



# Protected Designation of Origin as a Certified Quality System in the Andalusian olive oil industry: Adoption factors and management practices



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## ABSTRACT

Protected Designation of Origin (PDO) is a Certified Quality System (CQS) that guarantees that there is a link between the particular characteristics of the production process of certain foodstuffs and their geographical origin. However, there is room for manoeuvre with regard to the management practices implemented when it comes to PDO. This paper investigates the factors related to and explaining the adoption of PDO in the Andalusian olive industry, the main olive growing region in the world, including an analysis of the varying characteristics of mill enterprises, managerial and supervisory staff, and of the differences and similarities between the practices implemented by PDO enterprises compared with the rest. A structured personal interview was held with the managerial and supervisory staff of 101 olive mill enterprises in the main olive growing provinces of Andalusia. The results show that CQS are not in general very widespread but that PDO is relatively prevalent. However no clear adoption factors for PDO have been identified, since the structural characteristics of enterprises adopting PDO and the personal characteristics, attitudes and opinions of their managers and supervisory staff are very similar to those not adopting it. The adoption of PDO seems to be explained by a contagion effect among industries that are located within less favourable, steeply sloping areas. Moreover, the adoption of PDO is not generally linked to an implementation of better industrial practices, rather of better marketing practices, since in general optimal industrial practices are already widespread in Andalusian olive mills. The policy and management implications of enhancing economic viability by increasing the spread of PDO, and by improving the practices implemented by PDO enterprises, are also discussed.

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## 1. Introduction

Differentiating the quality of products and processes can generate a competitive advantage for agro-food enterprises due to the fact that customers and final consumers are increasingly demanding higher-quality products and stricter, more transparent and verifiable controls in the production process. Achieving, enhancing and sustaining competitiveness is dependent on delivering superior quality products/services to consumers (Magd & Curry, 2003). In the agro-food chain, quality can only be imperfectly observed by the end customer (Carrquiry & Bruce, 2007), due to the increasing distance between suppliers and customers in

the current context of economic globalisation and expansion of international trade (Terlaak & King, 2006). Therefore quality needs not only to be delivered, but also certified. Certification of products and processes through the implementation of a Certified Quality System (CQS) is voluntary and guarantees standards of quality that go beyond mandatory levels. Firms usually adopt CQS to obtain a market advantage and to build their reputation as a provider of products with certain claimed attributes (Carrquiry & Bruce, 2007).

Certification of quality is a key issue in the case of olive oil. Spain is the leading country in the world both in terms of olive production and surface area covered, representing 35.83% of world production and 24.86% of surface area on average in 2005–10 (FAO, 2012). The Spanish olive sector consists primarily of a wide group of small/medium olive growers organised into cooperatives with an olive oil mill, which account for more than 70% of the olive oil produced,

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plus a minority of private olive oil mills pertaining to larger farmers (Sanz Cañada & Macías Vázquez, 2005). Andalusia, a southern Spanish region, is the most important olive growing area in the country, representing 84.30% of the olive production and 61.89% of the olive surface area of Spain in 2009 (MARM, 2010b). The Andalusian olive sector faces a marketing problem because the cooperative and small/medium-sized private olive mills, which make up the majority of olive producers, have a negligible profile in the market of bottled olive oil. Cooperative mills and small/medium-sized private mills cannot compete in price with the large packaging groups and retailer labels (Sanz Cañada & Macías Vázquez, 2005), and are forced to sell their product in bulk to big olive oil companies with a consequent loss of added value (Marbán Flores, 2003, 2005; Montegut Salla, Cristóbal Fransi, & Marimon Viadiu, 2007). Additionally, the Spanish olive sector in general, and that of Andalusia in particular, currently face a critical situation, especially in the initial stages of the agro-food chain, due to the low productivity of a significant number of olive growers, since almost a third of the Spanish olive area is located in mountainous regions and managed in a traditional manner (Sanz Cañada, Rodríguez Zúñiga, & Mili, 1998). The sector also faces a drop in olive oil prices since 2009 (CAP, 2011) and also in CAP subsidies. In this context, competitiveness through quality differentiation and certification in the marketplace is clearly a fundamental survival strategy for olive mill enterprises (Marbán Flores, 2003; Montegut Salla et al., 2007). Quality differentiation will play a key role in the medium to long term, not only in traditional consumer markets but also in high income non-traditional countries, where there is a clear trend towards increasing market segmentation based on product quality (Anania & Pupo D'Andrea, 2008; Mili & Rodríguez-Zúñiga, 2001).

Protected Designation of Origin (PDO) is a CQS that guarantees that agricultural products and foodstuffs are produced, processed and prepared in a given geographical area using recognised know-how (Regulation EU 1151/2012 of the European Parliament and of the Council), all without prejudice to other rules relating to food security, quality, labelling, or other applicable measures (Ruiz Castillo, 2008). The spread of PDO has been impressive in the Andalusian olive sector: the olive surface under PDO increased by 166.43% between 2001 and 2008 and the quantity of olive oil produced under PDO schemes, which is of the highest extra-virgin quality, increased by 66.53% (MAPA, 2002; MARM, 2010c). Despite the relative importance of PDO in the sector, its adoption factors, i.e. the factors explaining its adoption and diffusion, have not been sufficiently analysed. Although the adoption of PDO has been analysed, studies have focused on a different perspective, taking PDO as a quality differentiation strategy for improving the economic viability of olive agriculture in Italy (Polelli, Corsi, & Giacomelli, 2007; Roselli, Casieri, De Gennaro, & Medicamento, 2009), Portugal (Baptista & Biswas, 2010) and Spain (Marbán Flores, 2003, 2004, 2005; Sanz Cañada & Macías Vázquez, 2005, 2008). Moreover, the 'goodness' or optimality of the management practices associated with PDO as compared to non-PDO is a topic which has not been much studied previously either. In effect, 'good practices' can be defined as the set of specifications that contribute to the sound management of the natural environment, animal welfare, public health and animal and plant health, and traceability through all stages of production, processing and distribution (CAP, 2006). However, it is not clear whether adopting PDO is related to the implementation of better practices. The scarcity of information on these topics is made patent by the international literature review on PDO as a Certified Quality System in the olive agro-food system carried out by Hinojosa-Rodríguez, Parra-López, Carmona-Torres, and Sayadi (2014).

In this context, this paper aims to contribute to the existing literature by investigating the factors conditioning the adoption of

PDO as a CQS as well as PDO's influence on the industrial and marketing practices implemented in the olive industry. The specific objectives of this study are: (1) to determine the adoption rates, i.e. the percentage of adoption, of the various available CQS including PDO in the olive mill industrial sector of Andalusia; (2) to define the adoption factors of PDO in the olive industry, i.e. the characteristics of the enterprises and their managerial and supervisory staff, which can explain the adoption of PDO; and (3) to examine the effect of the adoption of PDO on the implementation of optimal industrial and marketing practices by olive enterprises. The hypotheses of the research are that the Andalusian olive industry is not adopting the wide range of CQS available, and that the adoption of a CQS such as PDO does not automatically guarantee the implementation of better management practices. Hence, the final aim of the research is to generate insights for the design of policies that would strengthen the spread of PDO, enhance economic viability and improve the industrial and marketing practices implemented by PDO enterprises.

## 2. Material and methods

The managerial and supervisory staff members of 101 olive mill enterprises in the main olive growing provinces of Andalusia – Jaen, Cordoba and Granada (IEA, 2012a, 2012b) –, were interviewed face-to-face between May 2010 and February 2011. The survey sample was randomly stratified in proportion to the number of olive mill enterprises in five major homogeneous olive growing zones, which were previously clustered for the sake of facilitating the implementation of the survey. These zones encompass municipalities that are similar in terms of the share of olive surface over total agricultural surface, according to the census of the Spanish Olive Oil Agency online database (AAO, 2010). The distribution between PDO and non-PDO interviewees was random. Eventually information about 13 PDO and 88 non-PDO mill enterprises was gathered, which is in line with the share of PDO in the olive sector: olive oil produced under PDO represents 11% of the total extra-virgin olive oil produced in Andalusia (MARM, 2010a, 2010c). The survey was implemented using a structured questionnaire. Since 697 olive mills were registered, a sampling error of 6.32% for extreme proportions ( $p = 0.9$  y  $q = 0.1$ ) and of 10.54% for intermediate proportions ( $p = q = 0.5$ ) can be assumed for dichotomous variables at a 95% confidence level for the whole sample. In any case, the aim was to achieve a comparison between PDO and non-PDO adopters rather than an inference to the entire sector.

The theoretical basis for the study is the Diffusion of Innovations paradigm, in particular the most recent version of the Rogers theory (Rogers, 2003). This paradigm was formally conceived through the seminal work of Ryan and Gross (1943), and has been widely used to study the diffusion of innovations in agriculture. It proposes a model for establishing relationships between the characteristics and attitudes of individuals (or groups of individuals) and their behaviour with respect to the adoption of innovations. Moreover, it highlights the importance of investigating the consequences of this adoption for adopters and other agents.

Three main analyses were carried out in line with the three stated objectives of this research. The purpose, data gathered, and the methods followed for each analysis are as follows:

1. Adoption rates of diverse CQS:
  - 1.1. Purpose: Describing the adoption rate among olive mill enterprises, i.e. the percentage of mills adopting the various available and potentially applicable CQS.
  - 1.2. Data gathered: CQS analysed include public norms, such as PDO, organic agriculture, and integrated production; and

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