

ORIGINAL ARTICLE

Cooperatives and sustainability drivers in the Spanish wine sector. What differences do we find with investor owner firms?

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Abstract

The fight against climate change has become a basic vector for agri-food business strategies. In Spain, commercial wineries (Investor Owner Firms, IOFs) and cooperatives are facing major challenges in adapting to the most stringent environmental requirements and in becoming sustainable and environmentally responsible companies. The European winemaking model, unlike its “new world” competitors, has a very distinct configuration with the predominance of the social economy in parallel with capitalist enterprises. However, these two forms of business organization are different in terms of objectives, position in the value chain, type of organization and form of management. The purpose of this paper is to determine whether these two types of companies have a different orientation towards sustainability, and which are the drivers that facilitate a greater approach to sustainability in each group. With a sample of 411 wineries, the results of the study show a lower orientation towards sustainability among the cooperatives, without a relevant alignment of their resources towards this

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objective. However, IOFs orient their resources towards sustainability in a consistent and strategic way. This may infer that the European model, with a clear advantage in the social component, could be somewhat more limited in the environmental aspect.

KEYWORDS

cooperatives, IOFs, resources and capabilities, sustainability

1 | INTRODUCTION

Currently, sustainability is arousing special interest in academic and social environments. Climate change, global warming or the management of natural resources condition the objectives and activities of institutions, governments, entrepreneurs, and consumers (UN, 2021; De Steur et al., 2020; Pomarici & Vecchio, 2019; Moscovici & Reed, 2018; Bermejo, 2014; Warner, 2007). The concept of sustainability first emerged in 1987 in the Brundtland Report as a paradigm that should allow the improvement of the quality of life and level of consumption of current generations without compromising possible improvements for future generations (UN, 2021; Moscovici & Reed, 2018; Bermejo, 2014). From the outset, doubts arose over whether it was possible to combine development and sustainability (Bermejo, 2014; Ehrenfeld, 2005, Warner 2007), but after overcoming these initial conceptual misgivings, sustainability has become a primary development objective of governments and institutions and, particularly, the United Nations and its 17 Objectives of Sustainable Development, which contemplates sustainability as the need to ensure the harmonization of economic growth, social inclusion and the protection of the environment (UN, 2021). Within this context, this study seeks to analyze the different orientation towards sustainability of two organizational models; the cooperative and the capitalist firm.

The winemaking sector is an industry highly oriented towards sustainability, even though wine is not one of the foods or drinks which have the highest incidence on climate change (Poore & Nemecek, 2018). Different reasons explain the connection between the winemaking sector and climate change. Its activity is often developed on land where it is not always possible to grow other crops. In viticulture, there are many differences, in terms of economic viability, between rainfed and irrigated farms. Also, there are certain areas with geographical structural limitations that prevent the technical development of mechanized practices. It is in this environment where the vineyard in Spain is maintained as a woody crop as opposed to other potentially more profitable but non-feasible alternatives and abandonment. In this way, winemaking facilitates the maintenance of the population in rural areas (Barbosa et al., 2018; Ferrer et al., 2022; Brugarolas et al., 2010).

It is subject to variations in the climate which modify its annual production and yields. The effects of climate change are becoming increasingly visible, as we can observe in the ever more frequent heatwaves, droughts, cold snaps, hailstorms, torrential rains or the increase in average temperatures, etc. (Marx et al., 2017, Schultz, 2016). Therefore, climate change is the most important challenge facing producers and generates significant price rises (Prowein, 2021). Furthermore, the wine industry, with thousands of years of history, is related to the Mediterranean diet and in many cases to family-run businesses going back several generations. In the

management of wineries, it is common to find the transmission of values and knowledge based on a respect for the place where the wines are grown and made (Szolnoki, 2013; Corbo et al., 2014; OIV, 2016; Barbosa et al., 2018; Flores, 2018; Broccardo & Zicari, 2020).

Within the agro-food industry, and particularly in the winemaking sector, there are two types of company with clearly differentiated characteristics: the cooperatives and the so-called IOFs (Investor Owner Firms). The latter companies, whether individual or corporate, are commercial enterprises. The IOFs are firms constituted by one or more partners, they are of a commercial nature, produce the more well-known brands and are the most standardized in the market economy model. In the wine sector they are very close to the final consumer. The cooperatives, meanwhile, are companies owned by the farmers. The farmer partners sell their production to the cooperative. They benefit from collective purchases, and through the higher volume of production they can enjoy greater negotiating power with the next step in the value chain, being able to obtain a higher price for their products and obtain economies of scale (Santos-Arteaga & Schamel, 2018; Altman, 2015).

The differences between cooperatives and IOFs have been studied in the wine sector (e.g., Rouseliere, 2017; Valette et al., 2018). Other studies have analyzed the sustainability of the wine sector (e.g., Szolnoki, 2013; Marshall et al., 2005; Gabzdylova et al., 2009; Flores, 2018; Santini et al., 2013; Merli et al., 2018; Corbo et al., 2014). However, scarce and only partial research has been conducted on the differences between the two types of companies with respect to sustainability. In order to fill this gap, the objective and principal contribution of this study is to analyze the orientation towards sustainability of these two types of company that operate side-by-side in the wine sector; the cooperatives and the IOFs. Furthermore, it seeks to identify the resources that drive sustainability in these two types of ownership structure.

After analyzing the responses of 411 wineries to a quantitative survey sent to all of the companies in the winemaking sector of Spain, it has been found that there is a different orientation towards sustainability between cooperatives and IOFs. At the same time, the drivers and strategic orientation of each type of organization are also different. The IOFs exhibit a greater sensitivity to the three components of sustainability analyzed, namely ecological wine, the carbon footprint, and corporate social responsibility. In the case of the IOFs, a strategic alignment towards sustainability is found, together with a driving role of all the resources studied, namely innovation, marketing, human resources, network resources, management resources, and financial resources. In the case of the cooperatives, the fundamental drivers towards sustainability are innovation, network and management resources. Finally, it should be noted that no homogeneous behavior exists among the cooperatives and IOFs in terms of the three components of sustainability analyzed, with ecological wine being perceived in a different way to the carbon footprint and corporate social responsibility.

This article is structured as follows: in the following section the literature review is presented and the hypotheses are established. The third section explains the methodology used and the fourth presents the results obtained. The discussion and conclusions are found in the final two sections.

2 | LITERATURE REVIEW AND HYPOTHESIS

2.1 | Literature review

2.1.1 | Sustainability

An activity is considered as being sustainable if it fulfills three requirements: it is economically viable, it preserves the environment and is accepted by part of the social environment in which it is developed (FAO, 1989; OIV, 2016). However, these three elements are not always taken into account and many studies focus only on the environmental elements, that is, on the reduction of the impacts on the environment (Moscovici & Reed, 2018; Flores, 2018; Merli et al., 2018; Warner, 2007; Marshall et al., 2005). There are so many of these studies, that they have generated confusion among consumers and sustainability managers, who associate sustainability with environmental conservation (Bermejo, 2014; Moscovici & Reed, 2018; Santini et al., 2013; Flores, 2018; Szolnoki, 2013; Sellers-Rubio & Nicolau-Gonzalbez, 2016). This is the case, even though the principal world institutions, such as the European Union (EU), the World Bank (BM), the Organisation for Economic Co-operation and Development (OECD) and the United Nations Development Programme (UNDP) have reaffirmed that sustainability should encompass all three dimensions: economic, social and environmental (Bermejo, 2014).

The wine industry, which is the focus of this article, has not been exempt from this widespread movement and a large number of studies on sustainability have been conducted for this sector. The studies of Szolnoki (2013), Marshall et al. (2005), Gabzdylova et al. (2009), Corbo et al. (2014), Flores (2018), Santini et al. (2013), Merli et al. (2018) and Ayuda et al. (2020), among others, analyze the negative impacts on the environment of the wine industry, such as: the use of the soil, water consumption, water footprint, the energy and pesticides used, wastewater and waste generated, and the carbon footprint produced by its activity, particularly by transport. The fact that wine production is developed on the soil, where plants live and grow, reinforces the connection between winemaking and sustainability, given that the deterioration of the substrate or the climate conditions inexorably condition its existence and development (García-Cortijo et al., 2021). It is not surprising, therefore, that the most important world organization of the sector, the International Organisation of Vine and Wine (OIV) has assumed sustainability as one of its objectives. In different manifestations in 2004, 2008 and 2016, it recommended that wine-making enterprises should become sustainable. This organization particularly emphasizes the importance of the sustainable use of water in wine production in the document *New OIV collective expertise document on relevant principles for the sustainable use of water in Winegrape vineyards production. A tool for reference and guidance for the sector available on open source* (OIV, 2021).

Within this context, it may be understood that in the wine-making industry the development of sustainable practices has increased substantially, particularly since the beginning of the twenty-first century (De Steur et al., 2020, Gilinsky et al., 2016). However, sustainability does not seem to be experienced in the same way throughout the whole of the value chain of the wine industry. The producers at the beginning of the value chain perceive a greater amount of pressure to adopt sustainability measures, due to their proximity to the land factor (Prowein, 2021).

2.1.2 | The cooperatives vs. IOFs and sustainability

In Europe, cooperatives produce a large part of the total volume of wine, representing more than 50% of Italian and French wine (Bono et al., 2012; Couderc & Marchini, 2011) and between 60% and 70% of Spanish wine (Ferrer et al., 2019; Langreo & Castillo, 2014; Bono et al., 2012). However, the contribution of the cooperatives to total sales of the sector is not so relevant (Amadiou & Viviani, 2010). It is estimated that only 17% of total sales in France (Couderc & Marchini, 2011) and 25% in Spain (SEVI, 2021; COGECA, 2019; INE, 2018) correspond to the wine produced by cooperatives. However, their contact with the final consumer, with the final sale of the product is not as close as that of the IOFs. Therefore, their business model is different to that of the IOFs, as is their position in the value chain which is closer to production and further away from the final consumer (Ferrer et al., 2019; Bijman & Iliopoulos, 2014; Bono et al., 2012). The position of the IOFs in the value chain closer to the final sale is a differential element and could condition their management, making them more sensitive to adapting to a more aware society with a sustainable product.

The cooperative companies have other characteristics very different to the model of the capitalist firm, fundamentally related to their ownership and rights derived from it and also their management (Aiassa et al., 2018; Fanasch & Frick, 2018). The cooperatives diminish the uncertainty of farmers as they favor access to market information, reducing risk and transaction costs (Bijman & Iliopoulos, 2014; Candemir et al., 2021). In the predominant model in southern Europe, which includes the cooperatives of Spain, each member has a vote irrespective of the share or volume of wine contributed (Chaddad and Iliopoulos, 2013, Bono et al., 2012). Participatory decision-making makes the cooperatives prioritize the maximization of the money paid to the partners for their raw materials, over the overall benefit for the organization (Ajates, 2020; Sexton & Iskow, 1993; Luo et al., 2020). Therefore, there are also differences in terms of its business model and position in the food chain (Ferrer et al., 2019; Bijman & Iliopoulos, 2014; Bono et al., 2012).

The management of the cooperatives has been described as inefficient (Sexton & Iskow, 1993), as the democratic decisions are taken slowly and it is difficult for innovations to be approved and implemented (Chaddad & Iliopoulos, 2013; Benos et al., 2016). On the other hand, the heterogeneity of their members make it difficult to define stable objectives that are not modified in accordance with variations in the different interests. However, in the cases where the tragedy of the commons is overcome, the solutions provided by the cooperative can satisfy the members and ensure a long-lived management of the organization (Iliopoulos & Valentinov, 2018). The business and production strategies of the cooperatives, which should define what to sell and in which markets, are not designed based on what is best for the company, but on what is best for the members (Candemir et al., 2021; Bijman & Iliopoulos, 2014). In some cases, the cooperatives have shown a lack of marketing expertise in these strategic decisions, which has led them to a situation of inefficient management and lower performance (Luo et al., 2020). This circumstance is more prevalent in smaller-sized cooperatives (Calle et al., 2020). The difficulty for cooperatives to prevent opportunistic behavior (free riders) has prevented them from occupying leading positions, rendering them downstream participants in the value chain and condemning them to a low market penetration (Garrido, 2022). However, sometimes, the cooperatives have shown that when their management is based on a robust business model with qualified people leading their management bodies, they are able to increase their performance and survival to a level equal to or above that of the IOFs (Altman, 2015; Luo et al., 2020; Ferrer et al., 2019; Valette et al., 2018). In this respect, some studies highlight that, compared to the capitalist enterprise model, the coopera-

tives are less likely to be sustainable due to their position further away from the consumer (Marcis et al., 2019; Benos et al., 2016; Garrido, 2022; Ajates, 2020; Fonte & Cucco, 2017).

On the other hand, other studies highlight the relationship between cooperatives and sustainability (e.g., Luo et al., 2020; Candemir et al. 2021; Marcis et al., 2019; Benos et al., 2016; Iliopoulos & Valentinov, 2018), and some doubt their commitment to it (e.g., Marcis et al., 2019; Benos et al., 2016; Garrido, 2022; Ajates, 2020; Fonte & Cucco, 2017).

One argument is the position of the agricultural cooperatives at the beginning of the value chain, in the production of raw materials, which is considered as the ideal environment within which to base a sustainable production (Luo et al., 2020; Candemir et al. 2021; Marcis et al., 2019; Benos et al., 2016). Therefore, for Richter and Hanf (2021b), the very essence of the cooperative and its link with the producers would justify that sustainability constituted one of its priorities. Along the same lines, the International Co-operative Alliance () defines the cooperative as an organization focused on its members and oriented towards achieving the maximum benefit for its members, in order to achieve its cultural needs and aspirations, promoting equality and social justice, but creating sustainable companies that generate long-term and well-paid jobs. Other studies have shown that the IOFs contemplate sustainability in their daily management practices. The orientation of resources towards sustainability highlights the existence of an explicit sustainability strategy (Mintzberg et al., 1998). Some studies have already related the resources of innovation, marketing, human resources, network, management, and financial resources with sustainability (e.g., Luzzani et al., 2021; Maicas & Mateo, 2020; Baiano, 2021). In this case, sustainability constitutes a key element in the business model (Ferrer et al., 2022).

At the same time, the cooperative model, compared to the capitalist enterprise, has shown that it has survived over time by knowing how to adapt to changes and opportunities, and for this reason is considered to be sustainable (Benos et al., 2016; Iliopoulos & Valentinov, 2018). As the control system of the company's management is democratic and participative, this places the cooperatives in an unbeatable place for adopting sustainability (Benos et al., 2016). However, other studies point out that the heterogeneity and age of their members, the conflicts of interests, and the resistance to making long-term investments as opposed to the more agile decision-making in capitalist companies could hinder the task of the managers to implement sustainable practices (Ajates, 2020).

Although it is obvious that the cooperatives are taking action to foster sustainability, it is not always evident that reducing environmental impacts constitutes one of their priorities and they have still got a long way to go before adopting sustainability as one of their overriding objectives (Marcis et al., 2019; Benos et al., 2016). Furthermore, the cooperatives need to have infrastructures and the means to determine the scope of their environmental impacts (Benos et al., 2016). At the same time, the increase in environmental regulations is a concern for the cooperative members who observe this as a requirement to increase investments and reduce the profitability of their activity (Prowein, 2021). In short, all of the above aspects hinder an orientation towards sustainability of the cooperatives, which are reluctant to make changes due to the characteristics of their members who are mostly elderly people or part-time farmers, preferring things to remain unchanged (Garrido, 2020; Benos et al., 2016). Therefore, the cooperatives do not achieve the three pillars of sustainability, as they focus on just two of them, namely the economic and social pillars but ignore the environmental dimension (Ajates, 2020; Fonte & Cucco, 2017). The organization that groups together the European cooperatives, COPA_COGECA (2020), conditions environmental sustainability to the existence of a clear economic incentive for farmers and cooperatives. In fact, there is a widespread opinion in the farming cooperative sector that the cooperative cannot be seen as the only savior of the global environment and on which all of the responsibility should

lie (Ajates, 2020; COPA-COGECA, 2020). Indeed, the cooperatives could do quite a lot more in terms of sustainability, but the circumstances of their heterogeneous membership (Chaddad & Iliopoulos, 2013) hinder the introduction of changes towards sustainability, which is also curbed by the long-term return on certain investments which makes them less attractive (Candemir et al., 2021; Richter & Hanf, 2021a).

Within the context of this debate, the first hypothesis to be verified is as follows:

Hypothesis 1 Cooperatives and sustainability

Due to their very essence, wine cooperatives should have a greater interest and involvement in business sustainability than the so-called IOFs. However, due to their type of management and greater distance from the final product consumed, they will be less focused on sustainability.

2.1.3 | Resources and capabilities as drivers of sustainability

The resources and capabilities theory (Barney, 1991) indicates that the key factor for a company to achieve a competitive advantage resides in the availability of resources and differential capabilities. Knowing which resources and capabilities are those that lead to obtaining a competitive advantage has been extended in the analysis of sustainability, which contemplates the drivers leading to organizations fulfilling a triple objective; environmental respect, economic performance, and their adaptation to the social environment in which they conduct their activity, in what is known as the NRBV (Natural-Resource Based View of the firm) (Hart & Dowell, 2010).

Resources are specific assets, while capabilities are activities that the firm carries out particularly well. Capabilities can be specific functions for the business, they can be related to technology or product design or reside in the skill of the company to manage the relationships between elements of the value chain or their coordination (Besanko et al., 2009). Different studies have related resources and business capabilities to sustainability in the wine sector. For example, some authors (Pomarici & Vecchio, 2019; Dressler, 2013; García-Cortijo et al., 2021) remark how certain organizations which have innovation resources that are superior to those of the competition are more likely to be focused on sustainability. Innovation is necessary to reduce the impacts on the environment but also to search for new ways to establish the company in its community, improving the social environment and achieving, through product and process innovation, products that are better adapted to the consumers and/or with lower costs that give rise to a better economic result. Along the same lines, resources and capabilities of marketing have been indicated as drivers of sustainability as they provide a knowledge of the tastes in ecological and sustainable products of the clients (Flores, 2018; Szolnoki, 2013; Merli et al., 2018; García-Cortijo et al., 2021). Human resources, when contemplating the training of workers and the improvement of their competencies and performance, enable a better adaptation and consolidation of the company in the environment where it conducts its activity and have also been linked to sustainability (Luzzani et al., 2021; Baiano, 2021; Figueroa & Rotarou, 2018). Network resources that enable the development of the exchange of knowledge between the organization and its environment also foster the development of sustainable practices (e.g., Festa et al., 2019; Touzard et al., 2016; Overton et al., 2019). Management resources have also been related to sustainability. They enable an alignment of the rest of the resources and detect the changes in the consumers and the environment (Luzzani et al., 2021; Maicas & Mateo, 2020; Baiano, 2021). Finally, financial resources enable the firm to make the necessary investments that lead them to establish sustainable practices (e.g., De Steur et al., 2020; García-Cortijo et al., 2021). However, we have not found previous studies that establish

TABLE 1 Data for cooperatives and IOFs: 2019–20, Spain

	Agro-food Cooperatives	Wine cooperatives	Wine IOFs	Total wine companies
Total number	3,755	540	3,593	4,133*
Total turnover (M EUR)	28,993	1,361	4,020	5,381**
Number of employees	100,883	8,017	48,845	56,862***

Source: Own elaboration based on data from COGECA, *SEVI, **FEV, ***INE.

the difference in these drivers in the case of either a cooperative or an IOF, and their sustainability. Therefore, we contemplate hypothesis 2.

Hypothesis 2. Resources and sustainability

The resources that become drivers of sustainability will be the same for cooperatives and for IOFs.

2.2 | Case Study. Cooperatives in the Spanish wine sector

This study focuses on Spain, the world leader in terms of area of vineyards with more than 950,000 hectares dedicated to this crop, including ecological vineyards which represented 13% of the total vineyard areas for winemaking in 2019 (OEMV, 2020). Spain is the third-largest wine producer in the world, with a production of around 38 million hectolitres per year and close to a hundred protected denominations of origin. Furthermore, Spain is the world's leading exporter of wine in terms of volume and the third largest in terms of value, according to data for the year 2019. (OIVE, 2020)

There are around 4,100 companies engaged in wine-making (Statista, 2021) (CNAE Code 1102 Wine Elaboration), including cooperatives, small and medium-sized wineries and large wineries. Spanish wine-making companies are mostly small, family-run firms. In 2018, 27.3% had no salaried employees and 84.7% of total wineries had less than 10 salaried employees. The most common legal status of the companies in the wine sector is that of the limited liability company, accounting for almost half of the wineries. Other types of legal status are the natural person, limited company and cooperative society, each representing between 15% and 19% of the total. (SEVI, 2021)

The cooperative model has a share, in terms of volume of production, of around 60% in Spain and its presence is more prominent in large wine-producing areas (Langreo & Castillo, 2014). On the other hand, in terms of value, the large wine-making groups are prominent, with the top ten accounting for 44% of wine sales in 2018 (Interprofesional del Vino, 2020).

This position in the value chain, closer to production than the final sale, is a differential feature of the cooperative sector in general but particularly marked in the case of wine. For example, according to the sources, between 14% and 21% of agro-food cooperatives carry out activities in the wine sector, but the turnover of the wine cooperative sector only represents between 4.6% and 7% of all Spanish cooperatives and 8% of the employees (OSCAE, 2020; COGECA, 2019; FEV, 2021). This places the wine cooperatives in positions of lower value added, either due to a lower participation in the final sales or because their product has a lower value. With respect to the weight in the sector, the cooperatives account for 25% of total turnover of the wine sector in Spain and 14% of the personnel employed (SEVI, 2021, COGECA, 2019, INE, 2018). Table 1 shows the dis-

tribution of the number of employees, turnover and companies between agro-food cooperatives, wine-making cooperatives and IOFs of the wine sector for the 2019–20 campaign.

3 | MATERIALS AND METHODS

3.1 | Sample and variables

The database used is made up of companies that operate in Spain and whose economic activity is wine-making (code 1102 of Spain's National Registry of Economic Activities 2009). A total of 4,114 companies are registered in the Iberian Balance Sheet Analysis Service (SABI), of which 312 are cooperatives. The data were obtained through surveys carried out in 2020 and 2021. After sending the questionnaire via email to all the registered companies (Ortega, 2010; Spanos and Lioukas, 2001), the authors waited for one month to receive a response and if during that time none was received a follow-up reminder call was made. The final sample was made up of 411 wineries. This number does not have problems of significance for the statistical results because the sample error is 0.1%, according to the variable of the net amount of total sales for the year 2020, with the amount of the 411 companies being 764 million euros as opposed to the 7,336 million euros of the rest of the sector, according to the Iberian Balance Sheets Analysis System (SABI, 2022) which is considered appropriate for the study. Of the 411 companies that responded to the survey, 52 are cooperatives and 359 IOFs, representing a response rate of 14% and 9.5%, respectively. These amounts do not pose problems of significance since the sampling error, for a 95% confidence level, is 0.12 for the cooperatives and 0.04 for the IOFs.

The position of the wineries with respect to sustainability has been measured with three variables: (1) the making of organic wines in the winery (Schäufele and Hamm, 2017; Szolnoki, 2013), (2) concern about the carbon footprint (Merli et al., 2018, Pomarici and Vecchio, 2019), and (3) corporate social responsibility (Muñoz et al., 2021). Each item assesses the sensitivity of a company towards sustainability through this measurement. A Likert scale is used, where 1 is a low sensitivity and 5 a very high interest. The question posed to the wineries is shown in Table 2:

We understand organic wine to be that which has been developed following the EU standards on organic agriculture. According to these standards, the production method should have the objective of obtaining wine using natural substances and processes. In this way, the environmental impacts are reduced due to the promotion of a responsible use of energy and natural resources, the maintenance of the biodiversity, the conservation of the regional ecological balances, the improvement of soil fertility and the maintenance of the quality of the water (EU, 2020).

In this study, we understand the carbon footprint as a single-issue indicator commonly used to express the pressure of human activities on the environment. The CF quantifies the impact of a given activity/process/product in terms of equivalent carbon dioxide (CO₂eq) emissions, considering the total amount of direct and indirect GHG emissions (Scrucca et al., 2018). The importance of the carbon footprint resides in it being an indicator of environmental sustainability that quantifies the emissions of greenhouse gases generated during the lifecycle of a product.

Corporate Social Responsibility (CSR) is the responsibility that companies have for their impact on society (social, economic, and environmental) and, therefore, seeks to minimize negative impacts and maximize positive ones. Sustainability refers to the company's ability to meet its needs without compromising future generations (Maldonado-Erazo et al., 2020).

The descriptive statistics for the sustainability variables are presented in Table 3. The results indicate that both cooperatives and IOFs show more interest in Corporate Social Responsibility,

TABLE 2 Question posed to wineries in order to obtain the sustainability variables

Question: What is your company's interest in the following actions related to sustainability and the environment?	Answer (mark only one answer per item)
Ítem 1: Organic wine	1: Very low 2: Low 3: Neutral 4: High 5: Very high
Ítem 2: Carbon footprint	1: Very low 2: Low 3: Neutral 4: High 5: Very high
Ítem 3: Corporate Responsibility	1: Very low 2: Low 3: Neutral 4: High 5: Very high

Source: Own elaboration.

followed by the carbon footprint and, lastly, organic wine. On average, IOFs show more interest in each item than cooperatives.

Following the NRBV (Hart & Dowell, 2010), resources have been considered as drivers of sustainability and those analyzed are: innovation resources, marketing resources, human resources, network resources, management resources and financial resources. Each resource reflects the position of the company with respect to the competition, also through a Likert scale, where 1 is much worse and 5 is much better. The question posed to the wineries is shown in Table 4.

Table 5 presents the descriptive statistical data of the variables. In general, the resources of the IOFs are greater than those of the cooperatives. While the wineries, on the whole, show a better position for human resources and a worse position for marketing resources, the cooperatives stand out for their financial resources and, coinciding with the IOFs, a worse position with respect to marketing resources.

Although a priori, differences can be deduced between cooperatives and IOFs in terms of the sustainability and resource variables, it is the Mann–Whitney U-test that will indicate whether these differences are statistically significant.

3.2 | Methodology

In order to determine the sensitivity to sustainability between the two groups of firms analyzed, cooperatives and IOFs, we have conducted the Mann–Whitney U test. This test enables us to identify the possible differences between two independent samples with respect to the variable analyzed. In a first phase, we applied the Mann–Whitney U-statistic to analyze the differences in

TABLE 3 Descriptive statistics of the sustainability variable, for the total sample and the two subsamples (cooperatives, IOFs)

Variables	Total (411 observations)		Cooperatives (52 observations)		IOFs (359 observations)	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Organic wine	3.48	1.317	2.77	1.322	2.95	0.937
Carbon footprint	3.80	1.014	3.08	1.048	3.58	1.300
Corporate Responsibility	3.55	1.118	3.17	0.985	3.87	0.989

Source: own elaboration.

TABLE 4 Question posed to the wineries to obtain the resource variables

Question: What is your company's situation with respect to the competition?	Answer (mark only one answer per item)
Ítem 1: Innovation resources	1: Much worse 2: Worse 3: Equal 4: Better 5: Much better
Ítem 2: Marketing resources	1: Much worse 2: Worse 3: Equal 4: Better 5: Much better
Ítem 3: Human resources	1: Much worse 2: Worse 3: Equal 4: Better 5: Much better
Ítem 4: Network resources	1: Much worse 2: Worse 3: Equal 4: Better 5: Much better
Ítem 5: Management resources	1: Much worse 2: Worse 3: Equal 4: Better 5: Much better
Ítem 6: Financial resources	1: Much worse 2: Worse 3: Equal 4: Better 5: Much better

Source: Own elaboration, based on Ferrer et al. (2019) and Ortega (2010).

the three variables that we consider define sustainability and the six resources studied, with the two independent samples being the companies defined as cooperatives and the IOFs.

In the second stage of the research, each of the two samples, cooperatives and IOFs, were divided into two sub-groups: one with a high orientation towards the three variables that study sustainability ($Y_{ORGANIC}$, $Y_{FOOTPRINT}$, Y_{CSR}) and another with a low orientation. Subsequently, using the Mann–Whitney U-statistic, each sub-group was analyzed and the endowment of the six resources was studied in order to determine which resources act as drivers of sustainability in cooperatives and in IOFs (Ferrer et al., 2022).

TABLE 5 Descriptive statistics for resource variables, total sample, cooperatives, IOFs

Variables	Total (411 observations)		Cooperatives (52 observations)		IOFs (359 observations)	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Innovation resources	2.99	0.943	2.80	0.841	3.03	0.949
Marketing resources	2.68	0.979	2.43	0.842	2.72	0.987
Human resources	3.02	0.865	2.86	0.707	3.04	0.873
Network resources	2.90	0.849	2.76	0.662	2.93	0.867
Management resources	2.97	0.848	2.73	0.811	3.01	0.845
Financial resources	2.94	0.920	2.90	0.770	2.95	0.937

Source: Own elaboration.

TABLE 6 Average range Mann–Whitney U-test

Sustainability	Sig (Mann U)	Average range	
	(p-value)	Cooperatives	IOFs
Organic wine, $Y_{ORGANIC}$	0.000***	137.11	201.86
Carbon footprint, $Y_{FOOTPRINT}$	0.000***	126.38	205.74
Corporate Responsibility, Y_{CSR}	0.008***	154.53	198.90
Resources			
Innovation resources	0.151	175.99	199.43
Marketing resources	0.086*	171.34	199.53
Human resources	0.107	173.05	198.73
Network resources	0.125	173.26	197.57
Management resources	0.028**	164.29	199.43
Financial resources	0.502	186.51	197.36

*significance at the 10% level;

**significance at the 5% level;

***significance at the 1% level.

Source: own elaboration.

4 | RESULTS

Table 6 shows the results of the first phase, analyzing the differences in terms of sustainability and the business resources between the cooperatives and the IOFs. The Mann–Whitney U-test reveals that there are statistically significant differences between cooperatives and IOFs with respect to their sensitivity towards sustainability. Thus, cooperatives have less interest in the three variables of sustainability studied, organic wine ($Y_{ORGANIC}$), the carbon footprint ($Y_{FOOTPRINT}$) and corporate social responsibility (Y_{CSR}), accepting Hypothesis 1. With respect to the resources, a statistically significant difference between cooperatives and IOFs is found in just two; the management resources (<0.05) and marketing resources (<0.10). In both cases, the cooperatives had a lower value in the availability of these resources.

In the second stage, we analyzed sustainability and resources separately in cooperatives and in IOFs. In order to establish the sub-groups, as variables we used each measure of sustainability, $Y_{ORGANIC}$, $Y_{FOOTPRINT}$, Y_{CSR} , with group 1 including companies less sensitive to sustainability, those that responded 1, 2 or 3 on the Likert scale, and group 2 including companies more sensitive to sustainability that responded 4 or 5 on the Likert scale. After making this sub-division, we applied the Mann–Whitney test, comparing the innovation resources, marketing resources, human resources, network resources, management resources and financial resources. The Mann–Whitney results, for cooperatives and IOFs, are presented respectively in Table 7 (cooperatives) and Table 8 (IOFs).

The results in Table 7 show that in cooperatives, in terms of organic wine $Y_{ORGANIC}$, the resource related to its production is marketing. With respect to the concern about the carbon footprint, $Y_{FOOTPRINT}$, for the cooperatives, the drivers are innovation and networks. Finally, in the case of CSR, Y_{CSR} , the driving resources are those of innovation, networks and management.

For the IOFs (Table 8), marketing, innovation and network resources are relevant in terms of organic wine. With regard to the carbon footprint, all of the resources are aligned and are sig-

TABLE 7 Mann-Whitney test. Cooperatives

	Cooperatives											
	Y _{ORGANIC}				Y _{FOOTPRINT}				Y _{CSR}			
	Sig (p-value)	Lower sensitivity	Higher sensitivity	Sig (p-value)	Lower sensitivity	Higher sensitivity	Sig (p-value)	Lower sensitivity	Higher sensitivity	Sig (p-value)	Lower sensitivity	Higher sensitivity
Innovation resources	0.624	22.87	24.80	0.039**	20.45	28.25	0.045**	20.54	28.11			
Marketing resources	0.027**	20.65	29.40	0.124	21.21	27.06	0.269	21.86	26.06			
Human resources	0.699	23.90	22.50	0.721	22.96	24.31	0.786	23.11	24.11			
Network resources	0.387	22.45	25.57	0.005***	19.50	29.72	0.068*	20.93	27.50			
Management resources	0.590	24.19	22.07	0.104	21.09	27.25	0.051*	20.61	28.00			
Financial resources	0.352	22.34	25.90	0.127	21.29	26.94	0.490	22.50	25.06			

*Significance at the 10% level;

**Significance at the 5% level;

***Significance at the 1% level.

Source: Own elaboration.

TABLE 8 Mann-Whitney test. IOFs

	IOFs								
	Y _{ORGANIC}			Y _{FOOTPRINT}			Y _{CSR}		
	Sig (p-value)	Lower sensitivity	Higher sensitivity	Sig (p-value)	Lower sensitivity	Higher sensitivity	Sig (p-value)	Lower sensitivity	Higher sensitivity
Innovation resources	0.044**	154.79	175.04	0.000***	141.15	180.93	0.000***	147.04	182.15
Marketing resources	0.005***	149.38	178.03	0.000***	138.82	181.32	0.000***	141.23	186.58
Human resources	0.149	157.26	171.42	0.003***	146.00	177.22	0.001***	148.27	179.99
Network resources	0.104	155.27	171.29	0.029**	151.14	174.20	0.004***	149.68	178.05
Management resources	0.508	161.22	167.76	0.004***	146.44	177.16	0.000***	140.65	186.25
Financial resources	0.448	170.42	162.80	0.029**	151.97	175.32	0.000***	145.82	182.93

*Significance at the 10% level;

**Significance at the 5% level;

***Significance at the 1% level.

Source: Own elaboration.

nificant. Finally, with respect to CSR, as in the previous case, all of the resources influence the formation of an interest in improving CSR.

The results shown in Tables 7 and 8 lead us to reject Hypothesis 2 which states that the resources acting as drivers of sustainability in cooperatives and IOFs should be the same.

5 | DISCUSSION

The results obtained enable us to affirm that there is a different orientation between cooperatives and IOFs towards sustainability, being lower and statistically significant in cooperatives in all of the dimensions analyzed (organic wine, carbon footprint, and CSR). Previous studies had reached a similar conclusion (Marcis et al., 2019; Benos et al., 2016; Garrido, 2020; Ajates, 2020; Fonte & Cucco, 2017), highlighting how, due to their position in the value chain further away from the consumer, cooperatives are less inclined and more reticent to make changes in the way they operate. The heterogeneity and age of their members and the resistance to making long-term investments hinder the task of the managers in terms of achieving sustainable practices (Ajates, 2020). We should also take into account that many producers perceive large economic risks in producing organic wine (Prowein, 2021), which can explain the reticence of the cooperatives, characterized by a considerable aversion to risk (Benos et al., 2016). At the same time, wine producers consider that changes should be made in the environmental sustainability regulations and organic wine rules, given that they believe that they do not reflect the true sustainability of the winery and sometimes constitute greenwashing which endangers the profitability of the business (Prowein, 2021). These results contradict the opinions of other authors (Luo et al., 2020; Candemir et al., 2021; Marcis et al., 2019; Benos et al., 2016; Iliopoulos & Valentinov, 2018), who defend that the cooperatives, due to their position closer to the production part of the value chain, are more sensitive to the effects of climate change that can affect the soil which sustains their activity, causing them to have a greater focus on sustainable practices. Similar results are obtained by Calle et al. (2020), who do not find a greater orientation towards sustainability in cooperative wineries.

With respect to the resources that drive sustainability, differences can be observed between the cooperatives and IOFs. Fewer resources are aligned with sustainability in the cooperatives than in the IOFs. Thus, in the case of organic wine, only the marketing resource is aligned in the cooperatives, while in the case of the IOFs, innovation, marketing, and network resources are all drivers of sustainability. With respect to the carbon footprint and CSR, innovation, network, and management resources (only in carbon footprint) are focused on sustainability in the cooperatives. However, in the case of the IOFs, all of the resources are aligned and are significant, which highlights the lower commitment of the cooperatives to sustainability (Marcis et al., 2019; Richter & Hanf, 2021a; Sexton & Iskow, 1993; Cook, 2018). The lower orientation of resources towards organic wine than towards the carbon footprint and CSR can be observed both in cooperatives and in IOFs, coinciding with the study by Varia et al. (2021), which indicates a lower commitment of companies to organic wine as there is a part of the market that undervalues it and defines it as a lower-quality product (Delmas & Lessem, 2017).

It should be noted how in the IOFs, both in terms of the carbon footprint and in the CSR, all of the business resources are drivers of sustainability. The orientation of resources towards sustainability highlights the existence of an explicit sustainability strategy (Mintzberg et al., 1998). Other studies have already related the resources of innovation, marketing, human resources, network, management, and financial resources with sustainability (e.g. Luzzani et al., 2021; Maicas

& Mateo, 2020; Baiano, 2021). In this case, sustainability becomes a key element in the business model (Ferrer et al., 2022).

The certain degree of detachment detected with respect to organic wine can also be explained by the sometimes unclear regulatory, bureaucratic, and administrative norms which can deter companies from making this product (Varia et al., 2021, IFOAM, 2013). Organic wine should accredit the use of natural processes and substances, reducing impacts and promoting a responsible use of energy and resources, while maintaining the biodiversity (EU, 2020). The complexity of the accreditation process can explain a certain level of reluctance by the IOFs and that only those companies with differentiated and innovative marketing resources can defend the product in the market (Varia et al., 2021).

Finally, it should be noted that the Spanish wine sector is heterogeneous, with a great diversity of producing regions, varieties, aging systems, and wineries. This, to a certain extent, is a limitation for this study, since the bias derived from the heterogeneity of the elements of a sample has not been taken into account. Another aspect to consider is the difference in the final sample size of IOFs with respect to that of cooperatives, despite the low sample calculation error and the fact that the ratio between sample and population observations is maintained.

Another limitation is the technique used. Bivariate associations, as measured by nonparametric statistical Mann–Whitney U-tests, are useful when it is desired to examine the relationship between two variables without controlling for any other variable. However, they do not take into account the possibility that a third variable may be influencing both variables being studied and, therefore, do not provide information on the unique contribution of each variable to the outcome.

6 | CONCLUSIONS

This study seeks to analyze the different orientation towards sustainability of two types of organization in the wine sector, cooperatives and IOFs, and to determine which drivers explain this orientation. Sustainability has been analyzed through the sensitivity towards adopting strategies focused on the production of organic wine, the carbon footprint and CSR. The results lead us to conclude that there is a significantly lower orientation towards sustainability among cooperatives. This conclusion is undoubtedly concerning, given that a threat such as climate change and its consequences on temperature changes and the adaptation of crops, floods, droughts, cold snaps, hail, etc., primarily affect the land, which sustains the agricultural activity and would directly affect the partners/owners of the cooperatives, who are farmers. It is obvious that there are shortcomings in terms of raising awareness and there is a need to act on all levels. Therefore, important training and awareness campaigns should be conducted in the primary sector and in the rural areas in order to convince the cooperative members of the importance that sustainability has for their future and the rural environment. Furthermore, the willingness to carry out investments aimed at this overall objective generates new business opportunities and potential and for return for the investments that can never be considered as a liability or an overcost. The fact that in the IOFs sustainability is contemplated in the daily management indicates a greater sensitivity of the actors who are positioned at the end of the value chain, closer to the consumer. Therefore, they have the need to adapt to a society that seems aware of the importance of sustainability and demands companies and products to implement sustainable practices. There is a lower sensitivity of both cooperatives and IOFs towards organic wine, derived from the initial perception of this product as an unattractive market niche and which only seems profitable if it is supported by large mar-

keting and communication campaigns which defend the product in a market which undervalues this type of wine as it considers it to be of a lower quality.

On the other hand, the results reveal important conclusions with respect to the need for public regulation, particularly the new green architecture of the CAP, border environmental footprint adjustments or the possibility to generate voluntary markets of environmental credit trading in the new carbon farming on which the European Union has focused its strategy (Doc. COM (2021) 800 Final, of 15 December: “*Sustainable Carbon Cycles*”).

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