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Review

Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG): A bibliometric analysis

Claudia Dias^a, Luís Mendes^{b,*}^a Department of Management and Economics, University of Beira Interior, Pólo IV, Estrada do Sineiro, 6200-209 Covilhã, Portugal^b Department of Management and Economics, University of Beira Interior, Advanced Studies in Management & Economics Research Center (CEFAGE-UBI), Pólo IV, Estrada do Sineiro, 6200-209 Covilhã, Portugal.

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ABSTRACT

Despite the importance of the literature on food quality labels in the European Union (PDO, PGI and TSG), our search did not find any review joining the various research topics on this subject. This study aims therefore to consolidate the state of academic research in this field, and so the methodological option was to elaborate a bibliometric analysis resorting to the term co-occurrence technique. Analysis was made of 501 articles on the *ISI Web of Science* database, covering publications up to 2016. The results of the bibliometric analysis allowed identification of four clusters: “Protected Geographical Indication”, “Certification of Olive Oil and Cultivars”, “Certification of Cheese and Milk” and “Certification and Chemical Composition”. Unlike the other clusters, where the PDO label predominates, the “Protected Geographical Indication” cluster covers the study of PGI products, highlighting analysis of consumer behaviour in relation to this type of product. The focus of studies in the “Certification of Olive Oil and Cultivars” cluster and the “Certification of Cheese and Milk” cluster is the development of authentication methods for certified traditional products. In the “Certification and Chemical Composition” cluster, standing out is analysis of the profiles of fatty acids present in this type of product.

1. Introduction

As part of its food quality policy, the European Union (EU) promotes three types of quality labels for agricultural products and foodstuffs: Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG) (European Commission, 2013). PDO covers agricultural products or foodstuffs that are produced, processed and prepared in a specific geographical area, using recognized know-how. PGI covers agricultural products or foodstuffs closely linked to a geographical area; at least one of the stages of production, processing or preparation occurs in that area, while the raw material used in production can come from another region. Finally, TSG covers agricultural products and foodstuffs that are produced using traditional raw material or traditional production methods, or that have a traditional composition, with no restriction as to the product's geographical origin.

The PDO, PGI and TSG schemes were introduced, not only as a way to support consumers' decisions, but also as a mean of food control (Grunert & Aachmann, 2016; Hajdukiewicz, 2014). European producers are aware of these schemes and consumers are showing renewed interest in traditional food (Almli, Verbeke, Vanhonacker,

Næs, & Hersleth, 2011; Grunert & Aachmann, 2016; Guerrero et al., 2010). On one hand, agricultural producers in the EU are increasingly interested in using geographical indications to differentiate their products in international markets, and thereby improve their competitiveness and profitability. On the other, consumers' growing interest in quality and traditional products creates a demand for agricultural products and foodstuffs with specific, identifiable characteristics, particularly those that are linked to their geographical origin and their production method (Hajdukiewicz, 2014).

In 1992, the first European legislation for agricultural products and foodstuffs was adopted, covering PGI and PDO labels. Those legislation was inspired on existing national systems, such as the French AOC (*Appellation d'Origine Contrôlée*) and Italian DOC (*Denominazione d'Origine Controllata*) (European Commission, 2011). The French AOC system is closely linked to the concept of *terroir*, since a *terroir* product is characterised by a specific geographical origin, developed over a long period of interaction with local traditions, the local environment and know-how (Barham, 2003; Hajdukiewicz, 2014). These factors are considered in applying PDO/PGI schemes (Hegnes, 2012).

In 2006, Regulation (EU) N° 509/2006 was adopted, creating a regulatory framework of the TSG label for agricultural products and

* Corresponding author.

E-mail address: lmendes@ubi.pt (L. Mendes).<http://dx.doi.org/10.1016/j.foodres.2017.09.059>Received 26 August 2017; Received in revised form 16 September 2017; Accepted 21 September 2017
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foodstuffs. The latest regulation on agro-food quality certification schemes came into force on 3 January 2013 – Regulation (EU) N° 1151/2012. Applications to use any of those schemes are generally managed by a group of producers, through the national food authority's communication with the European Commission. The Commission analyses applications, in order to guarantee the right to use the respective label. However, Regulation (EU) N° 1151/2012 is not applied to wine products, except for wine vinegar, since those products require specific control rules, according to Regulation (CE) N° 1234/2007. Wine products can benefit from the PDO and PGI labels but not from TSG.

It is of note that currently producers from countries outside the EU can join EU quality certification systems, according to the *World Trade Organization's* rules on international commerce. Since 2006, applications for registration of PDO, PGI and TSG labels by producers in other countries, and objections in relation to applications made individually in other countries, can be made directly to the European Commission. However, the number of international registrations is very low (Hajdukiewicz, 2014).

There is a need to protect high quality products with geographical indications and designations of origin from possible commercial fraud, since such products are related to higher retail price and bring in higher financial benefits to producers in comparison with other similar products (Danezis, Tsagkaris, Brusic, & Georgiou, 2016). Methods for testing authenticity and providing analytical data on traceability require robust analytical techniques that can be used by the various regulatory authorities (Camin et al., 2017). So, it is not surprising that studies about food authentication cover more and more certified traditional products such as cheese (Fontenele, Bastos, dos Santos, Bemquerer, & do Egito, 2017), wine vinegars (Paneque, Morales, Burgos, Ponce, & Callejón, 2017; Ríos-Reina et al., 2017), vegetables (Drivelos, Danezis, Haroutounian, & Georgiou, 2016; Mir-Marqués, Elvira-Sáez, Cervera, Garrigues, & de la Guardia, 2016), meat (Mateus & Russo-Almeida, 2015), lard (Chiesa et al., 2016) or saffron (Cagliani, Culeddu, Chessa, & Consonni, 2015).

Food authentication aims to identify unique markers or groups of markers to characterise the authenticity of food or their potential adulterants/contaminants and use them to resolve authenticity problems (Guerreiro, Barros, Fernandes, Pires, & Bardsley, 2013). The studies about markers of authenticity of high-value added products, such PDO cheeses, analyse important topics like the evaluation of the proteolytic profiles in terms of ripening time and milk admixtures (Guerreiro et al., 2013), or the determination of biochemical, volatile and textural profiles during manufacture and ripening (Bertolino, Dolci, Giordano, Rolle, & Zeppa, 2011). Thus, reliability of food authenticity markers and the evaluation of factors that affect them are crucial to ensure the right decision about a product authenticity or an adulteration.

Despite the importance of PDO, PGI and TSG schemes and the various issues related to those, literature reviews on the subject are lacking (Grunert & Aachmann, 2016). The few existing reviews are about specific topics such as consumer reactions to the use of this type of scheme (Grunert & Aachmann, 2016), the economic perspective (Hajdukiewicz, 2014) or food authentication (Danezis et al., 2016). Considering the continuing lack of a more generic and aggregating review of various research topics on this subject, our aim here is to make a bibliometric analysis of the PDO, PGI and TSG schemes, in order to understand the state of academic research in this field. The analysis will consider articles on the *ISI Web of Science* database, covering publications up to 2016.

This study is structured in various sections. After analysis of statistical data and description of the methodology used, we examine 501 articles included on the *ISI Web of Science* database, considering publication in all areas of research. This is followed by the descriptive analysis of the results and analysis of the main thematic areas, resorting to the bibliometric technique of term co-occurrence. In the last part, after summarizing the main aspects dealt with in this study, we indicate

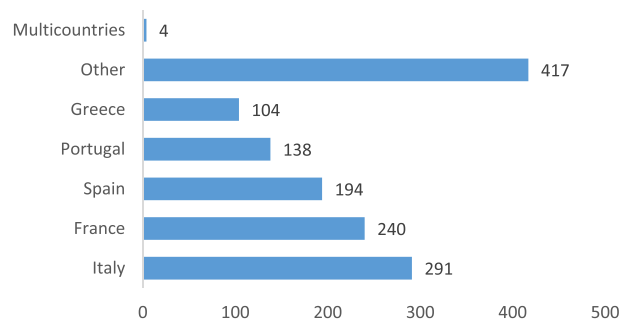


Fig. 1. N° Registrations per country (DOOR Database, 2017).

limitations and future lines of research.

2. Statistical data

According to *DOOR database* (2017), Southern European countries present the greatest number of PDO, PGI and TSG registrations. Italy and France stand out, having a long tradition of protecting and promoting products nationally, followed by Spain, Portugal and Greece (Fig. 1). PGI is the principal certification scheme, followed by PDO and TSG, although the last named has a low number of registrations (Fig. 2). “Fruit, vegetables and cereals”, and “cheeses”, are the product types with most registrations, although “meat products”, “fresh meat”, and “oils and fats” are also important (Fig. 3).

Regarding wine, Fig. 4 reveals that PDO wines (1291) predominate over PGI wines (459) in the European Union (*E-BACCHUS*, 2017).

3. Methodology

3.1. Data collection

Our research took place in June 2017 and focused on articles on *ISI Web of Science*, including articles up to 2016. In a first phase, documents using in the title, abstract or key words (Topic) one of the following terms: “Protected Designation of Origin”, “Protected Geographical Indication” or “Traditional Speciality Guaranteed” were selected. This search resulted in an initial sample of 577 documents. The review was limited to peer-reviewed published articles, omitting books, book chapters and other non-validated publications, since articles can be considered as validated knowledge and probably have a greater impact in the field (Keupp, Palmié, & Gassmann, 2012). After selection of “Article” and “Review” documents, 527 articles were obtained. Only articles in English were considered, since the spread of scientific knowledge occurs fundamentally through this language, and so the final number of articles obtained was 501.

3.2. Term co-occurrence

After identifying the articles, the bibliometric technique of term co-occurrence will be used. Our unit of analysis is the article, while the

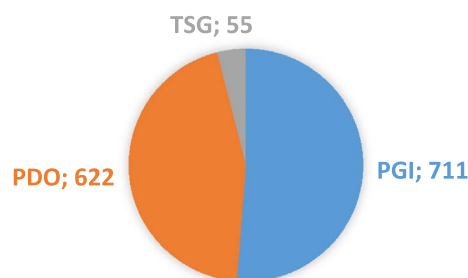


Fig. 2. N° Registrations per certification scheme (DOOR Database, 2017).

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