

Spanish Wine Cooperatives' Business Performance. Innovation Capabilities and Miles and Snow Strategies¹

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Abstract

Agricultural cooperatives' economic performance and efficiency today have great economic and social relevance. Consistent with the recent literature, this paper examines wine cooperatives and compares them with wine investor-owned firms, studying their innovation capabilities, Miles and Snow strategies and performance. A survey was conducted from all the wineries in Spain, with 339 responses. The interactions between the independent variables and the dependent variable were analyzed using the logit regression model. The study points out that cooperatives do not have fewer innovation capabilities, nor are they more inefficient, than investor-owned firms, although the factors that modulate their economic performance are different. (JEL Classifications: L66, M10,P13, Q13)

Key words: cooperatives, Miles and Snow strategies, performance, resources and capabilities, Spanish wine sector.

I. Introduction

Cooperatives in Europe produce a large part of the total volume of the wine produced, more than 50% of the Italian wine, about 40% in France and around 70% of the Spanish wine (Storchmann, 2018). Cooperatives are considered to be an alternative to corporate firms, or so-called investor-owned firms (IOFs), as they are able to generate growth and a more equitable distribution of wealth through the union of small rural farmers (Altman, 2015; Santos-Arteaga and Schamel, 2018). But cooperatives must face important organizational challenges to adapt to globalization, maturing markets, and climate change (Schamel, 2018). The existing studies on the difference in business performance between IOFs and

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cooperatives are not conclusive. Some of them highlight the lack of efficiency of cooperatives (Bono, Castillo-Valero and Iliopoulos, 2012; Soboh, Oude-Lansink and Van Dijk, 2012), others affirm that cooperatives perform a better management of resources (Sexton and Iskow, 1993; Altman, 2015) and others point out that cooperatives have a greater ability to survive in business than IOFs (Rousseliere, 2017; Valette, Amadiou and Sentis, 2018). Thus, at least two questions arise from the point of view of the competitive advantage of the cooperatives in the wine sector. The first one is: do cooperatives and investor-owned firms (IOFs) have different business performance results? And the second question: which factors explain the best performance in cooperatives and in IOFs?

There are two basic schools of thought regarding how a company gains a competitive advantage -best performance-. The Competitive advantage (Porter, 1985) and The Resources and Capabilities (Barney, 1991).

II. Development Hypotheses

In the existing literature, the issue of the differential performance between cooperatives and IOFs achieves a high consensus, as most studies point to the worse position of cooperatives due to their greater inefficiency (Amadiou and Viviani, 2010; Couderc and Marchini, 2011; Bono, Castillo-Valero and Iliopoulos, 2012; Soboh, Oude-Lansink and Van Dijk, 2012), with many people involved in their decisions (Aiassa et al., 2018), “..and as well as the absence of profit orientation due to poorly specified and diluted property rights” (Fanasch and Frick, 2018, p. 282). The reason for cooperatives’ inefficiency is then a consequence of the difference in the ownership and development of their governance.

Hypothesis 1. Wine cooperatives will achieve a lower business performance than wine IOFs.

Innovation allows the creation of new businesses and new jobs and increases productivity, being the key to growth. There are several studies in the wine sector that defend the importance of innovation and its relationship with better performance (Nuebling *et al.*, 2016). Regarding innovation in cooperatives, Nazzaro, Marotta and Rivetti (2016) relate innovation to the creation of value and corporate social responsibility. Through networking and knowledge exchange, Chiffolleau *et al.* (2006) link innovation collaboration between cooperatives with the improvement of the performance.

Hypothesis 2. IOFs and cooperatives that enjoy superior innovation capabilities will have a better performance.

Hypothesis 3. Wine cooperatives enjoy the same level of innovation capabilities as wine IOFs.

Several studies (e.g. Cabello Medina *et al.*, 2000; Song, Di Benedetto and Nason, 2007) try to relate the generic strategies of Miles and Snow (1978) to concrete actions in business management. The studies confirm that the three strategic behaviours, prospector, analyser or defender, are capable of achieving a good business result. Nonetheless, the reactive strategy is not related to better performance (Camisón, Simón and Marqués, 2007; Song, Di Benedetto and Nason, 2007).

Hypothesis 4. Wine IOFs will have a positive performance as long as they use the prospector, analyser or defender strategies and avoid the reactor strategy.

Hypothesis 5. Wine cooperatives will have a positive performance as long as they use the prospector, analyser or defender strategies and avoid the reactor strategy.

III. Methodology

A. Sample and Data

The initial sample universe of wineries was 3,286. Following previous studies (Spanos and Lioukas, 2001), authors have eliminated lost data, defined as companies lacking location data, a valid email address, or a valid telephone number. The total number was reduced to 2,413, and the survey was sent by email with a telephone reminder provided. The process as a whole lasted four months, from February to May 2016. A total of 339 valid responses were received—14%. These data represent a 95% confidence level and a sampling error of 4.9%.

B. Variables

Innovation Capabilities

Innovation capabilities are made up of six indicators, measured by a five-point Likert scale on which the firm had to indicate its position relative to its competitors from one, “much weaker than the competitors”, to five, “much stronger than the competitors”.

Winery Strategy

The evaluation of the business strategy was carried out using the Snow and Hrebiniak (1980) method of the paragraph, identifying the typology of Miles and Snow (1978). In this method, company managers indicate which of the four typologies best suits their reality: prospector, analyser, defender or reactor.

Business Performance

Business performance was analysed following Spanos and Lioukas (2001), assessing two dimensions, market and financial performance, and referring to the last three years of the activity. On a five-point Likert scale, companies evaluated their position with respect to the competition, and the values of the scale were between one, “well below the average”, and five, “well above the average”.

C. Logit Model

The logistic regression model was used, in which the dependent variable (Y) is a categorical variable (dummy) which will be explained by the independent variables (Xi). In our case, Y = 1 refers to a positive business result that is better or much better than that of the firm’s competitors. The independent variables are those related to innovation capabilities and strategies. To measure innovation capabilities, six variables were used: product innovation (Cip), process innovation (Cis), allocation of resources to R&D (Cir), innovation in management systems (Cim), participation in regional, national and international R&D projects (Cii) and collaboration with public research organizations or other firms (Cic). The variables used to measure strategies are: the Miles *and* Snow prospective strategy (Sp), the Miles and Snow analyser strategy (Sa), the Miles and Snow defender strategy (Sd) and the Miles and Snow reactive strategy (Sr). The constant of the equation is α .

The logarithm of the “odds” is known as the logit function.

$$\ln\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = \alpha + \beta_1Cip + \beta_2Cis + \beta_3Cir + \beta_4Cim + \beta_5Cii + \beta_6Cic + \beta_7Sp + \beta_8Sa + \beta_9Sd + \beta_{10}Sr \quad (1)$$

IV. Results

A. Differences in Business Performance between Cooperatives and IOFs

The authors performed a Mann–Whitney U test for an independent and non-parametric sample. As Table 1 shows, there is no statistical significance to affirm that a difference

exists in the business performance between cooperatives and IOFs, either in market or in financial performance, so hypothesis 1 must be rejected.

“INSERT TABLE 1”

Table 1

Market Performance and Financial Performance: Mann–Whitney U Test

<i>Market Performance</i>	<i>Mann–Whitney U Test</i>		<i>IOFs</i>		<i>Cooperatives</i>	
	<i>Sig.</i>	<i>Result</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Sales Volume, in Euros	0.127	Not reject H0	2.75	1.043	2.96	.808
Growth in Sales Volume, in Euros	0.682	Not reject H0	3.05	1.025	3.14	.773
Market Share, % of Sales in Euros	0.530	Not reject H0	2.76	1.022	2.86	.773
Growth of Market Share, over Sales in Euros	0.457	Not reject H0	2.99	.974	3.11	.731
<i>Financial Performance</i>	<i>Mann–Whitney U Test</i>		<i>IOFs</i>		<i>Cooperatives</i>	
	<i>Sig.</i>	<i>Result</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Profit Margin	0.667	Not reject H0	2.88	.924	2.93	.783
Return on Own Capital	0.646	Not reject H0	2.82	.964	2.86	.773
Net Profits	0.516	Not reject H0	2.80	.963	2.88	.788

Source: The authors.

B. Differences in Innovation Capabilities between Cooperatives and IOFs

The authors performed a Mann–Whitney U test for an independent and non-parametric sample. As shown in Table 2, statistical significance was only found in the product innovation differences between cooperatives and IOFs. In this case, IOFs have higher product innovation capabilities than cooperatives. Therefore, hypothesis 3 must be partially rejected.

“INSERT TABLE 2”

Table 2

Innovation Capabilities: Mann–Whitney U Test

	<i>Mann–Whitney U Test</i>		<i>IOFs</i>		<i>Cooperatives</i>	
	<i>Sig.</i>	<i>Result</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Product Innovation	0.080	Reject H0*	3.16	1.036	2.89	.880
Process Innovation	0.767	Not reject H0	2.87	.955	2.89	.958
Allocation of Resources to R&D	0.841	Not reject H0	2.37	1.103	2.29	.825
Innovation in Management Systems	0.715	Not reject H0	2.56	1.011	2.47	.847
Participation in R&D Projects	0.557	Not reject H0	2.23	1.081	2.11	.896
Collaboration with Public	0.732	Not reject H0	2.33	1.055	2.35	.896

Research Organizations or Other Firms						
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Source: The authors. (*) Significance at the 10% level.

C. Logit Model for IOFs and logit model for Cooperatives

In both cases, the analysis of the logistic regression as it appears in formula (1) was conducted. The results of the logistic regression with the variables included in the equation, as well as their beta values and their significance, are shown in Tables 3 (IOFs) and 4 (Cooperatives).

“INSERT TABLE 3”

Table 3
Variables in the Equation for IOFs

<i>Variables in the Equation</i>	<i>B</i>	<i>E.T.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp (B)</i>
Innovation in Products	.683	.182	14.161	1	.000	1.980
Innovation in Processes	.643	.195	10.860	1	.001	1.903
Miles and Snow Reactor	-2.124	1.169	3.298	1	.069	.120
Constant	-4.708	.699	45.300	1	.000	.009

Source: The authors.

In the case of IOFs, it is observed that innovation capabilities are the elements that define the best performance. Therefore, the analysis confirms hypothesis 2. However, the three positive strategies of Miles and Snow, prospector, analyser and defender, do not explain the better performance. Nevertheless, the study finds a significance of 0.069 (less than 0.10) between not using the Miles and Snow reactor strategy and business performance. Therefore, hypothesis 4 must be partially accepted.

“INSERT TABLE 4”

Table 4
Variables in the Equation for Cooperatives

<i>Variables in the Equation</i>	<i>B</i>	<i>E.T.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp (B)</i>
Allocation of Resources to R&D	1.084	.545	3.954	1	.047	2.957
Miles and Snow Prospector	2.327	1.034	5.065	1	.024	10.251
Miles and Snow Analyser	2.743	.815	11.317	1	.001	15.535
Constant	-4.341	1.509	8.273	1	.004	.013

Source: The authors.

In the case of cooperatives, at the 5% significance level, it can be observed that the business performance is defined by configurative strategies as well as by innovation capabilities. The analyser and prospector strategies are the most important elements. The third explanatory element of business success is innovation capabilities, through the variable “allocation of resources to R&D”. However, the defender and reactor strategies are not in the equation, as they did not show significant values. Therefore, hypothesis 2 about innovation capabilities can be partially accepted. The study also partially confirms hypothesis 5, as the prospector and analyser strategies are drivers of better performance, even though the defender and reactor strategies are not significant.

V. Conclusions

The main conclusion of the study is that there is no differentiation between the two groups analyzed; therefore, it cannot be affirmed that cooperatives have a lower performance than IOFs. The second question was: what explains the eventual performance and how does it differ between cooperatives and IOFs?

The results report that cooperatives base their best results mainly on the analyser and prospector strategies, more than on innovation capabilities. Nonetheless, in the case of innovation capabilities, they use the allocation of resources to R&D more than innovation in products and processes.

Regarding IOFs, the results show that the basis of their best performance is resources and capabilities and product and process innovation capabilities. However, none of the positive configurative strategies of Miles and Snow are related to their better performance, though the study reported that, by avoiding a reactor strategy, a firm can attain a better performance. The conclusions reached about the differences in business performance between cooperatives and IOFs are in line with the study by Sexton and Iskow (1993), who defended the idea that cooperatives do not have a lower performance, even though members’ return and continuity are the core objectives of cooperatives (Cadot and Ugaglia, 2018).

In terms of innovation capabilities, cooperatives have a lower endowment of innovation in products, it being more efficient for them to allocate resources to R&D in a generic way than to innovate in products and processes, which is more efficient for IOFs. The reason for this different behaviour can be found in the objectives of the cooperatives, which are

oriented towards their suppliers, located at the beginning of the value chain (Amadiou and Viviani, 2010; Bono, Castillo-Valero and Iliopoulos, 2012; Soboh, Oude-Lansink and Van Dijk, 2012). This has an impact on their innovation plans, which are located close to the producer, without focusing exclusively on products and processes (Wood and Kaplan, 2005), as is the case for the IOFs.

References

- Aiassa, P., Baltés, M., Danner, S., Frischengruber, H., Horvath, R., Klotz, W., & Vacca, A. (2018). Successful wine cooperatives: Field reports from cooperative managers in Austria, Italy, and Germany. *Journal of Wine Economics*, 13(3), 243-259.
- Altman, M. (2015), “Cooperative organizations as an engine of equitable rural economic development”, *Journal of Co-operative Organization and Management*, Vol. 3 No. 1, pp. 14–23.
- Amadiou, P. and Viviani, J.L. (2010), “Intangible effort and performance: the case of the French wine industry”, *Agribusiness*, Vol. 26 No. 2, pp. 280–306.
- Barney, J. (1991), “Firm resources and sustained competitive advantage”, *Journal of Management*, Vol. 17 No. 1, pp. 99–120.
- Bono, P., Castillo Valero, J.S. and Iliopoulos, C. (2012), *Case Study Report; Structure and Strategy of Wine Cooperatives: Comparing Veneto, Italy, to Castilla-La Mancha, Spain*, Wageningen UR, Wageningen.
- Cabello Medina, C., García Rodríguez, M., Jiménez, A. and Ruiz Navarro, J. (2000), “Tipología estratégica de Miles y Snow y factores competitivos: un análisis empírico”, *Cuadernos de Economía y Dirección de la Empresa*, Vol. 7, pp. 365–381.
- Cadot, J., & Ugaglia, A. A. (2018). The key role of banks in the lifecycle of Bordeaux wine cooperatives. *Journal of Wine Economics*, 13(3), 309-327.
- Camisón, C., Simón, F.G. and Marqués, D.P. (2007), “Estrategias competitivas y desempeño empresarial: estudio comparativo de los modelos de Robinson & Pearce y Miles & Snow en el sector hotelero español”, *Investigaciones Europeas de dirección y economía de la empresa*, Vol. 13 No. 3, pp. 161–182.

- Chiffolleau, Y., Dreyfus, F., Stofer, R. and Touzard, J.M. (2006), “Networks, innovation and performance: evidence from a cluster of wine cooperatives (Languedoc, South of France)”, in *Vertical Markets and Cooperative Hierarchies: The Role of Cooperatives in the Agri-Food Industry*, edited by Kostas Karantinis and Jerker Nilsson. 35-60. Dordrecht: Springer, 2007 Springer, pp. 37–61.
- Couderc, J.P. and Marchini, A. (2011), “Governance, commercial strategies and performances of wine cooperatives: an analysis of Italian and French wine producing regions”, *International Journal of Wine Business Research*, Vol. 23 No. 3, pp. 235–257.
- Fanasch, P., & Frick, B. (2018). What makes cooperatives successful? Identifying the determinants of their organizational performance. *Journal of Wine Economics*, 13(3), 282-308.
- Miles, R.E., Snow, C.C., Meyer, A.D. and Coleman, H.J. (1978), “Organizational strategy, structure, and process”, *Academy of Management Review*, Vol. 3 No. 3, pp. 546–562.
- Nazzaro, C., Marotta, G. and Rivetti, F. (2016), “Responsible innovation in the wine sector: a distinctive value strategy”, *Agriculture and Agricultural Science Procedia*, Vol. 8, pp. 509–515.
- Nuebling, M., Hammond, R., Behnke, C., Almanza, B. and Sydnor, S. (2016), *AAWE Working Paper 199*, American Association of Wine Economists, available at: <https://www.wine-economics.org/list-of-aawe-working-papers/>
- Porter, M.E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, Free Press, New York.
- Rousseliere, D. (2017), “A flexible approach to age dependence in organizational mortality. Comparing the life duration for cooperative and non-cooperative enterprises using a Bayesian generalized additive discrete time survival model”. Working Paper SMART – LERECO N°17-08 available at: <https://ageconsearch.umn.edu/record/264214/files/wp17-08.pdf>.
- Santos-Arteaga, F., & Schamel, G. (2018). Organizational Form and Payoff Imbalances in an Aggrievement Model: Cooperatives versus Privately Owned Wineries. *Journal of Wine Economics*, 13(3), 263-281. doi:10.1017/jwe.2018.32.

- Schamel, G. (2018). Guest editor's introduction to the symposium: Organization and performance of cooperative firms in the wine sector. *Journal of Wine Economics*, 13(3), 260-262.
- Sexton, R.J. and Iskow, J. (1993), "What do we know about the economic efficiency of cooperatives: an evaluative survey", *Journal of Agricultural Cooperation*, p. 8.
- Snow, C.C. and Hrebiniak, L.G. (1980), "Strategy, distinctive competence, and organizational performance", *Administrative Science Quarterly*, Vol. 25, No. 2 (Jun., 1980), pp. 317-336pp. 317–336.
- Soboh, R., Oude Lansink, A. and Van Dijk, G. (2012), "Efficiency of cooperatives and investor owned firms revisited", *Journal of Agricultural Economics*, Vol. 63 No. 1, pp. 142–157.
- Song, M., Di Benedetto, C.A. and Nason, R.W. (2007), "Capabilities and financial performance: the moderating effect of strategic type", *Journal of the Academy of Marketing Science*, Vol. 35 No. 1, pp. 18–34.
- Spanos, Y.E. and Lioukas, S. (2001), "An examination into the causal logic of rent generation: contrasting Porter's competitive strategy framework and the resource-based perspective", *Strategic Management Journal*, Vol. 22 No. 10, pp. 907–934.
- Storchmann, K. (2018). Introduction to the Issue. *Journal of Wine Economics*, 13(2), 117-118. doi:10.1017/jwe.2018.29
- Valette, J., Amadiou, P., & Sentis, P. (2018). Cooperatives versus Corporations: Survival in the French Wine Industry. *Journal of Wine Economics*, 13(3), 328-354. doi:10.1017/jwe.2017.1
- Wood, E. and Kaplan, D. (2005), "Innovation and performance improvement in the South African wine industry", *International Journal of Technology and Globalisation*, Vol. 1 Nos 3–4, pp. 381–399.