

Working papers

**New Trends in accounting
and management**



Universitat de Lleida
Departament d'Administració
d'Empreses i Gestió Econòmica
dels Recursos Naturals

Competitive Positioning of Spanish Agricultural Cooperatives

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COMPETITIVE POSITIONING OF SPANISH AGRICULTURAL COOPERATIVES

Abstract

Cooperatives are the basis of the social economy in many agricultural sectors. The present research work investigates the management situation of the olive oil cooperatives in Catalonia. The study identifies a typology of cooperatives based on their attitudes towards to the sector. A positioning map of the different types of cooperatives is then established on the basis of their characteristics. The study concludes with important managerial aspects of olive oil cooperatives in Catalonia.

Keywords

management, commercialization, segmentation, positioning, cooperatives, olive sector.

1. INTRODUCTION

Cooperatives are the basis of the social economy in many agrarian sectors. Such cooperatives have special characteristics that give them a ‘democratic’ management style and a relative subordination of their capital interests to their social aims. Agrarian cooperatives are ‘associative’ structures, whose development has been associated with a desire to improve the condition of rural society as changes have occurred in production, commercialization, financing, and services in the agricultural sector. They were originally created with a view to defend the interests of small and medium-sized farming enterprises in the face of decreasing incomes, increasing costs in production, and diminishing institutional subsidies.

A cooperative that is bound to its social and geographical environment assumes an important role in the economic development of local communities. It is the contention of the present study that it is necessary to respect the underlying principles of such cooperatives in searching for solutions to their problems—because losing their essential identity would render them more vulnerable.

The strategic scenario in which cooperatives will function in the immediate future in Europe will be determined by modifications in the Common Agricultural Policy (CAP) of the European Union (EU) and the policies of the World Trade Organization (WTO). It is possible that these policy modifications will increase territorial imbalances and enable international companies to act as agricultural oligopolies, to the detriment of local cooperatives. In practice, support for agrarian cooperatives requires sustainable development of the economic and social rural environment.

The main objective of the cooperatives in the past has been the commercial sale of their products. However, the modern socio-economic situation has increased the need for cooperatives to develop new objectives—such as respect for the environment, new marketing strategies, diversification, and so on.

In the particular case of the olive oil sector in Catalonia, the commercialization of the product and the restricted role of the productive sector in the distribution of that product raise significant questions about the value added by the cooperatives. This, in turn, has ramifications for the incomes of the farmers. The farmers do not actively participate in the commercialization of their product. Their focus is on delivering their olives to the cooperative for a certain price, and they do not have a role in the important issues that proceed from the time that the olive arrives at the cooperative until the olive oil is sold to the final consumer. Because most of the cooperatives were founded many years ago, they are not well adapted to modern market requirements in an open, competitive, global environment.

The present study analyzes the general characteristics of the olive oil sector in Catalonia and the role of the cooperatives in the production of olive oil. It is apparent that the cooperatives play a role in production, but that they do not have decision-making power with respect to the market. With subsidies to the sector likely to diminish as the CAP is reformed, it is clear that it will be necessary for the cooperatives to adopt a market-oriented approach.

2. LITERATURE REVIEW

Many scholars have studied business organization and management in general (Hall, 1991; Handy, 1985; Menguzzato and Renau, 1991; Mintzberg, 1979), and several have addressed these issues in the olive oil sector specifically (Crescimanno et al, 2002; Gil et al. 2004; Scarpa and Giudice, 2004; Siskos et al. 2001; Tsakiridou and Mattas, 2005). The majority of studies of the olive oil industry have addressed the dietetic, agronomic, and technological aspects of the sector, but few have considered the productive, economic, or business aspects. In particular, there have been few studies of the internal management style and competitive strategies of olive oil companies.

With regard to agrarian cooperatives in general, the following are worthy of note. Carrasco (1993) analyzed the financial problems of such cooperatives. Vargas (2002) contended that a concentration of companies and partnerships is required for effective development of the sector. Ceña *et al.* (1983) reviewed the situation of cooperatives in Andalusia. Caballer *et al.* (1987) analyzed the economic, financial, and management structure of Valencian cooperatives, and formulated a specific model of agrarian cooperativeness in Valencia. Julià (1993, 1994) described agrarian cooperativeness in general. Fernández (1996) analyzed the strategies of the cooperatives. Bel (1997) studied financial flows in the Spanish agricultural cooperative sector. Vidal *et al.* (2000) focused on cooperatives in the irrigation region of Valencia. Several authors, such as Oltra (1992), Segura and Oltra (1995), and Vidal (1999), have analyzed the efficiency of the management of cooperatives.

With regard to oleic cooperatives in particular, López Ontiveros (1982) undertook a detailed analysis of the sector. Domingo and Loma-Ossorio (1991) studied oil olive cooperatives in Andalusia, with particular emphasis on their management and possible solutions to the problems they faced. Vargas (1993) reviewed the olive oil industry in Huelva province. Pérez Rojas (1997) studied cooperative management through a review of the accounting systems of olive oil cooperatives in Córdoba. Torres Ruíz (1998) studied the marketing of olive oil from the perspective of the commercialization of the product in Jaén. Mozas (1998) conducted a survey questionnaire of the internal organization of the olive oil companies in Jaén.

Despite the importance of olive oil cooperatives in Catalonia, they have not been object of extensive studies. Amat (1991, 1997), Serrat (1986), and Barriach (1981) made global analyses of these entities, and Tous (1990) undertook a study of olive trees in Tarragona. Vilà and Farrán (1991) analyzed olive trees in Lleida and concluded that, despite the high quality of the oil, the harvesting costs were high and the financial benefits were limited. Tous and Romero (1993, 1994a, 1994b) did study the sector in Catalonia and its guarantee of origin^[1]. Fortuny (1994, 2002) also analyzed the oleic sub-sector in Catalonia. In 1995, the Agricultural Ministry of the Government of Catalonia offered a study of the agricultural food industry in Catalonia (Duch and Rubió, 1993). In this study the oil sector was analyzed through a questionnaire and some general macroeconomic data.

3. OBJECTIVE AND METHODOLOGY

The paper provides an overview of the olive oil cooperative sector in Catalonia to determine its strengths and weaknesses, and to consider possible threats, opportunities, and strategies. This allows reaching other objectives: the establishment of a typology of cooperatives according to their behaviour; and the establishment of a positioning map to illustrate the most important characteristics of the sector; propose some strategies depending on the cooperative type...

In order to select our target population, we took those cooperatives with activity codes in the Spanish fiscal systems are under the “411” family. This code includes the manufacturing companies of olive oil. The generic industries in this code are those related with food, drink and tobacco. The Catalans Commerce Chambers provided us the list of these cooperatives. From this data we concluded that there were 219 olive oil mills and 137 of them were cooperatives. The size of our target allows us to decide taking all of them.

As it is usual in an empirical study, the process to get data is complex, particularly in the post surveys, thus we have to face two problems: errors in the postal address and the lack of interest to respond. In order to solve it we conducted a telephone contacts to enhance the answer level. Eventually we got a 51% answer rate, which may be considered acceptable for the kind of analysis performed.

The methodology is based on a questionnaire survey of a representative sample of managers of cooperatives. In preparing the questionnaire, a full review of the extant literature was undertaken, and interviews were conducted to assess whether the questions were comprehensible and appropriate. The questionnaire covered: (i) general characteristics of the cooperatives; (ii) information about the productive, financial, and commercial activities of the cooperatives; and (iii) opinions on the general characteristics of the sector.

The field work was conducted in April–June 2005. The population consisted of the managers of 137 cooperatives in the olive oil sector in Catalonia. In all, 70 valid completed questionnaires were returned. We consider this sample sufficiently representative: there are cooperatives from different zones, with different turnovers and different number of employees.

The general characteristics of the sampling technique are shown in Table 1.

A factor analysis provided the main factors that characterize cooperatives within the sector, and a multivariate analysis of the responses was conducted to establish segments of cooperative types within the sector.

1] The “guarentee of origin” is a certification provided by an official entity that certifies that the olives come from a certain geographical area.

Table 1**General characteristics of the sampling technique**

Population.	Cooperative's managers of the oil sector of Catalonia (census of 137 cooperatives).
Sample.	70 questionnaires with a margin of error of $\pm 8,3$ percent and a confidence level of 95,5 percent ($k = 2$ and $p = q = 0,5$).
Procedure.	Simple random sample.
Date of the field work.	April – June of 2005.
Administration of the survey.	Personal interviewed through a semi structured questionnaire.
Information collected.	General characteristics of the cooperatives, information about the productive, financial and commercial activity, valuation about general characteristics of the sector.

4. GENERAL FEATURES OF THE CATALANE OLIVE OIL MILLS

Most of the olive oil catalane mills were establishes between 1910 and 1920. Thus there are mature companies: the cooperativism allowed the farmer to elaborate and distribute their produce. Nevertheless, the size of these cooperatives is so small that does not guarantee having enough resources to implement strategies to allow them to survive in a free market. From the managerial point of view, small size ends up in a low professionalization degree; some cooperatives do not have a manager and therefore there is observed an inefficient marketing focus and weakness in its managerial ability. There are other indicators of the low capacity management of the cooperatives: very few have a quality system based on ISO 9000 standards or in any other system. None of them has any environmental system based in ISO 14000. The only standard some of them have is about the product in itself as a “guarentee of origin”. Another indicator of the lack of marketing focus is that it scarcely may be found its olive in the supermarket, although recently it is improving. There are very few marketing actions.

In spite of this, we observed some changes in the production system used by these cooperatives, mainly since the entrance of Spain into the European Union. There are as well some improvements in the inventory systems, a modernization in the bottling and packaging equipment, an improvement in the olives cleaning system, etc... All this has enabled to reduce costs and increase quality –in product and presentation- at the same time.

All the cooperatives have its own brand, so there is not a sector policy in order to find a specific position in the market. At the same time, it limits its strength when the sector negotiates in front of third parts.

We point out another signal of sector weakness regarding to its marketing policy: there is a high percentage of production distributed in bulk –more than half of tis production. Although it may be said that the trend is improving and every year there are more and more production bottled.

Most of the cooperatives have different sections, although the basic activity is the production and commercialization of the olive oil. Secondary activities are centred in the wine production or in the provisioning of other services to its members.

5. SEGMENTATION OF THE COOPERATIVES

To distribute the respondents into homogeneous segments of cooperatives with similar attitudes towards the sector, a k-means conglomerate analysis was performed (Hartigan, 1975; Hartigan and Wong, 1979).

The k-means algorithm has been widely accepted as a data grouping technique (Siverman, 1986), but it presents an important inconvenience: the investigator has to know the number of categories in advance, *a priori*. In order to avoid this, a cluster analysis was firstly performed, with a hierarchical methodology to establish the number of segments (Ward method). This has been widely used in social sciences research (Balshfield, 1976). This minimizes the variance inside each cluster (Aldenderfer y Blashfield, 1984). Once the optimum number of clusters (three in this case) was found, a k-means hierarchical cluster analysis was performed.

A battery of questions was used for this purpose. The questions were developed from a careful review of the extant literature and from interviews with professionals and experts in the sector. Respondents were asked to reply on a *Likert* scale (from '1' = 'strongly disagree' to '5' = 'strongly agree'). The average score for each question was then calculated. The results are shown in Table 2.

A factorial analysis was then performed on the responses to the questions shown in Table 2 to extract the relevant factors to assess the sector. The segments were then positioned according to the factors shown by the factor analysis.

The hierarchical analysis demonstrated that three groups existed. A conglomerate analysis was then conducted. Three segments of different sizes were thus obtained: a large group (including more than half of the sample) and two smaller groups (representing about a quarter of the sample each).

Table 2
Attitudes towards the sector

1	Losing subsidies from the EU will directly affect my cooperative	4.12
2	Being on the Internet is important for the companies of the sector	3.81
3	Professional management is better than family management	3.48
4	A cooperative legal entity is better than a commercial legal entity	3.45
5	Quality systems such as ISO 9000 improve cooperative management	3.56
6	Being into a guarantee of origin enables commercialization	3.53
7	Having cost accounting enables management cooperative to be conducted correctly	4.39
8	Marketing research assists entry to new markets	3.66
9	It is important to associate with other cooperatives	3.50
10	The entry of new countries into the EU is a threat	3.36
11	The managerial mentality of the sector is 'closed'	3.60

12	Promotion and communication activities in this sector are not effective	3.34
13	It is difficult to find qualified personnel	3.82
14	Export markets should be promoted	4.09
15	Having a quality accreditation facilitates access to new markets	4.02
16	More training is required for employees working in cooperatives	3.86
17	The future of the sector shows considerable promise	3.14

5.1 Common characteristics of the whole sample

The first feature that can be observed is that these cooperatives had a long tradition (with some having been in existence for more than a hundred years). At the same time, their associates [2] were aged, as happens in the agricultural sector in general. May be, as a result of both, we found out that the commercialization effort was limited. They are managing cooperatives now as they used to do in the past. Therefore, they were not concerned about overseas markets, as they did not in the previous century. Just to highlight this, note that sales to foreign markets represents less than 25 percent of total sales. Management is more orientated towards the product (technical characteristics as density, acid degree, purity, colour, scents...) than to its production and sale. Really, managers are mainly interested in some elements of the product as quality, packaging, labelling, branding or a guarantee of origin. This is the main reason why most cooperatives take the price of their competence to fix their own price. They do not see how much the market would pay for it, but how much cost to produce, in order to guaranty a return of the investment to their associates. At the same time, the main channels of distribution were their own business houses and direct sales. In general, they are neither focused to distribution nor to innovation. Very few were aware of the importance of quality management, and very few had a quality certification.

Another general feature observed in the sector is its worries about losing subsidies. Actually, since Spain joined the EU, Spanish farmers' incomes have increased, surpassing the subsidy threshold. Losing these subsidies might give more power to large corporations to commercialize olive oil. It may be drown form this that there is a general pessimism and a lack of self confidence in the sector. They do as ever, but the world is globalizing, therefore they find themselves are loosing competitiveness.

There is also concern about the training of personnel and about difficulties in recruiting qualified personnel—especially suitable managerial personnel. They are not able to attract the profile of managers they need. They need to outsource the control management to outside auditors.

[2] Along the article, the word “associates” is used to mean the farmers who join the cooperative.

Most of cooperatives belonged to a second-degree cooperative and are federated[3]. Nevertheless, very few were associated with a second-degree cooperative of olive oil. On the contrary, they tended to associate with second-degree entities related to the supply side. The agricultural Spanish cooperatives were more interested in political matters than in the economic aspects of their existence. Thus, although 57.2 percent of the cooperatives belonged to a federation or representative organization, only 46.2 percent belonged to a second degree cooperative, as it is said in the *Libro Blanco Social en España* (Barea and Monzón, 1992).

5.2 Segment 1

The first segment consisted of small cooperatives of local scope, with a ‘closed-minded’ attitude, and a non-professional approach. This first segment consisted of 19 cooperatives, which represented 27.1 percent of the sample.

General characteristics

This segment was characterized by small and medium-sized cooperatives. This was the least professionalized segment, according to management. More than two-thirds did not have a manager at all; in very few of them, the manager were hired, and the remaining had a manager who was an associate. Managers in this segment had the lowest level of educational attainment. Most of them do not have a university degree. As a result, economic management control was exercised through external auditors.

Although they are small, the cooperatives[4] of this segment had other produce: wine, almonds, supplies, and an agro-shop. Compared with the other segments, the wine section was very prominent.

Productive activity

The changes introduced in production processes in recent years were mainly concerned with the renovation of equipment. This had led to an increase in production and a decrease in costs. It is important to note that they are focused mainly in production aspects rather than in marketing, commercialization or distribution function. This may explain why this was the only segment that sold more product in bulk than packaged. They do not care very much about international commerce, and most of them do not export any of their produce. They do not need enhance the image of the product, as the scope is very local, where they are well known, so they do not invest in packaging.

[3] A second-degree cooperative is another cooperative whose associates are cooperatives. In the other hand, a federation is not a cooperative, but an entity whose purposes are to protect the interest of the cooperatives (subsidies, help for the bureaucracy the cooperatives have to manage...).

[4] Most of the agrarian Spanish cooperatives are multifunctional and commercialize several products, (Hoogveld and Jurjus, 1990).

The turnover of the majority of cooperatives in this segment was less than 1.2 million euros. They had a production level of between 25 and 250 metric tons. Accordingly, this segment had the smallest staff: they had between one and five permanent employees and between one and five temporary employees. In general, these oil cooperatives were characterized by limited human resources in their organizations.

Financial activity

When credit is needed by the cooperative, they went to its own credit section^[5] of the cooperative; the second most common financial source was the associates. The funds that the associates bring to the credit section allow cheaper financing for other associates. At the same time, the funds provide a higher yield than other financial entities.

Commercial activity

Commercial activity for this segment is very local. The scope is quite reduced. Actually, a quarter of its commercial activity is in the same village where the cooperative is located; almost half of its activity is in Catalonia; the rest in Spain, France and Germany (10.5 percent each) and United Kingdom and United States of America (each 5.3 percent). They are not focused to the marketing campaigns. They outsource this work, only 21.1 percent performs this function themselves. When they assess the results of the campaign, only 50 percent of the cooperatives that had undertaken marketing campaigns believed that they were successful, and another 25 percent stated that they did not know whether their campaigns were successful.

In terms of marketing management policy, the cooperatives in this segment attached most importance to the product and to the price. They do not pay attention to the distribution and communication aspects. Nevertheless, it is important to note that most of them take the price of their competence as a point of reference. They do not play an active role fixing the price, due to the fact that they do not have a specific strategy. It seems that they act as they are used to, without taking advantage of its own position and knowledge of its own market. It is interesting to note that they believe that their campaigns had not been successful and were unnecessary because their customers were loyal. This point demonstrates as well the lack of interest for commercialization. In the same line, they are not pushing to new markets, but they focus in the local and loyal clients.

5.3 Segment 2

This segment consisted of medium-sized cooperatives with limited scope and limited market focus. This was the largest segment. It included 36 cooperatives and represented 51.4 percent of the sample.

[5] The credit section works as a bank for the associates.

General characteristics

The segment was formed mainly by medium-sized cooperatives; almost half of them have more than 200 associates.[6] This was the segment with the largest proportion of young associates, although the sector in general is quite aged. Only half of the cooperatives in this segment belonged to a second degree (the lowest proportion of the three segments).

Slightly more than a quarter of these cooperatives did not have manager, and almost half of them had given this role to an associate. It is the segment with the largest proportion of managers with specific training in cooperative management. These managers attained a high-level academic degree. In spite of this, the economic control was done by external auditors in most cases. This segment is more professionalized than the first one, but there is a lack of management ability.

The cooperatives of this segment also had other produce: wine, almond, supplies, credit and an agro-shop.

Productive activity

These cooperatives sold slightly more produce in their own packaging than in bulk, indicating some marketing focus in this segment. A majority of them had oil production between 25 and 250 metric tons.

It is observed a low appreciation of the importance of quality standards. Only a pair of cooperatives had ISO 9000 certification. In contrast, most large commercial companies involved in food distribution have these ISO norms, with the objective of maintaining a high uniform quality and satisfying consumers' requirements (Di Vita, 2002).

Commercial activity

Commercial activity in this segment was quite different from the first segment. This segment conducted commercial activities in the national market and in the international market as well, although with less intensity.

Some of these cooperatives had conducted a marketing campaign and usually had been developed by external professionals. The objectives of these campaigns were to increase sales and to know their clients' requirements. This indicates some marketing focus.

It is important to note that these cooperatives considered that the most important elements in sales were quality, the kind of oil and the official certification of origin. This indicates that the management focus was in production, although to a lesser degree than in the first segment, with this segment having a particular concern about the official certification of origin.

[6] The "Libro Blanco de la Economía Social en España" (Barea and Monzón, 1992) states that both the olive oil cooperatives and all the agrarian cooperatives are of small size—not large enough to face the requirements of the market.

These cooperatives conduct commercial activities in a wide range of products: canned olives, vinegar, wine, and aromatic oils... This is a productive structure quite similar to the first segment.

5.4 Segment 3

This segment was comprised of large cooperatives with professional management and online presence. It included 15 cooperatives and represented 21.4 percent of the sample. It was the smallest group.

General characteristics

The sector was formed by medium-sized cooperatives and large cooperatives, with 53.3 percent having 50–200 associates, and 33.3 percent having 500–1000 associates. This was the segment with the greatest proportion of large cooperatives. In spite of being the smallest cooperatives, their management capability is weak, although better than the other two segments. A quarter of the cooperatives in this group did not have a manager. In the rest of the cases were hired. In a remainder low percentage they were associates. This was the segment with the greatest proportion of hired managers. Moreover, this group had the highest level of managers with a university degree. According to this situation, the economic control was performed mainly by external auditors.

The cooperatives in this sector were the most diversified; in addition to oil, 80 percent of them produced almonds, had a supply section, or had a shop. Although the average size of these cooperatives was high, the production was not as high as in other sectors.

Productive activity

The changes made by these cooperatives in recent years were mainly concerned with renovation of equipment and they stated that the changes have produced a radical change in their way of making things.

They sell more with their own packaging than in bulk. A majority had a turnover of less than 1.2 million euros. This was the segment with the smallest turnover. On one hand, a majority of them had a production of less than 100 metric tons, and on the other hand, a quarter of them produced more than 250 metric tons.

This was the sector with the highest levels of both permanent and temporary staff. The cooperatives in this segment were thus larger entities than in other segments.

Commercial activity

The markets of these cooperatives were quite different from those of other segments. The markets were more open, with 33.3 percent operating in the national market and 20 percent operating in international markets.

In the national market, the main destinations were the local area and Catalonia. In particular, Madrid was a common destination. Internationally, Italy was the most common international destination.

This segment undertook more research, with 60 percent having conducted some marketing research. The cooperatives' managers developed the campaigns in most cases. The objectives of these campaigns were increasing sales and making people aware of the product. Therefore, the management is high involved in marketing and less focused to product.

Apart from olive oil, these cooperatives also conducted commercial activities in canned olives, vinegar, wine and cava. This was the segment that most frequently used the Internet as a distribution channel.

Only half of these cooperatives thought that their communication activities had been successful. Half of these cooperatives had their own website, but they updated it only sporadically. Despite being the group with the greatest presence on the Internet, they were there for image purposes only. Table 3 summarizes the main characteristics of each segment.

Table 3
Main characteristics of the segments

	Segment 1	Segment 2	Segment 3
Description	<i>Small cooperatives of local scope, 'closed minded', and non-professional approach</i>	<i>Medium-sized cooperatives, with limited scope and limited market focus</i>	<i>Large cooperatives, with professional management and online presence</i>
Size	27.2 percent of the sample	51.4 percent of the sample	21.4 percent of the sample
Number of associates	Small and medium	Medium	Medium and large
Relationship with the manager	Little professionalized management (majority do not have a manager)	The manager is an associate	Hired manager
Manager's studies	Secondary studies	Specific formation	University degree
Other sections	wine	almond	almond, supplies, and shop
Packaging	in bulk	packed	packed
Turnover	-	-	Low
Production	High production	25–250 metric tons	Less than 100 metric tons.
Personnel	Small number of personnel	1–5 workers	Large personnel
Exportation	Closed	-	Opened
Financing	Own credit section	Financing entities	Own credit section
Liquidation system	Gross margin	Gross margin	Market prices
Commercial scope	Local	Local and national	National
Marketing	Do not undertake marketing campaigns	25 percent of campaigns are designed by external professionals	The segment that undertakes most campaigns
Distribution	Do not use Internet	10 percent use the Internet	The segment that uses the Internet the most
Communication	Radio, press, and national fairs	Radio, press, and national fairs	Press, catalogue, radio. The segment that uses the Internet the most

Success of the campaign	50 percent believe campaigns are successful	Confident with marketing	The segment that is least confident with marketing
Reasons for failure of campaign	Unnecessary. They have loyal clients	Lack of budgetary resources	Lack of budgetary resources
Main uses of Internet	Send and receive data, research, financial transactions and e-mail	Send and receive data, information research, e-mail and transactions with administration	Send and receive data, research, e-mail. The segment making greatest use of the Internet for sales
Own website	1/5	1/3	1/2
Attitudes to problems facing the sector	Difficulties finding qualified personnel Worried about losing subsidies New entries to EU are a threat Cost accounting is important Poor future for the sector No importance attached to association with other cooperatives	Cost accounting is important Having a quality accreditation enables access to new markets Exports must be enhanced Worried about training New incomers to EU are not a threat	Worried about losing subsidies Cost accounting is important Worried about training Exports must be enhanced

6. POSITIONING OF THE COOPERATIVES

A factorial analysis of principal components was performed from the scores recorded for the characteristics of the sector. This reduced the whole group of variables into a smaller number of mutually correlated components. As a result, a series of quantitative indices was obtained.

The correlations between the variables demonstrated a degree of commonality in their explicative capacity. The matrix of correlations was submitted to two tests: Bartlett's sphericity test and the Kaiser-Meyer-Olkin (KMO) index.

The Bartlett statistic, which had a value $\chi^2 = 430.088$ with a critical significance level of 0.000, made it possible to reject the null hypothesis of non-correlation between the observed variables. The Bartlett test confirmed the existence of lineal dependence between the variables and justified continuing with the procedure.

An exploratory factor analysis was carried out and three factors or components were obtained. The Kaiser criterion was used in their elaboration in such a way as to conserve only those factors that presented *eigen* values of one or greater. The first three factors retained 64.2 percent of the initial variance—which represents a good proportion given that each of the new components provided independent (and therefore unrepeated) information.

Table 4
Matrix of rotated components

	Factor 1	Factor 2	Factor 3
Marketing research assists entry to new markets	0.799	0.225	0.118
Export markets should be promoted	0.736	0.167	0.175
Being on the Internet is important for the companies of the sector	0.706	–	–
Quality systems such as ISO 9000 improve cooperative management	0.668	0.191	–
More training is required for people working in cooperatives	0.659	–	–
The future of the sector shows considerable promise	0.610	–0.188	–
Having cost accounting enables management of the cooperatives be conducted correctly	0.593	–	0.214
Being into guarantee of origin enables commercialization of oil	0.550	–	–0.412
Having quality accreditation facilitates access to new markets	0.502	–0.464	0.423
It is important to associate with other cooperatives	0.483	–0.304	0.185
Professional management is better than family management	0.165	–	–0.117
It is difficult to find qualified personnel	–	0.812	–
The entry of new countries into the EU is a threat	–	0.776	0.133
Losing subsidies from the EU will directly affect my cooperative	0.226	0.590	0.260
A cooperative legal entity is better than a commercial legal entity	0.401	0.421	–0.148
The managerial mentality of the sector is ‘closed’	–	0.224	0.803
Promotion and communication activities in this sector are not effective	0.151	–	0.697

With the rotated component matrix (Varimax rotation method) it was possible to obtain weightings for each factor in each of the variables. In Table 4, the first column presents items with highest saturations on the first factor; the second column presents those mainly saturated on the second factor; and the last column is formed by items more closely related with the third factor. Each factor had a high correlation with one group of variables and a low correlation with the rest—thereby providing a more appropriate interpretation of the initial factors.

The factors derived from the analysis were assigned a ‘label’ and an index (or score). This index was the arithmetic average of the items that formed it. The variables with high saturations (which appear in *italics* in the previous rotated component matrix) corresponded to the following factors:

- *Factor 1 Orientation towards marketing and quality management*: this is related to marketing research attitude, presence on the Internet, presence in external markets, the establishment of guarantee of origin, and a quality certification (score 3.72 on scale of 1–5).
- *Factor 2 Perceived risk*: this is related to risk perceived with the entry of new countries to the EU, fear of diminished subsidies, and concern regarding lack of qualified personnel (score 3.75 on scale of 1–5).
- *Factor 3 Closed mind*: this is related to the general business mentality of the sector and attitudes towards the promotion and communication activities of the sector (score 3.44 on scale

of 1–5).

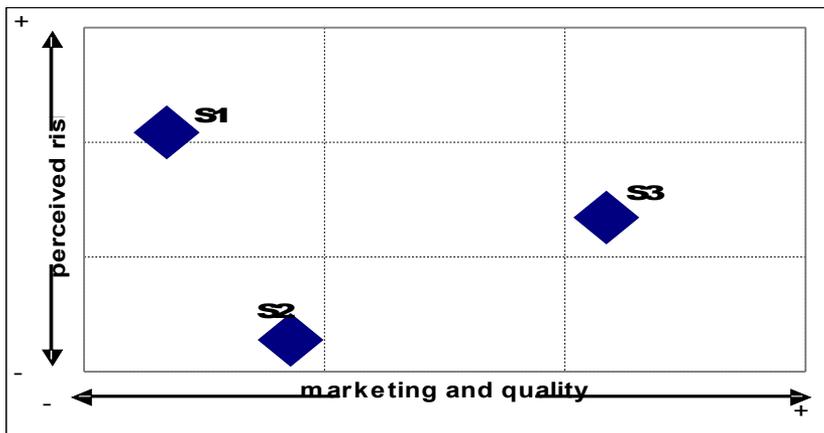
The three factors all scored above three (the mid-range value of the measurement scale of 1–5), but all three scored values removed from the extreme values. This suggests that there is still room for increase in the first factor, and room for a decrease in the other two factors.

7. MAP OF THE RESULTING SEGMENTS IN THE DETECTED FACTORS

The three segments were then situated with respect to the three factor axes. This enabled analysis of attitudes of the different segments (see Figures 1, 2, and 3).

It should be noted that the segments are all located in the same relative place in Figures 1 and 2. Figure 1 shows that Segment 1 perceived a significant risk from new entries to the EU—causing a decrease in subsidies and a lack of qualified personnel. This group also had a low level of marketing and quality orientation. Segment 3 is on the opposite site. This segment attached importance to marketing research, a presence on the Internet, the enhancement of external markets, a guarantee of origin, and quality certification. The members of this segment are situated in an intermediate situation in terms of risk perception. Segment 2 did not consider that newcomers to the EU pose a risk; however, the members of this segment did not show a positive attitude towards quality management or commercialization.

Figure 1
Positioning of factor 1 and factor 2



The situation of the three factors in Figure 3 is similar to Figure 1. Segment 3 had a very positive attitude towards quality and marketing management. However, the members of this segment considered that the sector is rather ‘closed minded’. Segments 1 and 2 were aware that the sector ‘mentality’ should be more open, but their management was not focused on quality and commercialization.

Figure 2
Positioning of factor 1 and factor 3

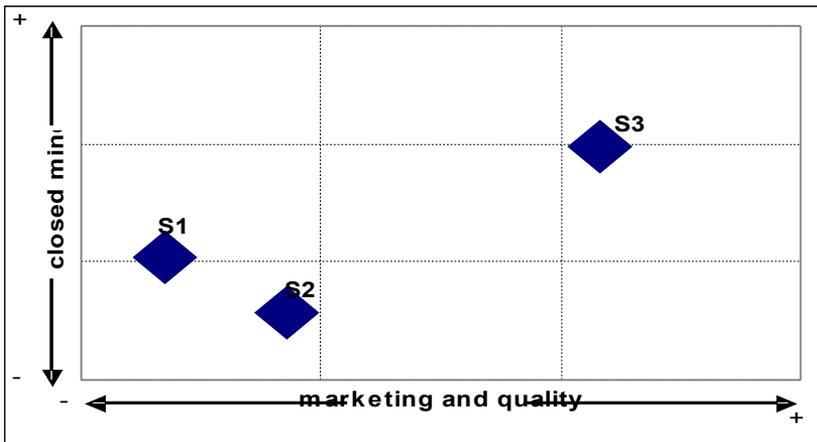
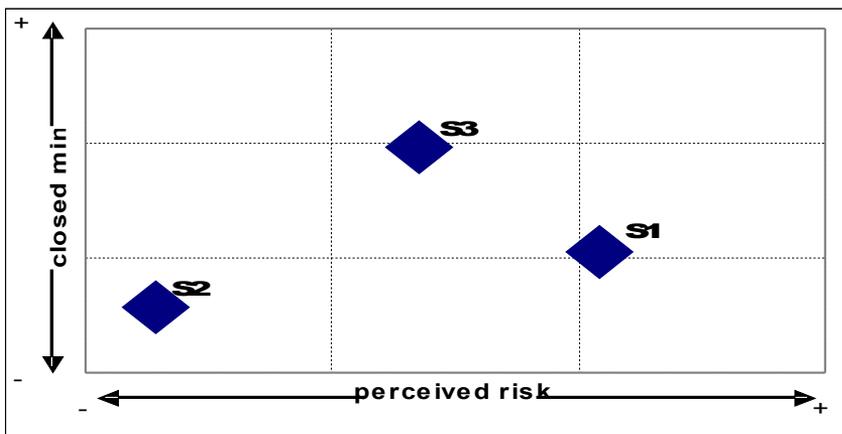


Figure 3 shows relative positions of the segments that confirm the findings noted above. Segment 1 was worried about the changes in the EU and about the lack of competent personnel. The segment also thought that the sector is open-minded. Segment 2 is close to the origin of the co-ordinates. The members of this segment did not perceive a risk; nor did they think that the mentality is closed. They attached significant importance to communication and promotional activities. The third segment is in an intermediate situation.

Figure 3
Positioning of factor 2 and factor 3



It can be inferred that the more open-minded cooperatives faced future in different ways. On the one hand, there were cooperatives that had little perception of risk; on the other hand, there were some cooperatives that considered the potential loss of subsidies and the entry of new countries into the EU as representing risks for the sector. The ‘closed-mind’ cooperatives perceived that there is a risk, but they did not attach importance to it.

The open-minded cooperatives were not focused on quality. In this group were cooperatives that foresaw some risk that eventually could affect them. It can be assumed that they will make some change to adapt to the new markets. There are other open-minded cooperatives that did not see any risk; it cannot be expected that they will make any change, and they might well find themselves in a critical situation in future markets.

In contrast, the close-minded cooperatives were orientated towards market and quality. They detected some risks and believed that this orientation might help them to survive.

8. CONCLUSION

The olive oil industry consists of a large number of companies, most of them small. The entrepreneurs in this industry do not have adequate training and, given the advanced average age of most farmers, they are unlikely to obtain the required training in the future.

The problems that exist in contemporary cooperatives require more professional solutions. Olive oil cooperatives of adequate size should be managed by professionals with the ability to manage with efficiency. Smaller cooperatives should join together to hire a professional

manager.

The cooperatives attached importance to three issues. The first was cost accounting (with a score of 4.39 on a scale of 5). The second was the possibility of losing subsidies (with a score of 4.12). The third was the enhancement of export markets (4.09).

The cooperatives do not see a promising future for the industry. In fact, they perceive themselves as becoming increasingly uncompetitive against the big companies that will dominate the market.

An important contribution of this study is the sector analysis of the behaviour of the cooperatives. Three segments were identified. The *first* consists of small cooperatives of local scope, with a closed-mind attitude and a lack of a professional approach. Most of these did not have a manager. Until now, these cooperatives have depended on EU subsidies, and they are therefore worried about losing these subsidies. Nevertheless they are not worried about the sector's future because they can sell their production to loyal clients. They do not therefore consider that being associated is important. Nevertheless they worry about new countries entering the EU.

The *second* segment consists of medium-sized cooperatives with limited scope and limited market focus. This was the largest segment. These cooperatives are more focused on the market, and they do not see newcomers to the EU as a threat. Nevertheless, they demonstrate a lack of professional management, despite being in external markets. They consider that external markets should be enhanced, and that the Internet should be used to access new markets.

The third group consists of large cooperatives with professional management and an online presence. This is the smallest group of the sample. They are the largest cooperatives, quite diversified, and with a presence in international markets. They are worried about losing subsidies. Due to their size, they need more financing and their projects are more ambitious. They believe that external markets must be enhanced, and they undertake advertising and marketing campaigns.

Another finding out of this study is the factors that determine the behaviour of these segments and the cooperatives in general. These factors are: (i) orientation towards marketing and quality management; (ii) perceived risk; and (iii) closed mind. Analysing the cooperatives' behaviour with respect to these factors it was noted that segment 1 perceives risk in the sector—due to the entry of new countries into the EU and the attendant risk of losing subsidies and lacking qualified personnel. Segment 3 attaches more importance to marketing research, Internet presence, enhancing external markets, establishing guarantee of origin, and quality certification. Segment 2 does not see a threat in the newcomers to the EU; neither do they focus on quality management or commercialisation.

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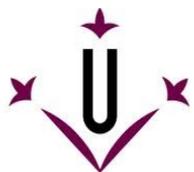
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