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RESEARCH ARTICLE

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Managerial capabilities and generic business strategies in the wineries of the 'Cava' protected designation of origin

Juan R. Ferrer

Universidad Politécnica de Madrid, Dept. Agricultural Economics. Campus Ciudad Universitaria. Av. Puerta de Hierro, nº 2-4. 28040 Madrid, Spain

Abstract

Aim of study: Cava is Spain's largest wine exporter. However, in the last 20 years, the growth of exports from Cava protected designation of origin (PDO) wineries has been lower than that of other Spanish PDO wines, and Cava's domestic market share has fallen. From the point of view of strategic management, it could be said that it seems that the wineries of the Cava PDO are losing their competitive advantage. It is therefore fundamental to perform an analysis of the wineries that maintain a better performance to understand the elements that give them a competitive advantage. In this article, to analyse competitive advantage, both management capabilities and Robinson and Pearce's generic business strategies are studied. The objective is twofold; on the one hand, we pursue the level of the managerial capabilities in the wineries of Cava PDO, while on the other hand, we seek to know the influence of the managerial capabilities and the strategies as reflected in their business performance.

Area of study: Spanish wineries of the Cava PDO.

Material and methods: Sixty-six wineries were analyzed using the Mann-Whitney U Test and Bayesian regression to determine the relationship between the managerial capabilities, strategy, and business performance.

Main results: The results show a lower level of managerial capabilities in Cava PDO wineries as compared with Rioja PDO wineries, a strong relationship between management capabilities and performance.

Research highlights: These results are highly applicable since they show what resources and what strategies should be promoted to achieve a competitive advantage.

Additional key words: agricultural economics; competitive advantage; wine sector; business performance; resource-based view.

Abbreviations used: PDO (protected designation of origin); RBV (resource-based view).

Authors' contributions: This manuscript has one author who conceived and designed the study, performed the study, analyzed the data and wrote the manuscript.

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Correspondence should be addressed to Juan R. Ferrer: juanramon.ferrer@upm.es

Introduction

Wines from the Cava protected designation of origin (PDO) generated the second highest revenue among the PDO regions of Spain, behind only Rioja in the 2018-19 season, when it accounted for 733 million euros and 18% of all Spanish PDO sales. Meanwhile, the surface area occupied by the Cava PDO is just 37,955 ha, about 6% of the total surface area of the PDOs in Spain (MAPA, 2020).

Historically, the Cava PDO has been one of the major exporters of Spanish wines, thus being one of the leading PDOs in performance and development, since its origins in the early 19th century (Fernández & Pinilla, 2014). However, in the last two decades, the wineries of the PDO have lost share in the domestic market and their exports have not grown as much as other Spanish PDOs (see Table 1). Thus, from the point of view of strategic management, it could be said that some PDO Cava wineries are losing their competitive advantage. The factors that determine the competitive advantage and the outsized business performance of the Cava PDO wineries are ripe for detailed analysis, given that they were only partially addressed by a study on the differentiating resources of the Cava PDO conducted by Duarte Alonso (2017).

How a given company achieves its competitive advantage can be determined via two different schools of thought. The first emphasizes the characteristics of the sector in which the company is located and maintains that the company must select its place (its position) in the

Table 1. Percentage increase or decrease in the main magnitudes of Cava PDO, compared with Rioja PDO and Spain total PDO. Period 2000-01 to 2018-19.

	Cava PDO%	Rioja PDO%	Spain PDO%
Winegrowers	-3.8	-22	-28.3
Wineries	30	-44	-5
Qualified wine (hL)	18.2	10.8	-1.9
Volume of wine sold in the domestic market (hL)	-18.6	20.5	7.2
Volume of wine sold abroad (hL)	68.4	90.6	25.3

Source: Author's own elaboration based on MAPA data (2020), series 2000-01 to 2008-19.

market, and that their success in their choice will result in their competitive advantage and profitability (Porter, 1985). The second school of thought focuses on the individual analysis of each firm, focusing on the resources and capabilities of the company (Wernerfelt, 1984; Barney, 1991). Within this second school of thought, the theory of resources and capabilities, or resource-based view (RBV), bases the competitive advantage on the assets available to the company and the use it makes of them (Barney, 1991). For this, the company must achieve an exclusive disposition or use in time of one or more of these resources and its competitors must not be able to imitate them.

Several works have partially studied the resources and capabilities as explanatory factors of business success in the wine industry. First, within the last decade, various researchers have explored wineries from an RBV perspective (Castillo Valero & Garcia Cortijo, 2013; Evaldo Fensterseifer & Rastoin, 2013; Chong, 2014; Galati *et al.*, 2014). Second, from the point of view of strategy, there are different studies that attempt to explain successful business performance (Newton *et al.*, 2015; Simon-Elorz *et al.*, 2015).

And yet, there are still not many studies that use the synergistic vision, which combines resources and capabilities with strategy, as explanatory factors of business performance in the wine sector. The works of Ferrer (2018) and Ferrer *et al.* (2018) stand out as notable exceptions, combining, in the Spanish wine sector, resources and capabilities, strategy, and business performance. In other sectors, from the seminal work of Spanos & Lioukas (2001) there are some studies that analyze business performance combining the RBV and strategic approaches in different sectors (Takata, 2016; Chuang & Lin, 2017). However, many elements still remain to be understood about how both factors are combined and complemented, or if one is a consequence of the other (Villanueva & Ferrer, 2020).

The novelty elements of this article are the interaction between resources and strategies and how they are compensated within the company. Among the different resources, in this study we analyze the managerial capabilities that have been shown to be highly influential in business performance (Spanos & Lioukas, 2001; Ortega, 2010; Villanueva & Ferrer, 2020). The strategic vision of a given company is analyzed from the basic strategy capture model of Robinson & Pearce (1988), focused on the Cava PDO. The study of the relationships between variables will be carried out using Bayesian regression and their differences using the Mann-Whitney U Test. Then, the objective of this study was, first, to analyze the level of the managerial capabilities in the Cava PDO, and second, to determine the relationship of managerial capabilities and dominant strategies with business performance. To analyze the level of managerial capabilities, a comparison will be performed between the two most important PDOs in Spain, Cava and Rioja.

Material and methods

Case study

The Cava PDO is the largest bottled wine exporter in Spain, slightly ahead of the Rioja PDO, and accounts for around 27% of the total national wine export volume (MAPA, 2020). Fig. 1 shows the evolution of both PDOs in the last 20 years.

The history of Cava begins with the *phylloxera epidemic* that devastated French vineyards in 1870, which represented an opportunity for the entire Spanish wine industry to become a supplier to the neighboring country (Fernández & Pinilla, 2014). It was also the beginning of Josep Raventos' research with the traditional champagne method, with indigenous grapes from Catalonia, particularly parellada, macabeo and xarel-lo varieties. Since 1890, Cordorniu, Josep Raventos' winery, decided to specialize in the production of the sparkling wine that would later receive the name of cava (Saito & Takenaka, 2004). When phylloxera destroyed the Penedès vineyards at the beginning of the 20th century, most of the farmers took the opportunity to substitute the traditional red grapes for the varieties that Josep Raventos experimented with to make cava (Saito & Takenaka, 2004). The subsequent protectionist policies, which made it difficult for

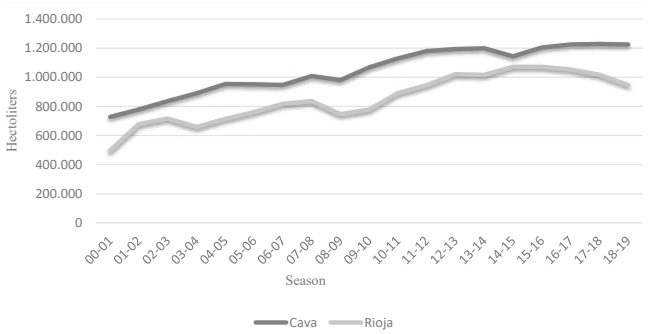

Figure 1. Total wine exports by volume from PDO Cava and PDO Rioja, 2000-01 to 2018-19. *Source*: Author's own elaboration based on MAPA data (2020), series 2000-01 to 2008-19.

French champagne to enter the Spanish market, and the advertising techniques of Manuel Raventos, son of Josep Raventos, facilitated the establishment of a large production center in the Penedès region. After this initial settlement came a subsequent export stage, in which the Freixenet brand played an important role, positioning cava as the most important wine in terms of export volume (Fernández & Pinilla, 2014). In 1972, the Regulatory Council for Sparkling Wines was established, and the name "Cava" was approved to denote Spanish sparkling wine (CRC, 2021a).

One unique characteristic of the Cava PDO that other PDOs do not share is that wineries belonging to the Cava PDO that make sparkling wine are able to be located out of the original Penedès production area, although 90% of the Cava PDO wineries belong to Penedès (Saito & Takenaka, 2004).

The area dedicated to Cava was 32,009 ha in the 2000-01 campaign, compared to 57,636 ha in Rioja and 673,626 ha in all PDO regions of Spain. The data for the 2018-19 campaign reflect an area of 37,955 ha for Cava, 66,239 ha in Rioja, and 648,631 ha in the national total. Across this 19-year period, we can therefore observe a growth of Cava of 18%, a growth of Rioja by 15%, and an overall decrease in total PDOs of 3.7% (MAPA, 2020). The data of the number of winegrowers, wineries, volume of qualified wine, volume of wine sold in domestic market, and abroad, can be seen in Table 1. Table 1 shows that there has been a different evolution in the Cava PDO, with two variables that go against the general evolution of the sector: an increase in the number of wineries and a decrease in the volume sold in the domestic market.

In the 19-year period from 2000 to 2019, the number of wineries increased by 84 in the Cava PDO, the agricultural area by 5,946 ha, and the volume of qualified wine by 332,478 (MAPA, 2020). Cava's increase in the number of wineries, contrary to Rioja and the PDOs of Spain as a whole, has caused a lower average volume of qualified wine per winery, which has gone from 6,673 hL in 2000-01 to 6,034 hL in 2018-19. This output is still well above the ratio of Rioja, which is around 4,442 hL per winery in 2018-19, as well as the national average of 2,891 hL per winery (MAPA, 2020). This process, inverse to that which has occurred in the Spanish wine sector, can perhaps be explained, on the one hand, by the interest that Cava has aroused in regions that did not produce it, and by a lesser need for investment for its production, which has allowed small producers to quickly enter the market, linked to the Masía concept as a differentiated production core (Saito & Takenaka, 2004).

The prices of Cava wines in this period have had an interesting evolution, rising in the domestic market, and decreasing in the foreign market. Table 2 shows the data for this period from 2000-01 to 2018-19.

The variation of prices and quantities in the domestic and foreign markets can be seen in more detail in Figure 2. The trend line for the data has been added to them. The trend line allows us to calculate the elasticity of domestic demand. For its calculation, an intermediate point of the domestic market P = 500 €/hL and Q = 700,000 hL has been taken, resulting in an elasticity of -0.60. The trend line shown in Fig. 2 also allows us to calculate the elasticity of external demand; for this we have taken an intermediate point P = 300 €/hL and Q = 1,000,000 hL, resulting in an elasticity of -30.

Therefore, domestic demand, in absolute value, is inelastic (< 1) and determines that the income of producers decreases as the quantity exchanged increases. However, foreign demand is elastic (> 1) in absolute value and suggests that the income of the wineries increases as the exported volume increases (Krugman *et al.*, 2015).

An element that links the wine activity with the production area and its sustainability is the remuneration of the resources used in production (Simon-Elorz *et al.*, 2015; Villanueva & Ferrer, 2020). Table 3 makes a comparison of Cava PDO, Rioja PDO and the mean of PDOs in Spain; due to a lack of complete data, the period from the 2016-17 season to the 2018-19 campaign is analyzed. The data show that the values of the resource per hectare

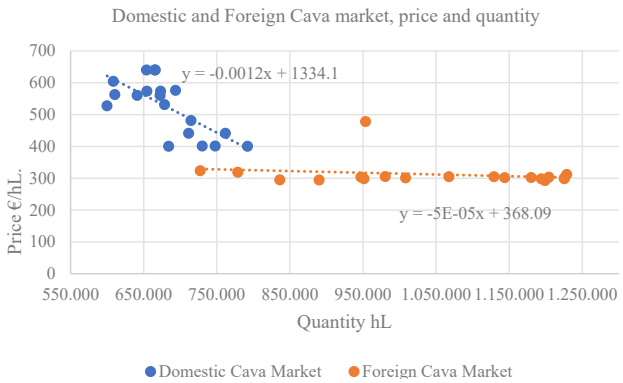

Figure 2. Price-quantity graph. Domestic and Foreign Cava market, from 2000-01 to 2018-19. *Source*: Author's own elaboration based on MAPA data (2020), series 2000-01 to 2008-19.

Table 2. Changes of the value, quantity, and price of Cava PDO wines in the domestic and foreign market.

Season	Domestic market			Foreign market		
	Value (€)	Volume (hL)	Price (€/hL)	Value (€)	Volume (hL)	Price (€/hL)
2000-01	299,700,696	747,990	401	235,140,299	727,640	323
2001-02	292,596,732	730,260	401	248,074,243	778,871	319
2002-03	273,772,800	684,432	400	246,312,277	836,342	295
2003-04	316,898,679	792,247	400	261,963,305	890,238	294
2004-05	313,672,706	711,692	441	455,403,896	953,681	478
2005-06	335,851,854	762,014	441	283,654,638	951,566	298
2006-07	343,717,710	714,887	481	287,473,216	947,398	303
2007-08	426,268,454	666,044	640	303,406,605	1,008,432	301
2008-09	425,705,510	665,164	640	298,815,207	980,621	305
2009-10	418,648,008	654,137	640	324,989,306	1,067,772	304
2010-11	399,657,024	693,849	576	343,823,710	1,129,313	304
2011-12	360,393,299	678,792	531	356,263,686	1,180,199	302
2012-13	316,279,404	599,923	527	355,576,314	1,194,100	298
2013-14	343,664,397	610,778	563	350,400,252	1,199,105	292
2014-15	376,658,281	672,604	560	345,112,481	1,143,994	302
2015-16	359,171,232	641,377	560	364,798,819	1,204,366	303
2016-17	375,259,280	654,522	573	368,043,283	1,225,731	300
2017-18	386,072,776	673,382	573	382,584,965	1,228,878	311
2018-19	367,627,898	608,656	604	365,473,005	1,225,592	298

Source: Author's own elaboration based on MAPA (2020) data, series 2000-01 to 2008-19.

and per winery present higher data in Cava than in Rioja and in the average of the PDOs of Spain.

Resources and capabilities or resource-based view

This first theory focuses on the availability of certain resources and capabilities in the company, the key element to achieving a competitive advantage (Barney, 1991). Resources are all available factors that the business controls and that are turned into end products or services using a wide range of other assets and mechanisms available to the business. Capabilities develop over time, based on complex interactions between available resources (Amit & Schoemaker, 1993). The resources and capabilities available to the company are not in themselves a strategic and fundamental element that ensures the achievement of a competitive advantage. To obtain it, three conditions must be met: a company must establish the competitive advantage, maintain the competitive advantage, and appropriate the benefits derived from it. To satisfy these three conditions, resources must be scarce and relevant, and they must be durable, non-transferable, and not replicable (Grant, 2010).

Strategy

For the company, a strategy is a plan that determines the objectives (Brenes *et al.*, 2014), integrates policies and the most relevant sequences of action (Mintzberg *et al.*, 2009), and contemplates which markets to supply and with which products (Ansoff, 1965). Despite being criticized for the overly static nature of his approach or his failure to account for evolving components of company's real strategies (Mintberg *et al.*, 2009), Porter's model continues to be the reference model for analyzing business strategy (Brenes *et al.*, 2014; Islami *et al.*, 2020). Porter (1985) argues that to obtain a competitive advantage, a company must choose between two strategic options, leadership in cost or leadership in differentiation. Cost leadership focuses on the production of low-cost products to satisfy price-sensitive customers, while leadership in differentiation focuses on offering different and unique products and services in the industry, but to a wide range of clients that are relatively insensitive to price (Soltanizadeh *et al.*, 2016). Both strategies can be successful, and the literature indicates successful situations for both. The differentiation strategy has been referred to as the star strategy; in the context of the food industry in Italy, Curzi &

Table 3. Production value in Cava PDO, Rioja PDO, and mean of all Spanish PDOs.

	Season 16-17	Season 17-18	Season 18-19
		Value (€/ha)	
Cava PDO	22,449	20,386	19,315
Rioja PDO	15,526	15,153	14,918
Mean of Spanish PDOs	6,350	6,548	6,145
		Value (€/winery)	
Cava PDO	1,905,904	1,975,984	2,053,504
Rioja PDO	1,266,220	1,259,852	1,278,336
Mean of Spanish PDOs	883,129	905,486	848,977

Source: Author's own elaboration based on MAPA data (2020), series 2016-17 to 2008-19.

Olper (2010) argue that differentiation strategies influence the ability of companies to develop their external activity. In addition, based on business activity in Colombia, Kugler & Verhoogen (2008) reveal that to carry out good quality practices, highly qualified employees are needed, establishing a positive relationship between investment in inputs and the quality and price of products. However, reality shows many examples of companies that increase their presence in the international market through cost strategies (Bardají *et al.*, 2014; Simon-Elorz *et al.*, 2015). In the Spanish wine sector, faced with the challenge of internationalization due to the decline in domestic consumption, wineries have been able to combine increases in value and new customers with efficient cost-reduction models that have resulted in very competitive prices (Cervera Ferrer & Compés López, 2018).

Although Porter's model has a preponderant role in the definition of strategies through the two classics of differentiation and costs, there are different models that broaden this vision and introduce more types of generic strategies. Among them is the Robinson & Pearce (1988) model, which defines four generic strategies—efficiency, service, innovation, and marketing—and which has been used in different studies. For example, the Robinson & Pearce model has previously been applied by Spanos & Lioukas (2001) in Greek manufacturing industries, by Salavou & Sergaki (2013) in Greek private food firms, by Brenes *et al.* (2014) in Latin American agribusiness, by Ferrer *et al.* (2018) in the Spanish wine sector, and by Villanueva & Ferrer (2020) in the U.S. wine sector. It is necessary to mention that this expansion of Porter's classic model, towards a model that includes in the company's strategy a greater compatibility of generic strategies, where innovation, efficiency, and marketing are combined, for example, is at the base of the Blue Ocean strategy (Kim & Mauborgne, 2005). That same argument is defended by D'Aveni *et al.* (2010), in mature markets characterized by strong competition such as that characterizes the wine sector.

Managerial capabilities

Management and organizational capabilities are developed at the top of the organizational chart through three functions: coordination and integration, learning, and reconfiguration (Teece *et al.*, 1997). These capabilities are part of the routines learned and differentiate the company, explaining why some of them present a more efficient management than others and become a source of competitive advantage (Teece *et al.*, 1997).

The importance of managerial capabilities is based on the manager's vision and leadership (Pickett, 1998), integrating this with the strategy (Westley & Mintzberg, 1989). The managerial competencies include the definition of the strategy and the organizational structure at the level of design and implementation. Managers must provide a high degree of commitment, clear definition of objectives and financial resources (Pickett, 1998), and guide employees towards the shaping of business resources and competencies (Kor & Mesko, 2013).

Management resources reflect the capabilities of managers and are precursors to competitive advantage and performance. The managerial capabilities are not easily exportable to other companies. Therefore, the hiring of external managers does not always have a positive effect. It is through human capital that the manager generates income by implementing strategy and making operational decisions (Castanias & Helfat, 2001; Helfat & Martin, 2015).

Managers use their management capability to guide the company towards cost reduction, product differentiation, or a combination of both, looking for competitive advantage. Their management responsibilities include strategic business vision, internal communication, strategic management of human resources (recruitment, job analysis, development, training, performance, and compensation), the acquisition of resources, and their transformation into products and services. Through these managerial steps, they create value for the partners and owners of the company,

thus being a generator of revenues and their appropriation, and a key element for the maintenance of the competitive advantage (Lado & Wilson, 1994). The analysis of managerial capabilities and their connection with strategy and performance has been analyzed, finding a direct relationship between the former and the latter (Spanos & Lioukas, 2001; Ortega, 2010; Welter *et al.*, 2013).

Sample

The list of companies that operate in the wine sector in the Cava and Rioja PDOs has been compiled from two sources of information. The first source is the database of the Iberian Balance Analysis System (SABI, 2017), taking those companies that are registered and active, under heading 11.02 of the National Classification of Economic Activities (CNAE) corresponding to "Viticultural Companies." The second source is the public registry of wine companies that exist in the different PDO regions. The number of independent entities that resulted from this compilation was 243 in Cava and 480 in Rioja. Following previous studies, the lost data was eliminated, in this case, eliminating those companies that did not have a valid telephone number or email address (Spanos & Lioukas, 2001). Those companies without a firm structure, or that were a subsidiary of another company, were also eliminated.

As a result of this process, the total number of independent companies was reduced to 183 in Cava and 312 in Rioja. A survey was emailed to managers, marketing personnel, or production directors with subsequent telephone reminders a month later. At the end of the process, a total of 66 valid responses were received, 20 in Cava and 46 in Rioja, which represents 13% of the total sample; this has been considered a valid response rate for industrial sectors according to Baruch & Holtom (2008). Table 4 shows the statistical summary of the sample.

Variables

The survey was set up after an extensive review of the literature. In addition, to justify its application to the Spanish wine sector, a subsequent validation of the survey was carried out among companies, experts, and managers related to the Spanish wine sector. The goal was to ensure that the survey was understandable and reflected the peculiarities of the industry. The elements that have been considered are presented below.

Managerial capabilities

The managerial capabilities are made up of seven indicators, measured by a Likert scale of 5 points where the company had to mark its relative position in front of its competitors from 1, "much weaker than the competitor," to 5, "much stronger than the competitor." The questions adapted from Spanos & Lioukas (2001) and Ortega (2010) are: 1) managerial competencies, 2) knowledge and skills of employees, 3) work climate, 4) efficient organizational structure, 5) coordination, 6) strategic

Table 4. Statistical summary. Characteristics of the sample.

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Cava PDO					
Age (years of operation)	20	41.35	33.89	11	134.00
Number of permanent employees	19	11.31	19.40	1	80.00
Production of wine (hL)	12	50,069.17	130,000	0	450,000
Assets (×1000 €)	20	2,950	6,641	0	30,000
Billing business (×1000 €)	20	2,585	4,603	0	15,000
Exports of wine (hL)	12	286,000	779,000	0	2,700,000
Rioja PDO	46				
Age (years of operation)	45	45.6	37.87	11	160
Number of permanent employees	44	12.38	29.91	1	191
Production of wine (hL)	40	142,000.63	26,390	0	120,000
Assets (×1000 €)	46	3,717.39	6,766.29	0	45,000
Billing business (×1000 €)	46	2,524.45	4,927.87	0	30,000
Exports of wine (hL)	38	58,852	122,000	0	600,000

Source: Author's own elaboration

planning, and 7) ability to attract creative employees. The survey measured management competence, knowledge and skills of the employees, work environment, efficiency of the organizational structure, coordination, strategic approach, and ability to attract creative employees.

Strategy

To capture the business strategies, the Dess & Davis (1984) and Robinson & Pearce (1988) scales were used to determine the strategic options followed by each winery. See Table S1 [suppl.] for a list of 22 questions asked in our survey. Specifically, each company determined the weight of the four main strategies defined by Robinson & Pearce (1988): efficiency, service, innovation, and marketing. The measure used to capture the strategy consists of a Likert scale with five levels where companies rate themselves with respect to different business development efforts, where one is "never used" and five is "main, constantly used." The main strategies are determined by grouping the 22 questions by strategy.

Managerial capabilities are made up of seven indicators, measured by a five-point Likert scale where the company had to mark its relative position in front of its competitors from one, "much weaker than the competitor," to five, "much stronger than the competitor." The questions are adapted from Spanos & Lioukas (2001) and Ortega (2010). The items measured were management competence, knowledge and skills of the employees, work environment, efficiency of the organizational structure, coordination, strategic approach, and ability to attract creative employees.

Business performance

Following Ortega (2010) and Spanos & Lioukas (2001), the survey have asked managers about business performance in the last three years (period 2013 to 2015, in our case) with seven indicators grouped into two dimensions: market position (sales volume in euros, growth in sales volume in euros, market share in % over sales in euros, and growth in market share over sales in euros), and profitability (profit margin, return on own capital, and net profits). The first dimension shows the external performance of the company, evaluated by its behavior in the market through four items. The second dimension reflects the internal performance of the company, the income generated in its economic activity (Spanos & Lioukas, 2001), through three items. All items use a five-point Likert scale, where companies evaluate their position with respect to their competitors, and where the values of the scale are rated from one ("much weaker than the competitor") to five ("much stronger than the competitor"). Subjective scales are used instead of objective scales, due to two reasons. First, the literature has demonstrated the validity of subjective scales to determine business performance and their convergent validity with objective scales (Dess & Davis, 1984; Richard *et al.*, 2009; Santos & Brito, 2012). Second, accounting data could be subject to annual variability and may include extraordinary results and movements outside the main activity of the company (Richard *et al.*, 2009). Thus, several studies have used subjective instead of objective scales to analyze business performance (Spanos & Lioukas, 2001; Ortega, 2010; Ferrer-Lorenzo *et al.*, 2018; Villanueva & Ferrer, 2020).

Methodology

First-step comparison between independent samples

To determine the elements that characterize the PDOs studied, the Mann-Whitney U test was used for two independent samples, Cava and Rioja.

Second-step Bayesian regression

Bayesian regressions have been chosen for two reasons. Bayesian regression has greater reliability when the number of cases is low and when the normality of the variables cannot be assured (Block *et al.*, 2011). The proposed analysis model is as follows:

$$Y_j = \beta_0 + \beta_1 S_j + \beta_2 CD_j + \beta_3 A_j + e_j,$$

where the dependent variable Y_j is the financial performance value of the company j, measured as the average of the seven items considered in the market performance and financial performance. β_0 is the constant; β_1, the coefficient of the Robinson and Pearce strategy; β_2, the coefficient of managerial capabilities, by extraction of the main components of the seven items analyzed; β_3, the Assets of the company, control variable; and finally, e_j, the error or the residual of the proposed model. Four regressions (models) are developed that correspond to the four values that the Robinson and Pearce strategy variable can adopt: 1) efficiency strategy, 2) innovation strategy, 3) service strategy, and 4) marketing strategy, as defined in Table S1 [suppl.].. The size of the company has been taken as a control variable, measured on a scale from one to seven, where one represents assets below 400,000 euros, up to seven, representing assets greater than 40 million euros. Table 5 shows the correlation matrix for each of the independent variables. As we can observe, the correlations between some of the strategies proposed in the model have fairly high values, implying serious multicolinearity problems.

This high correlation between the strategies prevents their simultaneous inclusion in the models.

Results

The analysis of the results has been carried out in two steps. The first step analyzes whether there is a difference in managerial capabilities between companies in the Cava PDO and the Rioja PDO. In the second, the strategies that determine business performance in the Cava PDO are analyzed, as well as the influence of managerial capabilities.

First step: Differences between variables, Mann-Whitney U test

Table 6 shows the mean values and the standard deviation of the items contemplated under the category of the managerial capabilities, differentiated by Cava and Rioja, as well as the significance of the Mann-Whitney U Test for independent samples. The analysis of the level of managerial capabilities reveals a lower statistical significance level in six of the seven items analyzed for the Cava PDO. For the first, with a significance level < 0.05, Cava trails Rioja in the areas of knowledge and skills of employees, strategic planning, and ability to attract creative employees. For the second, with a significance level between 0.05 and 0.10, Cava is outperformed by Rioja in the area of efficient organizational structure, and for the third, with a significance between 0.10 and 0.20, Cava trails Rioja in the areas of managerial competencies, work climate, and strategic planning.

Second step: Bayesian regression

Regarding the Bayesian regression, Table 7 shows the result for the four Robinson & Pearce strategies for the Cava PDOs. The results of the relationship between strategies, managerial capabilities, and business performance for the Cava PDO show an important relationship in all case models between managerial capabilities and performance (between 95 and 98%). Regarding strategies, there is not a single strategy that is related to performance, but two of them show an important cause-and-effect association, the marketing strategy (99.8%) and the innovation strategy (98.4%). Finally, regarding the other two strategies that this paper studied, efficiency (Porter: cost strategy) and service (Porter: differentiation strategy), the efficiency strategy (92.9%), can be correlated with business performance since its statistical significance is lower

Table 5. Spearman correlations matrix

	1	2	3	4	5	6	7
(1) Business performance	1.000						
(2) Efficiency strategy	0.554*	1.000					
(3) Service strategy	0.118	0.101	1.000				
(4 Innovation strategy	0.630*	0.617*	0.287	1.000			
(5) Marketing strategy	0.764*	0.804*	0.127	0.672*	1.000		
(6) Managerial capabilities	0.652*	0.389	0.115	0.214	0.463*	1.000	
(7) Asset	0.559*	0.383	0.012	0.371	0.508*	0.806*	1.000

* Significant at 5%. *Source:* Author's own elaboration

Table 6. Statistical summary and Mann-Whitney U test for Cava PDO and Rioja PDO. Managerial capabilities

Managerial capabilities	Cava median	Cava SD	Rioja median	Rioja SD	Mann-Whitney U significance test
Managerial competencies	2.85	0.75	3.18	0.92	0.15
Knowledge and skills of employees	3.05	0.69	3.57	0.87	0.01
Work climate	3.50	0.61	3.75	0.92	0.20
Efficient organizational structure	2.90	0.72	3.30	0.90	0.09
Coordination	3.30	0.66	3.48	0.90	0.46
Strategic planning	2.80	0.62	3.11	0.89	0.16
Ability to attract creative employees	2.35	0.88	2.91	0.94	0.03

Source: Author's own elaboration

Table 7. Bayesian regression, managerial capabilities, Robinson & Pearce strategies. Cava PDO

	Mean	Std. Dev.	MCSE	Median	Equal-tailed		Likelihood>0
					95% Cred.	Interval	
Model 1							
Efficiency strategy	2.831	1.924	0.113	2.831	-0.914	6.621	0.929
Managerial capabilities	5.014	2.331	0.108	4.958	0.302	9.508	0.984
Asset	-0.731	1.168	0.051	-0.712	-3.034	1.683	0.266
_cons	15.711	6.470	0.350	15.617	3.243	28.874	
sigma2	21.022	10.536	0.494	18.683	8.918	48.251	
Model 2							
Service strategy	1.185	2.236	0.105	1.051	-3.066	5.672	0.701
Managerial capabilities	5.258	2.500	0.084	5.303	0.166	10.360	0.982
Asset	-0.155	1.237	0.052	-0.220	-2.632	2.367	0.451
_cons	18.020	9.705	0.437	18.639	-2.178	36.847	
sigma2	24.499	11.884	0.472	21.602	10.538	56.392	
Model 3							
Innovation strategy	2.805	1.308	0.053	2.802	0.374	5.499	0.984
Managerial capabilities	5.624	2.087	0.081	5.578	1.469	9.847	0.996
Asset	-0.747	1.070	0.048	-0.765	-2.907	1.346	0.242
_cons	16.622	4.544	0.151	16.691	7.273	25.247	
sigma2	17.497	9.407	0.580	15.087	7.618	41.353	
Model 4							
Marketing strategy	4.181	1.395	0.046	4.213	1.325	6.920	0.998
Managerial capabilities	3.153	1.959	0.087	3.156	-0.646	6.990	0.946
Asset	-0.379	0.895	0.039	-0.379	-2.226	1.413	0.336
_cons	9.998	5.196	0.204	9.640	-0.378	20.486	
sigma2	13.418	5.953	0.241	12.114	6.100	28.078	

Source: Author's own elaboration

than 0.10. In contrast, the service strategy (70%) is not correlated with business performance.

Discussion

This article aims to analyze the competitive situation of wineries within the Cava PDO, the largest exporter of wines among PDOs in Spain. For the analysis of the competitive situation, the managerial capabilities of the wineries and the strategies that they employ are studied. At the same time, a framework is provided showing the changes in data within Cava in the last two decades. An analysis of competitive advantage is carried out through the theory of resources and capabilities of Barney (1991) and the competitive strategy of Porter (1985). Regarding resources and capabilities, one of the most relevant resources related to sales performance—managerial capabilities—is explored. The managerial capabilities are analyzed through seven items (Spanos & Lioukas, 2001; Ortega, 2010; Ferrer *et al.*, 2018). Porter's strategic model is extended with the analysis of the generic strategies of Robinson & Pearce, and its four main strategies. These include efficiency (Porter: costs), service (Porter: differentiation), and two more strategies, innovation, and marketing, which can be aligned with the previous ones or studied independently. The analysis of the history of the Cava PDO in recent years presents some common characteristics and other differences with the average of all Spanish PDOs and with its primary competitor, the Rioja PDO. The main element is the entry of wineries in the PDO in the period from 2000 to 2019; it is an element

that goes against the general trend of the sector, in which there has been a reduction in the number of wineries. This circumstance can be understood through three factors. On the one hand, Cava possesses a higher profitability per winery (see Table 3), and simultaneously, a lower initial investment is necessary to produce cava compared to traditional wine (Saito & Takenaka, 2004). Finally, that the Cava PDO is open to other geographical areas outside of the original Penedès region allows additional wineries to produce Cava. In this sense, the definitions of the Cava PDO regulatory council are bit ambiguous, differentiating between three non-exclusive typologies of wineries: 1) cellars producing base wine registered with the regulatory board, 2) cellars producing Cava registered with the regulatory board, and 3) certified cellars producing Cava (CRC, 2021b). In this study, we have taken the second definition, cellars producing Cava registered with the regulatory board as a winery group in the preparation of the database. It should be noted that the number of cava-producing companies has decreased from 243 in 2015 to 212 in 2020. Meanwhile, the number of wineries outside the so-called "counties of Barcelona" (Penedès) increased from 23 in 2015 to 26 in 2020, a noticeable increase from 9.4% of all cava-producing companies in 2015 to 12.3% in 2020 (Ferrer, 2018; CRC, 2021b). These data show a reduction over a five-year span; Cava's 31 fewer wineries (12.7%) are in line with the general numbers for the sector. Yet, the value of the production per hectare and per winery is undoubtedly remarkable, well above the average for the sector and above the Rioja PDO (MAPA, 2020).

Regarding competitive advantage and managerial capabilities, two aspects are worth highlighting. On the one hand, the low level of the items analyzed in managerial capabilities for Cava PDO is well below those presented by the Rioja PDO. On the other hand, the study shows the great importance of managerial capabilities in explaining the business performance of the winery. The low level of managerial capabilities can be understood by the generally smaller size of Cava wineries compared to those of Rioja (see Table 4), which would be related to the lower need for investment for its production (Saito & Takenaka, 2004) and the lower training capacity of their managers and employees when the company size tends to be smaller (Sanchez-Marín *et al.,* 2017). The importance of managerial capabilities in achieving performance would be explained by the Theory of Resources and Capabilities (Barney, 1991), insofar as it ensures that the more limiting a resource is, the more influence it has on the result. This question has been pointed out by abundant literature that stresses the correlation between managerial capabilities and performance (Sanchez-Marín *et al.,* 2017). Finally, the analysis of generic strategic options by Robinson & Pearce (1988) clearly determines two strategic options that are above the others, innovation and marketing. This element has already been pointed out by other authors as key elements in achieving performance (Spanos & Lioukas, 2001; Ortega, 2010; Welter *et al.*, 2013). Regarding the remaining strategies, service and efficiency, which are closely related to Porter's cost and differentiation strategies, it should be noted that the differentiation strategy does not always seem to be related to performance; this element has already been pointed out in previous studies in the sector wine (Bardají *et al.*, 2014; Simon-Elorz *et al.*, 2015). The efficiency strategy has a greater relationship with performance and would be related to the way the Spanish wine sector competes, characterized by being in the lowest-priced market segments, as has also been pointed out in previous studies (Fernández & Pinilla, 2014). It is important to highlight how Porter's dualistic design of costs versus differentiation does not seem to be applicable in this case. Porter's model, despite being the most widely used, has already been demonstrated on several occasions to be excessively dichotomous, without allowing intermediate situations in the strategic model (Campbell-Hunt, 2000; Mintzberg *et al.*, 2009; Banker *et al.*, 2014). The strategic design of the company that extends the Porter model, including a greater combination of generic strategies, has already been contemplated in the Blue Ocean model (Kim & Mauborgne, 2005), where innovation, efficiency, and marketing are combined to achieve the competitive advantage. The implications that this article reveals are various and they can be limited to two spheres. First, we can draw some conclusions about the whole of the Cava PDO, and subsequently we can call attention to issues impacting the wineries that are part of it.

Regarding the Cava PDO, it can be concluded that the Cava appellation presents better ratios than the Rioja PDO in terms of factor remuneration (*i.e.*, revenues by surface area and winery) and furthermore that Cava remains well above the average of all national PDOs. It continues to be a leader in the export market, which is important in a market where around 70% of the wine produced in Spain has or should be aimed at this market (Serrano *et al.*, 2018). The domestic market presents an inelastic demand, which makes it difficult to increase income simply from an increase in the quantities sold, which may also make it less attractive. Regarding the wineries that are part of the Cava PDO, it is note worthy that they have a low level of managerial capabilities—an element that must be considered by political leaders, authorities, and the managers of the PDO, who should promote a training plan for winery managers, especially when their relationship with performance has proven to be very significant. In reference to strategies, it is also shown how innovation and marketing are the two most relevant strategies and should be used to promote them within the wineries that belong to the Cava PDO. From a practical point of view and close to the tasks of policy makers, the study highlights the importance of training

in business management as an element facilitating the improvement of the management and performance of the firm. This is particularly important for the PDO Cava wineries, where a strong relationship has been found between management capabilities and competitive advantage. Courses and training should therefore be encouraged to enable managers of companies, many of wineries in Cava PDO are small and with few resources, to have the skills that help them compete in the difficult environment of the Spanish wine industry. The present study has certain limitations, the most important being the size of the sample, which, although it reaches the 12% recommended by studies carried out through a survey of companies (Baruch & Holtom, 2008), should have a greater response rate in order to allow us to reach more robust conclusions. Future studies should corroborate the conclusions of this study and evaluate the evolution of this important PDO, and whether an improvement in the managerial capabilities has been achieved among winery managers.

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