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Innovation as the key to gain performance from absorptive capacity and human capital

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ABSTRACT

This study aims to investigate how firms can achieve high levels of organisational performance through innovation, absorptive capacity (ACAP) and human capital (HC). Using a sample of 138 Spanish companies from the wine industry, our findings show that ACAP and HC allow businesses to fully capture the benefits of innovation. These results contribute to the literature of ACAP, human resources management (HRM) innovation and resource-based view (RBV) of the firm by showing that a number of resources and capabilities (ACAP, HC, and innovation) can be seen as good drivers of performance and, by extension, of competitive advantage.

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Human capital (HC); absorptive capacity (ACAP); innovation; performance; resources based view (RBV)

1. Introduction

Over the last two decades, research has shown a strong relationship between innovation and competitiveness (Carneiro 2000; Cantwell 2005; Pérez-Luño, Gopalakrishnan, and Valle-Cabrera 2014; Petrakis, Kostis, and Valsamis 2015). Interest in this type of research has been growing with the aim to identify the best method to improve the innovative capability of a firm (Damanpour 1991; Galunic and Rodan 1998). Therefore, it is important to identify the internal and external factors that have positive effects on such behaviour (Zhou 2006; Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). Some authors have acknowledged the involvement of culture as a long-term strategic instrument (Petrakis, Kostis, and Valsamis 2015); others emphasise the importance of knowledge production (Farinha, Ferreira, and Gouveia 2016; Roper, Love, and Bonner 2017; Dabić et al. 2019), absorptive capacity (Dabić et al. 2019; Jansen, Van Den Bosch, and Volberda 2005; Volberda, Foss, and Lyles 2010; Vlačić et al. 2019), human resources (Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009; Franco, Marzucchi, and Montresor 2014; Roberts 2015), and even different regulations in each country in which the companies are located (Zhao and Sun 2016). Furthermore, there is a need to understand whether it is innovation that leads to competitiveness, whether this competitiveness is reached because of the capabilities that companies develop in order to innovate, or whether it is a combination of both.

This research is framed within the resource-based view (RBV) theory, whose main research topic is related to the kinds of resources and capabilities that lead to sustainable competitive advantage (Wernerfelt 1984; Barney 1991). In this direction, among the possible internal factors to take into account, knowledge, skills and abilities (KSA) appear as key resources for innovation (Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). It has also been argued that external knowledge acquired from the

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company's absorptive capacity (ACAP) is needed in order to update the employees' KSA that are needed to develop innovations and to increase performance (Miron-Spektor et al. 2018; Roper and Love 2018).

Innovation requires the exploration of new ideas as well as the realisation of new solutions for organisational change (Janssen 2001). Therefore, the success of companies is related to their ability to manage knowledge (Morling and Yakhlef 1999). In order to have knowledge to manage, individuals (and companies, by extension) require external knowledge. The literature has acknowledged that ACAP, defined as the ability of companies to acquire, assimilate and exploit knowledge, is the best way of sourcing external knowledge and that it is an important antecedent of innovation (Cohen and Levinthal 1989; Zahra and George 2002; Vlačić et al. 2019).

The literature has shown that human resource management (HRM) has positive linkages to innovation (Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). Some researchers have agreed that HRM includes knowledge, skills, and abilities (KSA) within an individual, which are grouped as human capital (HC) (Schultz 1961). HC has been considered to be one of the main positive outputs of HRM for innovation and higher performance (Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). There is the assumption that a company's innovation and performance will improve if its employees share knowledge, effective practices, experiences, preferences, and learning (Roper, Love, and Bonner 2017).

Innovation can be seen as the successful exploitation of new ideas which incorporate novelty and utility (Alegre, Lapiedra, and Chiva 2006; Pérez-Luño, Valle-Cabrera, and Wiklund 2011). Companies willing to innovate need individuals with expertise and knowledge to develop such new ideas (Anand, Gardner, and Morris 2007). Therefore, to achieve such innovation, firms need competent and innovative employees who are willing to apply new knowledge and experiment (Costa and McCrae 1992; Díaz-Fernández, López-Cabrales, and Valle-Cabrera 2014).

Based on the previous discussion, the research question that we address in this paper is: To what extent is performance improved through resources and capabilities such as ACAP, HC, and innovation? This research question aims to analyse the relationship between HC, ACAP, innovation and performance to try to shed light on two research gaps. The first is, as discussed at the beginning of this introduction, to understand whether competitiveness is achieved through innovation or through the capabilities that companies develop in order to innovate, or through the combination of both. The second would be to identify to what extent ACAP and HC are determinants of innovation and/or performance. With these aims in mind, we will try to understand to what extent ACAP is necessary to better exploit the required HC to develop innovations and to enhance performance.

This study will result in three main contributions. The first contribution is related to the relationship, on the whole, among ACAP, HC, innovation and performance. Among the different types of innovation, this research focuses on technological product innovation. Therefore, our findings expand the innovation literature by providing a more profound and direct analysis of the predictors of product innovation. That is, while previous research has tried to relate the different dimensions of ACAP (e.g. Jansen, Van Den Bosch, and Volberda 2005; Zahra and George 2002) and the dimensions of HC with regards to innovation and performance (e.g. Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009; Flor, Cooper, and Oltra 2018), we believe that it is through the global variables that we can really understand the full interrelationship.

The second contribution focuses on the lack of systematic empirical support received by the RBV (Newbert 2007; Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). For this reason, by demonstrating that a number of resources (knowledge materialised in HC and innovation) and capabilities (ACAP and HC) can be seen as valuable drivers of competitive advantage, this study expands the empirical approach in support of the theoretical section discussed in this paper. Finally, we find similar results for the empirical analysis of ACAP, HC and innovation with objective and subjective measures of performance. This is an important contribution that shows that managers are able to perceive their results in real work situations.

The study is structured as follows. First, the conceptual framework and the hypotheses of the study are presented. Next, the methods are explained, and are followed by the results. The last section of this study presents the discussion.

2. Conceptual framework

2.1. Absorptive capacity (ACAP) as an antecedent of human capital (HC)

ACAP is one of the most important theories that has emerged in organisational research in the past 30 years. Cohen and Levinthal (1989) defined ACAP as 'a firm's ability to identify, assimilate, and exploit new knowledge'. Since then, there have been many other studies that explore the ACAP concept and its dimensions. Table 1 summarises research from more than 900 peer-reviewed academic papers published on the topic:

The information used to develop Table 1 leads us to conclude that in most of the literature, ACAP consists of four dimensions, which are built on each other (Zahra and George 2002; Vlačić et al. 2019): The first one is knowledge acquisition, which is the way to bring new knowledge into an enterprise (Zahra and George 2002; Krstić and Petrović 2011; Vlačić et al. 2019). The second dimension refers to the institutional capacity to examine or review past knowledge, as well as to synthesise, and combine knowledge gained from external sources (also known as knowledge assimilation capability). It is related to the understanding of knowledge as an economic resource for generating value and innovations (Zahra and George 2002; Krstić and Petrović 2011; Vlačić et al. 2019). The third dimension is the institutional capacity to develop and improve routines that facilitate the incorporation of existing knowledge with acquired knowledge, also known as knowledge transformation capability. Knowledge transformation also includes joining previously scattered sets of knowledge and recombining them (Zahra and George 2002; Krstić and Petrović 2011; Vlačić et al. 2019). The last dimension is the institutional capacity to refine, expand, and elevate existing competencies or create new ones by combining acquired knowledge. This dimension is also known as knowledge exploitation capability, and refers to the ability of a firm to incorporate knowledge in its operations and processes (Zahra and George 2002; Krstić and Petrović 2011; Vlačić et al. 2019).

Some authors have proposed to group the four dimensions into two structures: on the one hand, potential absorptive capacity (PAC or PACAP), which includes the ability to acquire and assimilate knowledge, and, on the other hand, realised absorptive capacity (RAC or RACAP), which includes the ability to transform and exploit knowledge (Ali and Park 2016; Vlačić et al. 2019). The level of ACAP itself is a function of the organisation's existing resources, existing tacit and explicit knowledge, internal routines, management competences, and culture (Gray 2006; Larrañeta, Zahra, and Galán 2007).

Most of the research has related the different dimensions (4 or 2) of ACAP with different outputs. However, based on the idea that the four dimensions are built on each other and that, in sum, ACAP represents the firm's willingness to create new knowledge (Cohen and Levinthal 1989; Lane, Koka, and Pathak 2006), we believe that analysing ACAP as a single construct made by the four or two dimensions proposed by previous literature may help to better understand the connection between ACAP, HC, innovation and performance.

It is believed that firms with higher ACAP have greater ability to detect changes, to explore available alternatives and solutions, and thus to exploit innovation to meet its needs (Zahra and George 2002; Bharati, Zhang, and Chaudhury 2014). On the one hand, some research results show a close relationship between ACAP and innovation (Gray 2006; Fosfuri and Tribó 2008). On the other hand, different researchers have shown that ACAP contributes to a firm's performance both directly and indirectly (Lane, Koka, and Pathak 2006; Bharati, Zhang, and Chaudhury 2014). That is, for example, using the RBV, Davidsson and Honig (2003) explain that in order to be competitive and increase performance, companies need ACAP. However, we propose in this paper that the influence of ACAP on innovation and performance is through its influence on HC. That is, we believe that ACAP gives the necessary knowledge to employees to reinforce their HC. This idea comes from the analysis of its definition, that is, the 'ability to recognise the value of new knowledge, assimilate it, and apply it to commercial ends' (Cohen and Levinthal 1990). Therefore, by the development of this ability to recognise the value of new knowledge, assimilate it and apply it, the people involved increase their HC.

Some ACAP literature supports the idea that the technological aspect of a company is the most important for better performance in R&D. For example, Vlačić et al. (2019) pointed out from their

Table 1. Research on ACAP.

Authors	Journal and Years Published	ACAP as Dimension
Keller	Journal of Development Economics – 1996	UNIDIMENSIONAL ANALYSIS OF ACAP
Lane, Koka, and Pathak	Academy of Management Review – 2006	
Rodríguez-Castellanos, Hagemeister, and Ranguelov	European Planning Studies – 2010	
Vasudeva and Anand	Academy of Management Journal – 2011	
Hotho, Becker-Ritterspach, and Saka-Helmhout	British Academy of Management – 2012	
Ritala and Hurmelinna-Laukkanen	Journal of Product Innovation Management – 2013	
Aryasa, Wahyuni, Sudhartio, and Wyanto	Academy of Strategic Management Journal – 2017	
Scuotto, Del Giudice, and Carayannis	Journal of Technology Transfer – 2017	
Hernandez-Perlines	Journal of Family Business Management – 2018	
Crescenzi and Gagliardi	Research Policy – 2018	
Authors	**Journal and Years Published**	BIDIMENSIONAL ANALYSIS OF ACAP
Jansen, Van Den Bosch, and Volberda	The Academy of Management Journal – 2005	
Larrañeta, Zahra, and Galán	Frontiers of Entrepreneurship Research – 2007	
Fosfuri and Tribó	Omega – 2008	
Volberda, Foss, and Lyles	Organization Science – 2010	
Leal-Rodríguez, Ariza-Montes, Roldán, and Leal-Millán	Journal of Business Research – 2014	
Franco, Marzucchi, and Montresor	Industry and Innovation, 2014	
Larraneta, Galan, and Aguilar	Journal of Technology Transfer – 2017	
Enkel, Heil, Hengstler, and Wirth	Technovation – 2017	
Flor, Cooper, and Oltra	European Management Journal – 2018	
Mariano and Al-Arrayed	European Journal of Management – 2018	
Limaj and Bernroider	Journal of Business Research – 2019	
Authors	**Journal and Years Published**	ANALYSIS OF ACAP USING THREE DIMENSIONS
Lane and Lubatkin	Strategic Management Journal – 1998	
Lichtenthaler	The Academy of Management Journal – 2009	
Zobel	Journal of Product Innovation Management – 2017	
Stulova and Rungi	Journal of High Technology Management Research – 2017	
Authors	**Journal and Years Published**	ANALYSIS OF ACAP USING FOUR DIMENSIONS
Cohen and Levinthal	The Economic Journal – 1989	
Cohen and Levinthal	Administrative Science Quarterly – 1990	
Zahra and George	Academy of Management Review – 2002	
del Carmen Haro-Domınguez, Arias-Aranda, Llorens-Montes, and Ruız Moreno	Technovation – 2007	
Camisón and Forés	Journal of Business Research – 2010	
Jiménez-Barrionuevo, Garcıa-Morales, and Molina	Technovation – 2011	
Krstić and Petrović	Economics and Organization – 2011	
Backmann, Hoegl, and Cordery	Journal of product innovation management – 2015	
Vlačić, Dabić, Daim and Vlajčić	Technological Forecasting and Social Change – 2019	

Source: Authors' own elaboration.

result in technology-driven companies that if ACAP level is higher, business performance in regularly performed R&D activities will tend to be higher. However, Rodríguez-Castellanos, Hagemeister, and Ranguelov (2010) believe that HC is more important than the technological and relational capital. To maximise HC's contribution to company effectiveness and growth, strategic policies on acquisition, development, and capital retention are needed (Harris and Kor 2013). Therefore, we think that in order to take advantage of ACAP for innovation (or any other purposes), companies need HC that exploits the knowledge gained through ACAP. Then, as explained in the next section, this HC will have a positive impact on innovation. Thus, we propose our first hypothesis:

H1: There is a positive relationship between ACAP and HC.

2.2. Human capital (HC) as an antecedent of innovation

Innovation is the successful application or execution of new ideas (Alegre, Lapiedra, and Chiva 2006; Pérez-Luño, Valle-Cabrera, and Wiklund 2011). It has been accepted that a firm's ability to generate innovation is linked to the knowledge of its HC (Laursen 2002; Foss 2007). Therefore, the most distinctive and inimitable resource that companies have is people's knowledge collected in the company's HC (Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). HC can be defined as the set of knowledge, skills and abilities that individuals have and use at work (Schultz 1961; Wright and McMahan 2011). HC has also been defined as the collective value of knowledge, skills, and ability as well as the life experiences and motivation of an organisational workforce (Bogdanowicz and Bailey 2002; Subramaniam and Youndt 2005).

Considering the HC approach, the novelty and value of employee's knowledge are the most important aspects for innovation (Lepak and Snell 1999; Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). The value of knowledge means the potential knowledge to increase the efficiency and effectiveness of a company, take advantage of market opportunities and neutralise potential threats (Lepak and Snell 2002). An employee must possess skills and firm-specific knowledge that are irreplaceable and unique (Barney 1991). Since creative individuals have to deal with ambiguous problems and will need to exploit the knowledge reached through the company's ACAP, human capital is required to display strong, valuable, and unique knowledge (Mumford 2000; Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). Therefore, in order to make sure innovation takes place, companies may leverage valuable and unique HC to develop organisational expertise for creating new products and services (Damanpour and Schneider 2006). Therefore, we propose our second hypothesis:

H2: There is a positive relationship between HC and innovation.

2.3. Innovation as an antecedent of performance

An understandable explanation for the effect of knowledge on competitiveness is suggested in the RBV of the firm. The classical approach of RBV argues that a firm can build competitive advantages based on valuable, rare, inimitable, and non-substitutable resources (Barney 1991). Previous literature has demonstrated a strong relationship between innovation and performance (e.g. Carneiro 2000; Pérez-Luño, Gopalakrishnan, and Valle-Cabrera 2014; Petrakis, Kostis, and Valsamis 2015).

In this paper, we believe that the absorptive knowledge used by valuable and unique HC to develop innovations will lead to higher performance and competitive advantages. Even more, we believe that this relationship will be similar for objective and subjective measures of performance. Therefore, we propose our third hypothesis:

H3: There is a positive relationship between innovation and performance.

The proposed model and our hypotheses are represented as Figure 1.

3. Methodology

3.1. Sample and data collection

We use a sample of Spanish wineries to conduct our analysis as they represent a population of firms where ACAP, HC, and innovation are salient performance dimensions. That is, although the wine industry is seen as very traditional, the current situation has made it to continuously innovate in products, services, production processes, management and business model. In relationship to product innovation, wineries, both large and small, are not only changing the alcoholic graduation of their wines (e.g. Familia Bodegas Torres and Bodegas Robles), but also their flavours, to make them softer (e.g. Bodegas Peñafiel), and are introducing new products related to wine (among others).

In 2013, we surveyed a population of 520 Spanish wineries. We received responses from 138 directors of the firms (response rate of 29%). In order to safeguard against bias and verify the quality of the responses, we surveyed secondary respondents (enologists) of 33 firms, allowing us to establish inter-rater reliability. Objective information about the performance and number of workers was obtained from external sources, reducing the risk of common method bias. The result was previously published as a working paper in Wiklund, Perez-Luño, and Nason (2015) and the data is available through the SABI/AMADEUS database.

3.2. Variables

Many of the constructs included in the study were measured by multi-item scales. Several steps were taken to complete the validity and receive data. First, we conducted the pre-test of measures in 25 interviews with managers. We asked them to revise the survey before returning it in order to ensure the clarity of the questions and to ascertain whether the scale was appropriate for this research. We then revised each requested item before sending the questionnaire.

To measure absorptive capacity (ACAP), we adapted the scale items developed by Jansen, Van Den Bosch, and Volberda (2005) for large companies to our sample. The items have proven to be effective in measuring ACAP in small firm environments, as shown in Fernhaber and Patel (2012) and Tzokas et al. (2015) among others. For human capital (HC), we adapted the scale items proposed by Lepak and Snell (2002) and Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera (2009). For innovation, we adapted the scale items proposed by Zhang, Lettice, and Zhao (2015), which has also been used in other similar studies in small firm environments (e.g. Mamun et al. 2018; Ruiz-Ortega, García-Villaverde, and Parra-Requena 2018). Finally, to measure performance, we adapted the scale proposed by Zahra (1996) to measure subjective performance, and to measure objective performance we used return on assets (ROA) from 2016. The time lag between innovation and objective performance guarantees that the measured ROA has been reached from the innovations developed some years before (Pérez-Luño, Gopalakrishnan, and Valle-Cabrera 2014; Agostini, Filippini, and Nosella 2015) We controlled for firm size (number of employees) and for family firm ownership (given the big proportion of this kind of company within this industry).

3.3. Measurement model

We conducted a preliminary study of scale dimensionality by performing an exploratory factor analysis. The proposed scale of ACAP was extracted in two dimensions. The items related to knowledge acquisition and knowledge assimilation were loaded on the first factor, while the items that measure knowledge transformation and knowledge exploitation conformed the second factor. Both extracted dimensions explained 66.31% of the variability. With regard to the HC scale, the results showed a multidimensionality structure with two factors, value and uniqueness, which explained 66.16% of the variability. The innovation and subjective performance scales were one-dimensional. We eliminated two items of human capital uniqueness since their factor loadings were smaller than 0.6.

The measurement model was estimated using partial least squares based on the principal component-based estimation approach (Chin et al. 2013). As we have considered ACAP and HC as second-order factors, we applied a two-stage approach for integrating the higher-order models into the measurement model (Becker, Klein, and Wetzels 2012). In the first stage, we estimated the items from the first to

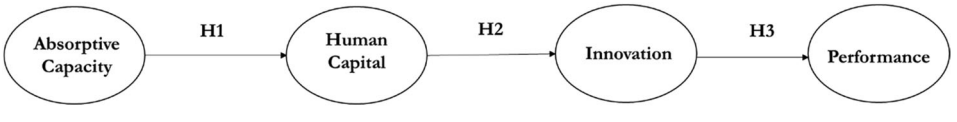

Figure 1. The relationship between HC, ACAP, innovation and performance. Source: Authors' own elaboration.

Table 2. Descriptive statistics and scale correlations (subjective and objective performance).

Constructs	1.	2.	3.	4.	5.	6.	7.
1. Absorptive Capacity	0.932						
2. Human Capital	0.499	0.867					
3. Innovation	0.232	0.274	0.824				
4. Subjective Performance	0.355	0.306	0.255	0.810			
5. Objective Performance	−0.036	−0.064	−0.292	0.052	N.A.		
6. Firm Size	0.087	−0.089	0.011	−0.045	−0.076	N.A.	
7. Family business	−0.065	−0.068	−0.021	0.176	0.102	−0.021	N.A.
The elements on the main diagonal represent the square root of the AVE							
Statistics							
Mean	3.529	3.522	3.504	3.171	0.320	0.320	N.A.
SD	0.590	0.650	0.855	0.812	0.339	0.338	N.A.
Cronbach's Alpha	0.850	0.712	0.904	0.871	N.A.	N.A.	N.A.
Composite reliability	0.930	0.858	0.927	0.905	N.A.	N.A.	N.A.
Average variance extracted (AVE)	0.870	0.752	0.679	0.657	N.A.	N.A.	N.A.

the second-order factors, and the latent variables scores were used as indicators of the reflective higher-order constructs estimation. The factor loadings of the first-order constructs (Knowledge Acquisition, Knowledge Assimilation, and Knowledge Transformation and Exploitation) to reflect the higher-order construct of ACAP showed factor loadings that were significant and with high values (β=0.940** and β=0.925**). Similarly, the first-order dimensions of Value and Uniqueness showed significant and high factor loading to second-order constructs of Human Capital (β=0.938** and β=0.791**).

As we consider all the dimensions as reflective constructs, we evaluated their internal consistency and validity according to the procedures suggested by Hair et al. (2014). Internal consistency of the dimensions was evaluated considering three indicators: Cronbach's alpha indicator exceeded the recommended threshold of 0.7 (Nunnally and Bernstein 1994), the composed reliability coefficient was greater than 0.7 (Anderson and Gerbing 1988), and the average variance extracted (AVE) was over 0.5 (Fornell and Larcker 1981) (Table 2).

We analysed scale validity for the constructs. We confirm convergent validity as all the reflective indicators, and the reflective construct for ACAP and HC showed significant and high standardised loadings (>0.6; p-value < 0.000) (Steenkamp and Van Trijp 1991). We checked discriminant validity by linear correlation between each pair of dimensions. These values were less than the square root of the AVE in the scales, showing evidence that each reflective construct related stronger to its own scales than to the others (Table 4). We analysed this validity in depth with the heterotrait-monotrait ratio of correlations (HTMT). These values, shown in Table 3, were lower than the threshold of 0.9 (Henseler, Ringle, and Sarstedt 2015).

4. Results and discussion

The structural model was estimated and assessed by 5000 bootstrap runs. According to Henseler, Ringle, and Sinkovics (2009) the use of this level of bootstrapping provides standard errors and t-statistics to evaluate the significance of the structural coefficients. As we measured performance from two different perspectives, we developed two models to test the relationship chain effects

Table 3. Heterotrait-monotrait ratio of correlations (HTMT).

Constructs	1.	2.	3.	4.	5.	6.
1. Absorptive Capacity						
2. Human Capital	0.609					
3. Innovation	0.263	0.326				
4. Subjective Performance	0.421	0.398	0.270			
5. Objective Performance	0.040	0.076	0.303	0.088		
6. Firm Size	0.095	0.094	0.041	0.098	0.076	
7. Family business	0.072	0.093	0.053	0.421	0.102	0.021

TABLE 4. Estimation of the causal relationship chain on Subjective Performance.

Direct effects	β (t-Stat)	R^2
H_1. Absorptive Capacity→Human Capital	0.499** (8.309)	0.249
H_2. Human Capital→Innovation	0.274** (3.357)	0.095
H_3. Innovation→Subjective Performance	0.259** (3.038)	0.100
Indirect effects		
Absorptive Capacity→Innovation	0.137** (2.937)	
Absorptive Capacity→Subjective Performance	0.035+ (1.948)	
Human Capital→Subjective Performance	0.071* (2.109)	
Controls		
Firm Size→ Subjective Performance	−0.044 (0.429)	
Family business→Subjective Performance	0.180* (2.198)	

+ Significant at $p < 0.10$.
* Significant at $p < 0.05$.
** Significant at $p < 0.01$.

Table 5. Estimation of the causal relationship chain on Objective Performance.

Direct effects	β (t-Stat)	R^2
H_1. Absorptive Capacity→Human Capital	0.499** (8.309)	0.249
H_2. Human Capital→Innovation	0.274** (3.357)	0.095
H_3. Innovation→Objective Performance	0.289** (3.358)	0.100
Indirect effects		
Absorptive Capacity→Innovation	0.137** (2.937)	
Absorptive Capacity→ Objective Performance	0.040* (2.145)	
Human Capital→ Objective Performance	0.079* (2.360)	
Controls		
Firm Size→ Objective Performance	−0.071 (0.746)	
Family business→ Objective Performance	0.096* (1.215)	

+ Significant at $p < 0.10$.
* Significant at $p < 0.05$.
** Significant at $p < 0.01$.

on both subjective and objective performance. Tables 4 and 5 show the direct and indirect effects, with the t-stats associated to assess the strength of the causal relationships between the endogenous and exogenous variables, and R^2 values to evaluate predictability of the model.

The results for the estimated coefficients of causal relationships showed a significant effect of Absorptive Capacity on Human Capital (β = 0.499**; *p*-value < 0.01), supporting H_1. As we specified in H_2, the Human Capital construct was significantly related to innovation (β =0.274**; *p*-value < 0.05). Finally, H_3 predicted that Innovation had a significant and positive impact on Performance. The results provided support the effect of Subjective Performance (β = 0.259**; *p*-value < 0.05) and Objective Performance (β = 0.289**; *p*-value < 0.05). We have also included Robustness analyses as an Appendix to show that our proposed path is what better explain the ACAP, HC, innovation, performance relationship and to show that the results are similar for 2016 and 2015 performance measure.

The fit indexes for both casual models $SRMR_{subject\_perf} = 0.066$ and $SRMR_{object\_perf} = 0.058$ were adequate as they were lower that the cut-off point of 0.08 (Hu and Bentler 1999). According to Henseler, Hubona, and Ray (2016), we assess the global model goodness of fit in order to avoid potential problems with bootstrapping results. Our results ($SRMR_{subperfo} = 0.066$ and $SRMR_{objperfo} = 0.058$) showed that the fits were adequate in line with bootstrapping indexes.

5. Conclusion

There is a need to identify whether it is innovation that leads to competitiveness or whether it is competitiveness that is reached by means of the capabilities that companies develop in order to innovate. Based on this and other assumptions, this paper aimed to provide a more elaborate analysis of the relationship between ACAP, HC, innovation and performance using unidimensional constructs to

better shape their full relationships. There are previous studies connecting these phenomena. However, most of the research still falls short in explaining the existing relationships among all of them (Lane, Koka, and Pathak 2006). Even more, as the majority of research has evaluated the different dimensions of these concepts, it has been difficult to find clear conclusions.

The explanation of how HC and ACAP enhance innovation and performance could help expand the RBV, HRM and innovation literature. Specifically, this paper has made five main contributions. The first contribution is related to the existing relationship, on the whole, among HC, ACAP, and innovative activity. Even more, our results have shown that the ACAP, HC, innovation and performance path is the best way of explaining how to take advantage of ACAP and HC to innovate and outperform. Our findings improve the innovation literature by providing deeper and more direct analysis of the predictors and consequences of innovation. That is, while previous research has related the different dimensions of ACAP and HC with innovation and performance (e.g. Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009; Flor, Cooper, and Oltra 2018), we believe that it is through the global relationship that we really see the full interrelationship. The second contribution, which enriches the HRM literature, concerns the consequences of HC. That is, in order to make sure innovation takes place, companies need to leverage HC to develop organisational expertise for creating new products and services (Damanpour and Schneider 2006). Organisations must define and apply appropriate human resource management (HRM) practices for managing people and link them to the firm's core capabilities (Peltokorpi and Tsuyuki 2006). The third contribution is related to ACAP. While previous research has revolved around a discussion about dimensionality and the relation of each of the dimensions to innovation, this paper has shown that the global measure of ACAP has an important influence on innovation and HC. The fourth contribution is related to performance. Having found that both of our variables have the same influence on the objective and subjective measures of performance, this gives robustness to our findings and a clearer conclusion. Finally, our fifth contribution is related to the lack of systematic empirical support received for the RBV (Newbert 2007; Lopez-Cabrales, Pérez-Luño, and Valle-Cabrera 2009). For this reason, having demonstrated that a number of resources (knowledge materialised in HC and innovation) and capabilities (ACAP and HC) can be seen as good drivers of competitive advantages, this study presents empirical support for such a theoretical approach.

As is the case of previous studies, our research has certain limitations that provide opportunities for future research. First, due to the limited information available, our study does not include all of the variables that explain performance. Second, we relied on cross-sectional data gathered in 2013. However, this does not represent a relevant problem because our objective performance measure is from 2016, showing that performance has increased from the innovations developed three years before. We believe that the time lag, in this case, is an advantage instead of a limitation because in several occasions, testing contemporary effect might be misleading (Agostini, Filippini, and Nosella 2015). As argued by Agostini, Filippini, and Nosella (2015), Jiao et al. (2016) and Pérez-Luño, Gopalakrishnan, and Valle-Cabrera (2014), it is important to take time lag into account to ensure that performance has been reached from those innovations. Finally, our study is based on one sector only, the wine industry. While we believe that this adds value to the literature by the specific analysis developed, future research confirming our hypotheses in other contexts would be desirable.

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