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# From social capital to entrepreneurial orientation: The mediating role of dynamic capabilities

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ABSTRACT

This paper analyzes how social capital and its three dimensions—structural, relational, and cognitive—affect entrepreneurial orientation through dynamic capabilities. We specifically analyzed the effect of each dimension of social capital on firms' entrepreneurial orientation and the mediating effect of dynamic capabilities to explain these relationships. This study was conducted on a sample of firms in the Spanish agri-food industry. The results of the empirical analysis show that dynamic capabilities are generated by firms' social capital. Dynamic capabilities lead relational and cognitive social capital to develop a higher entrepreneurial orientation. The negative effect of structural social capital can only be countered if firms build and develop dynamic capabilities.



## 1. Introduction

In the last few decades, entrepreneurial orientation (EO) has been consolidated as a differentiating firm factor in the entrepreneurship literature (Covin & Lumpkin, 2011). According to Lumpkin and Dess (1996), EO is defined as a firm's strategic orientation that captures the methods, practices, and decision-making styles that managers use to act entrepreneurially. Despite the extensive literature linking EO to firm performance (Avlonitis and Salavou, 2007; Sciascia, D'Oria, Bruni, & Larrañeta, 2014), only a few studies have analyzed its antecedents (De Clercq, Dimov, & Thongpapanl, 2013; Kyrgidou & Spyropoulou, 2013). Therefore, the origins of EO remain unclear, and researchers should move toward the study of less explored areas, such as social capital (SC), to explain and predict EO (Wales, Gupta, & Mousa, 2013). In line with this, Stam and Elfring (2008) highlighted that it is an important research agenda to investigate how SC encourages or discourages EO. The limited number of existing studies do not clarify how SC influences EO because they show somewhat divergent results: positive (Kaasa, 2009; Kwon & Arenius, 2010), negative (Inkpen & Tsang, 2005; Nooteboom, 2002), or even curvilinear effects (Molina-Morales and Martínez-Fernández, 2009). To improve our understanding of this particular research issue and fill this important gap in our knowledge, we introduce dynamic capabilities (DCs) as a key driver factor to explain this relationship.

The SC perspective has received increasing attention in the field of management. In line with studies undertaken by Stam and Elfring (2008), we used the definition of SC proposed by Nahapiet and Ghoshal (1998) in this paper, considering it to be the actual and potential resource available to a firm through its network of relationships. Previous literature has shown how a firm's SC can strengthen cooperation with suppliers, improve interfirm learning (Ramström, 2008), and encourage the identification of new opportunities and acquisition of complementary resources (Gulati, Nohria and Zaheer, 2000). Despite the numerous contributions made over recent years from both the SC perspective and that of firm EO, we found few studies that connect the two. Thus, Stam and Elfring (2008), employing the idea that in the field of entrepreneurship, EO "remains virtually untouched by theory and empirical research on the network forms of SC" (Burt, 2000, p. 372), suggest the need to explore this field of study further. Some studies have addressed the role of the generation of SC in the process of a firm's creation (Anderson, Park and Jack, 2007). Moreover, a firm's SC both facilitates the exploitation of innovative opportunities with

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uncertain results and improves the ability to identify information asymmetries, thereby enabling the discovery of new opportunities (Hargadon, 2002). However, the study has also shown problems linked to cost and time spent on maintaining relationships, and the concepts of redundancy, blindness, inertia, and myopia. Thus, the literature suggests there will be contradictory effects of SC on a firm's EO depending on the SC dimension analyzed, which the current debate has not yet resolved. Furthermore, we find studies that show both positive and negative effects in the three dimensions of SC proposed by Nahapiet and Ghoshal (1998), i.e., structural, relational, and cognitive. The structural dimension is the most controversial of these. In addition, the literature establishes that dense networks of strong ties allow for the transmission of tacit knowledge and identification of further opportunities (Kaasa, 2009). However, different authors establish its negative effects (McEvily and Zaheer, 1999; Molina-Morales and Martinez-Fernández, 2009). Similarly, although several studies establish a positive relationship between relational SC, specifically trust, and a firm's perception of new opportunities (Kwon & Arenius, 2010), some authors point out that high levels of trust can produce rigidity, setting up barriers against new opportunities (Nooteboom, 2002), which would, in effect, limit a firm's EO. With respect to cognitive SC, having common norms and goals favors the exchange of valuable information (Tang, 2010), which promotes an EO. However, some authors specify that this type of SC can discourage individual initiative (Woolcok, 1998). Given the heterogeneity in the meaning and implications of SC (Franke, 2005), we analyzed it as a multidimensional construct (Nahapiet and Ghoshal, 1998), where each dimension may exert a different effect on a firm's EO.

Following the demands identified in the previous literature, in the present paper, we analyzed new explanatory factors that advance our understanding of the process by which a firm develops EO through their SC. Specifically, the DC approach helps to highlight and understand the link between SC and a firm's EO. Thus, Helfat and Martin (2015) established that a firm's EO is determined by its DCs. Furthermore, studies such as those of Zahra, Sapienza and Davidsson (2006) and Teece (2007) specify that the presence of a greater or lesser EO depends on the DCs developed by the firm. DC is defined as "the ability of an organization to integrate, build and reconfigure internal and external competencies in order to cope rapidly with changes in the environment" (Teece, Pisano and Shuen, 1997, p. 516). The SC developed by firms from their relationships with other actors may favor the development of DCs. Thus, SC develops certain mechanisms that transform external knowledge in DCs, which can be exploited in new products, processes, or services (Zahra & George, 2002). Moreover, the development of DCs deters a firm's EO (Helfat and Martin, 2015; Teece et al., 1997). Specifically, a firm's EO will depend on the DCs they develop (Kyrgidou & Spyropoulou, 2013). Therefore, the DC approach serves as a key link between the SC possessed by the firm and its transformation, adaptation, and use for the development of EO.

Thus, the role of DCs can explain existing doubts about the relationship between the three SC dimensions and a firm's EO. This paper serves to fill the gap identified in the literature, offering a solution to the dispute surrounding the divergent effects of each type of SC on the EO. Our aim is therefore to analyze the mediating role of DCs to explain the link between SC (structural, relational, and cognitive) and EO. To this end, we propose that SC will lead firms to develop an EO only if this SC is oriented toward creating and strengthening their DCs.

This paper presents three main contributions. First, we observe that DC drives the relationship between SC and EO. Thus, DC allows us to understand and resolve the doubts existing about this effect. Second, we provide an in-depth analysis of the heterogeneous effect of each SC dimension, in line with those works that require the independent analysis of each element. Third, this study links three theoretical approaches, SC, EO, and DC, that were subject to growing interest over the last two decades in the business administration literature to respond to the demand of previous publications, examining the main antecedents of EO both theoretically and empirically (Wales et al., 2013).

We first, therefore, explain the theoretical basis of our work and the hypotheses. Second, we describe the methodology and the results obtained. Third, we present the discussion of these results, the main conclusions that can be drawn from them, and the wider implications that follow.

## 2. Theory and hypotheses

### 2.1. Entrepreneurial orientation

Covin and Lumpkin (2011) highlight the three fundamental reasons why the research on a firm's EO bridges an important gap in the entrepreneurship literature. First, it has been shown that EO is a valuable construct for understanding how and why some firms are able to renew themselves regularly over time through new paths of growth (Morris, Kuratko and Covin, 2011). Second, the EO exists as a continuous variable or a set of variables that represent one or more dimensions in which firms can be framed. Thus, this concept offers a common measurement by which entrepreneurship can be assessed. Finally, EO occupies a distinct space from other entrepreneurial concepts, such as entrepreneurial culture and climate. Thereby, Covin and Lumpkin (2011) suggest that EO is not a specific and unique act or behavior, but it is the essential element of the entrepreneurial process. As stipulated by Lumpkin and Dess (1996, p. 136), EO is defined as "the methods, practices, and decision-making styles managers use to act entrepreneurially. These include such processes as experimenting with promising new technologies, being willing to seize new product-market opportunities, and having a predisposition to undertake risky ventures."

Previous literature has proposed that EO is shaped by several dimensions, representing different characteristics of the firm's strategic orientation. Initially, Miller (1983) and Covin and Slevin (1989) identified three aspects to define the EO construct: innovativeness, proactiveness, and risk-taking. Two additional dimensions, competitive aggressiveness and autonomy, were incorporated by other authors, who suggested that these new characteristics must be observed within an entrepreneurial process (Lumpkin and Dess, 1996). Innovativeness refers to the firm's propensity to support new ideas, novelty, and creativity, and the process that results in new products, services, or technological processes (Lumpkin and Dess, 1996). Proactiveness represents a future perspective, trying to anticipate changes and opportunities in the environment, to develop new products or improvements in the current products, detect future market trends, and promote changes in tactics (Hughes & Morgan, 2007). The essence of proactiveness is in a firm's ability to introduce new products and services to capitalize on market opportunities (Wang & Altinay, 2012). Risk-taking represents the willingness to take advantage of opportunities that have arisen in the environment, although the firm knows neither the likelihood of its success nor the consequences of its actions (Lumpkin and Dess, 1996). Competitive aggressiveness represents the firm's behavior to improve their position in the industry, challenging its competitors directly and intensely (Lumpkin and Dess, 1996). Finally, autonomy refers to the willingness of the firm to allow the independent individual or team action and supporting an idea or vision and bringing it to completion in a self-directed process (Hughes & Morgan, 2007). As De Clercq et al.

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(2013: 507) highlighted, there are two conceptualizations of a firm's EO in the literature, the composite dimension approach and the multidimensional approach, stating that "recent reflections suggest that neither approach is intrinsically superior." In the present study, following the study by De Clercq et al. (2013), we adopted the dimensional approach. According to Covin and Slevin (1991), the EO subdimensions are simply behavioral manifestations of a strategic orientation. This implies that a change in one dimension alone would not reflect a change in EO, but a change in a firm's EO would generate a change in all five dimensions (Zhang, Zhang, Cai, Li and Wei, 2016). Therefore, firms must exhibit a high value in each EO dimensions for them to be considered to possess an entrepreneurial behavior or orientation. Therefore, when each dimension varies independently, we cannot consider this behavior as entrepreneurial, and EO should be perceived as a second-order reflective model (George, 2011).

The literature has shown that the establishment of an EO leads firms to obtain greater sustained performance over time (Lumpkin and Dess, 1996; Rauch, Wiklund, Lumpkin and Frese, 2009; among others). Furthermore, EO research focuses on the EO−performance relationship or the effect of contingent variables. However, there are few studies that analyze the antecedents of EO and study the effects of some variables such as environmental influence (Becherer & Maurer, 1997), top managers' characteristics (Simsek, Heavey, & Veiga, 2010), or strategic process (Green, Covin and Slevin, 2008). Previous studies suggest the need to advance the study of SC to explain and predict EO (Huang, Wang, Tseng, & Wang, 2010; Wales et al., 2013). Stam and Elfring (2008) also indicate that focusing on which conditions of the firm's SC improve or limit EO is an important item on the research agenda. It is clear that the availability of SC affects knowledge transmission; however, how the different dimensions of SC affect the EO remains to be examined. Thus, as will be described with more detail in the next section, SC can promote access to resources, markets, and technologies and facilitate the exploitation of innovative opportunities; a high SC can also, however, generate problems such as redundant information, problem blindness, and a high investment of time and cost to maintain the relationships, which can adversely affect the development of an EO. It is therefore important to analyze the influence of SC and DC on EO.

### 2.2. Social capital and entrepreneurial orientation

SC theory has gained increasing importance over the last few decades, showing the benefits derived from the firm's position in a social network. SC provides value to the actors, allowing them to take advantage of the resources established in their relationships (Bourdieu, 1986) and obtain a competitive advantage over their rivals (Tsai & Ghoshal, 1998). The generation of intellectual capital (Nahapiet and Ghoshal, 1998), the attainment of resources and knowledge-based capabilities (Rowley, Behrens and Krackhardt, 2000), and knowledge acquisition among actors have variously been explained through a firm's SC (Houghton, Smith, & Hood, 2009; Tsai & Ghoshal, 1998; Yli-Renko, Autio, & Sapienza, 2001). Thus, SC can be considered to be a strategic resource as it is unique, difficult to imitate, and invisible to competitors (Galaskiewicz and Zaheer, 1999; Stam and Elfring, 2008). We define SC as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal, 1998, p. 243).

Nahapiet and Ghoshal (1998) distinguish three dimensions of SC: structural, relational, and cognitive SC. The structural dimension refers to the network of relationships that the firm possesses, which aims at including the social interaction produced in the network, focusing on the properties of the social system and network of relationships as a whole (Nahapiet and Ghoshal, 1998). Its main aspects are the network density and the strength of the links. The relational dimension analyzes the characteristics of personal relationships that actors or firms have developed through their history of interactions (Granovetter, 1992). The main aspect of this dimension is trust, which refers to a firm's belief that the other actors in the network will not act opportunistically (Nahapiet and Ghoshal, 1998; Tsai & Ghoshal, 1998). Finally, the cognitive dimension represents the "resources providing shared representations, interpretations, and systems of meaning among parties" (Nahapiet and Ghoshal, 1998, p. 244), their essential components being goals and shared culture. According to previous literature, SC should be analyzed as a multidimensional construct, which involves the definition and measurement of several dimensions (Koka and Presscott, 2002) because each component of SC can have differentiated effects on the analyzed dependent variable. In this way, we avoid the loss of explanatory power, which is produced by grouping the SC dimensions in a single index (Franke, 2005).

Previous studies have analyzed EO and SC as independent variables without a close examination of their interrelationships (Stam and Elfring, 2008). However, the need for research on which characteristics of SC improve EO is highlighted in the literature (Wang & Altinay, 2012). Anderson et al. (2007) suggest that SC is essential in the entrepreneurship process. SC is a key element for the development of entrepreneurial behavior, promoting access to resources, markets, and technologies. Therefore, SC facilitates the exploitation of innovative opportunities with uncertain results and improves the ability to identify asymmetries in the information obtained through these relationships (Hargadon, 2002). However, SC also carries a series of conditions that can adversely affect this relationship. Thus, the problems associated with a strong SC such as redundant information and problems of inertia, blindness, and myopia, together with the investment of time and cost to maintain the relationships, can adversely affect the development of an EO.

Focusing on the structural dimension of SC, we observed that network density and the strength of ties make up the most controversial dimension of SC. Although some studies established that dense networks can promote quick flows of information, mostly of a tacit type, and identify more opportunities than isolated entrepreneurs, there are many authors who establish the predominance of negative effects (Granovetter, 1992; McEvily and Zaheer, 1999; Hansen, 1999; Inkpen & Tsang, 2005; Obstfeld, 2005). Thus, location in networks with higher density and strength in their links will negatively influence the EO (Molina-Morales and Martínez-Fernández, 2009). A higher structural SC produces a fast transmission of information but creates problems of knowledge redundancy, where access to new information to innovate is limited (Koka and Prescott, 2002). Furthermore, this situation in turn may lead to an internal block, blindness, and myopia (Inkpen & Tsang, 2005; Exposito-Langa and Molina-Morales, 2010), which translates into a reduction of both proactiveness and detection of new opportunities. Moreover, these networks can lead firms to commit themselves to known technology and to the demands and preferences of their current customers (Atuahene-Gima, Li, & De Luca, 2006), which again discourages the development of risk-taking behavior. In addition, firms avoid opportunistic behavior to exploit potential advantages (Gulati, 1998), and they probably conduct fewer competitively aggressive activities against each other (Gnyawali & Madhavan, 2001). Finally, the communication structure of the network generates a mechanism that encourages collective coordination so that each actor coincides with the joint expectations (Walter, Lechner, & Kellermanns, 2007), developing strong restrictions on an actor's autonomous actions (Rowley, 1997).

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The knowledge redundancy derived from a greater structural SC can reduce the likelihood of firms' accessing new and specific information, thereby discouraging the development of an EO. These networks limit firms' innovation activities, the discovery of new opportunities, or the launch of new products ahead of competitors through a more conservative behavior. Thus, the negative effects of structural SC exceed the positive effects, producing a net negative influence on the EO. From these arguments, we propose the following hypothesis:

**H1**. *Structural SC has a negative effect on EO.*

Regarding the relational dimension, we observe that trust between network actors can boost the firm's EO. If there is trust between firms, it will reduce monitoring costs, allowing time and money to be devoted to other actions such as innovative activities (Kaasa, 2009), which in turn can lead to more radical innovative cooperative projects (Akçomak & Ter Weel, 2009). Therefore, relational SC facilitates innovation, learning, and creativity (Meeus, Oerlemans, & Hage, 2001). In addition, a greater relational SC favors the transmission of new information, which, combined with existing knowledge (Shane, 2000), can improve proactiveness. Trust is an essential factor by which some actors, but not others, will have a gateway to new information and perceive entrepreneurial opportunities (Kwon & Arenius, 2010). Moreover, relational SC can help to overcome institutional constraints in the entrepreneurial process and gain access to key sources of competitive information (Florin, Lubatkin and Schulze, 2003). Thus, when managers are asked what protects their new risk-exposed projects from the opportunistic behavior of the other actors with whom information is exchanged, managers often respond using the word "trust" (Larson, 1992). Relational SC also makes it possible for firms to be able to implement their competitive aggressiveness through product promotions, sales incentives, or improvements to existing products ahead their competitors (Smith, Ferrier, & Ndofor, 2001). Finally, a lack of trust implies the need for an increase in the monitoring costs (Langfred, 2004), which can cause a reduction in the individual autonomy of actors.

In short, relational SC, through a greater trust among actors, allows the exchange of confidential information, reduces the need for monitoring other actors and opportunistic behavior, and increases the chances of developing mutual collaborative actions. Thus, a greater relational SC improves the firms' EO through the perception of new opportunities, the likelihood of developing new innovations, or undertaking risky actions ahead of competitors. In this sense, we propose the following:

**H2**. *Relational SC has a positive effect on EO.*

A greater cognitive SC promotes the same perception about how to interact and, therefore, network actors can avoid any potential misunderstandings in communications (Tsai & Ghoshal, 1998). Thus, the higher the norms, goals, and a common culture, the higher will be the propensity of actors to interpret useful information and knowledge and therefore to innovate (Doh & Acs, 2010). Firms with high levels of cognitive SC can gain a proper understanding of valuable information and, if they act proactively, are able to make better use of knowledge to identify new opportunities (Tang, 2010). A network with high cognitive SC allows firms to take advantage of external information and resources, favoring a greater risk-taking (Iturrioz, Aragón and Narvaiza, 2015). In addition, cognitive SC allows for practices and behaviors of other actors to be better known, making it much easier to form a correct interpretation of their actions. Therefore, firms that begin a competitive action will have a greater likelihood of receiving an immediate response from their rivals (Gnyawali & Madhavan, 2001). Finally, cognitive SC encourages independent thinking, thus reducing the need for support and compliance (Sexton and Bowman, 1985), which can increase autonomy in strategic behavior.

In short, cognitive SC through the norms, goals, and culture shared among actors allows firms' proper comprehension of external knowledge, thereby avoiding misunderstandings. This improves the firm's EO by promoting practices that are focused on experimentation and creativity, the tendency to be ahead of competitors in introducing novel ideas or products, and a positioning that maximizes the likelihood of exploiting potential opportunities. From these arguments, we propose the following hypothesis:

**H3**. *Cognitive SC has a positive effect on EO.*

### 2.3. The role of dynamic capabilities

In recent years, the DC approach has attracted a growing interest from the management literature (Teece, 2012; Helfat and Martin, 2015), modifying the static perspective of the resource-based view (Peteraf, 1993; Wernerfelt, 1984). This approach explains how firms in a dynamic context can get a competitive advantage and survive in the long term (Schilke, 2014). The internal debate on the DC approach focuses on two main aspects: the nature and concept of DCs and its origin, effects, and consequences. In addition, Peteraf, Di Stefano, and Verona (2013) noted that the DC approach has been built up on two separate knowledge bases, impeding the development of a linear dialogue. On the one hand, Eisenhardt and Martin (2000) argued that DC is considered to be "best practices" with common characteristics among firms. On the other hand, Teece et al. (1997) described DC as a specific combination of each firm, highlighting the uniqueness of the capabilities established. However, Peteraf et al. (2013) emphasized the possibility of unifying these contradictory approaches and yet preserving the differing assumptions. Despite some progress made in recent years, the way forward is far from being clarified. In this paper, we adopted the definition of DC by Teece et al. (1997, p. 516) as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." Thus, in highly dynamic environments, it is necessary not only to replicate the firm's valuable resources to gain a sustainable competitive advantage but also to have the ability to replicate the suitable DC (Teece, 2007).

Despite the advances noticed in the last few years over DC conceptualization, one of the main problems is the existence of several structures and measures, which greatly increases the difficulty to measure the concept (Li & Liu, 2014). Following the study by Jantunen, Ellonen, and Johansson (2012), we use the classification proposed by Wang and Ahmed (2007), which identifies three main dimensions that are related to the classification proposed by Teece (2007): (1) adaptive capacity refers to the firm's ability to identify and take advantage of emerging market opportunities; (2) absorptive capacity represents the firm's ability to recognize the value of new information garnered from outside the firm, assimilate it, and put it to good commercial use (Cohen & Levinthal, 1990); (3) innovation capacity refers to the firm's ability to mobilize and combine the knowledge of its employees to create new knowledge, resulting in a new product or process (Kogut and Zander, 1992). This is to be distinguished from a firm's innovativeness, which as we have previously observed, represents the propensity to pursue new processes or products and shows the willingness of the firm to engage in creativity and experimentation (Lumpkin and Dess, 1996). In accordance with Wang and Ahmed (2007), we considered that these three components can be integrated into a single construct, as proposed in other recent works (Li & Liu, 2014; Lin & Wu, 2014; Makkonen, Pohjola, Olkkonen, & Koponen, 2014).

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Although the three components are conceptually different, they are highly correlated. The joint execution of these three components configures a DC that allows a suitable adjustment of firms' operating routines to be achieved (Wilhelm, Schlömer, & Maurer, 2015), and all these capabilities are necessary if firms require adjustment to changing environments (Ambrosini, Bowman, & Collier, 2009).

Second, in relation to the effects and consequences of DC, several studies have tried to determine the origin of firms' capabilities, highlighting the key role of the SC to generate new resources and strategic capabilities (Helfat and Martin, 2015). Thus, Zahra and George (2002) suggested that SC produces a social integration mechanism, being able to transform the potential external knowledge into a firm's distinctive capabilities. SC provides access to external information and specific tacit knowledge that is difficult to obtain in other ways and favors the development of their DCs (Von den Driesch, da Costa, Flatten, & Brettel, 2015). Therefore, the most valuable resources and capabilities are socially constructed (Schoemaker & Jonker, 2005) and are created by firms' SC (Hsu & Wang, 2012). Firms' SC influences all knowledge absorption processes, facilitates the transfer of tacit and complex knowledge, and enhances the ability of firms to efficiently recognize and evaluate the internal and external information (Zhang and Wu, 2013). Therefore, the acquisition of external tacit knowledge through SC is one of the key factors for the development of capabilities (Kemper, Engenel and Brettel, 2011; Von den Driesch et al., 2015). Each of the SC dimensions, i.e., structural, relational, and cognitive, affects the development and creation of higher DCs. With regard to the structural SC, the availability of a dense network of contacts promotes learning among agents because network density allows sharing of tacit knowledge (Hansen, 1999), produces greater efficiency in negotiation time and costs (Uzzi, 1997), and provides firms with the know-how for the exchanged knowledge (Moran, 2005). These recurrent and close interactions thus play an essential role and allow firms to understand where really relevant tacit knowledge lies and who owns it (Kale, Singh and Pelmutter, 2000).

Regarding the relational SC, it is widely recognized that the existing trust between members of a network allows for a greater sharing of knowledge (Nahapiet and Ghoshal, 1998). When two firms trust each other, commitment to share knowledge increases, particularly tacit knowledge, because opportunism is not a problem and the relationship is mutually beneficial (Tsai & Ghoshal, 1998).

Finally, with regard to cognitive SC, the literature shows that network agents from a similar cultural background acquire tacit knowledge more easily (Parkhe, 1991). Thus, a shared vision among agents is considered an essential mechanism, which unites firms and helps them to observe and integrate knowledge (Inkpen & Tsang, 2005). In addition, it increases the likelihood of the parts of a relationship sharing their resources (Tsai & Ghoshal, 1998). Therefore, in contexts where organizations have a better alignment of their cultures and goals, it is more likely that they can have access to relevant tacit knowledge (Parra-Requena, Molina-Morales and Garcia-Villaverde, 2010). Thus, the SC owned by a company favors the development of its DCs being socially constructed through acquired tacit knowledge. Therefore, we propose the following hypothesis:

**H4**. *SC—structural, relational, and cognitive—has a positive effect on DCs*.

Teece (2007) indicated that DCs are the foundational aspects of firm's competitive advantage in changing environments. In this sense, a firm's EO is determined, among other factors, by the firm's resources and capabilities (Helfat and Martin, 2015). Currently, there are few studies that have provided an explanation for the ability of some firms to create, discover, and exploit entrepreneurial opportunities in a continuous manner. One of the sources of these differences lies in the capabilities that are socially constructed, that is, in the DCs developed by the firm (Zahra et al., 2006). Teece (2007) argues that a firm's innovativeness is constrained by its capabilities. Thus, the capability to acquire and assimilate knowledge effectively is a critical aspect to the firm's innovativeness (Cepeda-Carrión, Cegarra-Navarro, and Jiménez-Jiménez, 2012). Firms must have the ability to acquire information, assimilate the internal knowledge, and exploit the new knowledge developed if they want to be able to recognize changes in the environment and exploit new opportunities (Helfat and Martin, 2015). Moreover, the development of these capabilities enables the accumulation of additional knowledge needed to exploit any available information, therefore improving the firm's proactiveness (Liao, Welsch, & Stoica, 2003). Firms with high DCs have strong communication routines among their employees that help to combine diverse views on a new opportunity and react before a market opportunity closes or loses attractiveness (Rothaermel & Alexandre, 2009). Furthermore, firms with DCs can exploit opportunities more efficiently to overcome rivals' threats, thus blocking these competitors from responding to their actions, and reap above-average returns in their actions (Engelen, Kube, Schmidt, & Flatten, 2014). They may anticipate a rival's competitive actions, minimize the potential adverse effects of entrepreneurial initiatives with unexpected results, and help to improve the breadth and depth of knowledge for making decisions (Green et al., 2008), thus facilitating the autonomous individual development of new creative ideas. Therefore, we propose the following hypothesis:

**H5**. *DCs have a positive effect on EO*.

This reasoning indicates the possibility that DC may mediate the relationships between SC dimensions and EO. As noted above, SC requires investments in resources and time, which without maintenance could gradually decay (Burt, 2002). SC produces several risks such as information redundancy, myopia, inertia, providing common goals (which can generate group thinking), and costs in terms of time and resources used to develop and maintain SC, which results in a loss of objectivity and opportunism. These problems can produce a similar behavior that further decreases a firm's EO and performance (Hsu & Wang, 2012). In this way, given an awareness of the downside of SC, DCs can facilitate the resolution of the problems that the firm might find itself confronted with (Westerlund & Svahn, 2008). Networks allow firms to share risk and profit from the expertise, information, and knowledge of other actors. Firms may refrain from pursuing risky actions if they do not have the ability to interpret partners' knowledge, thus inhibiting the firm's EO (Engelen et al., 2014). Therefore, knowledge flows between firms through higher SC do not guarantee the transformation of this knowledge into a higher EO. It will be those firms that leverage their SC to obtain DCs, taking advantage of external knowledge to generate complementary capabilities, which exhibit a higher EO, enabling the firm to identify, assimilate, transform, and exploit (Zhang and Wu, 2013). Thus, DCs lead firms to effectively exploit the knowledge gained from their SC (Jantunen, 2005), enabling firms to recognize and interpret the new perspectives, opportunities, and the most suitable alternatives through the firm's SC (Atuahene-Gima & Murray, 2007).

Briefly, the social strengthening of DCs is a mechanism through which firms can take advantage of their SC to develop an EO, thus avoiding the potential obstacles that may arise. Therefore, firms will only be able to develop a higher EO if they can transform the resources obtained through their SC to generate and develop socially constructed capabilities. In this way, regardless of the direct effect of SC, if firms orient their SC (in any of its three dimensions) to the development of DCs, it promotes EO. From the previous arguments, we propose the following hypothesis:

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**H6**. *DCs mediate the relationships between SC (structural, relational, and cognitive) and EO.*

## 3. Method

### 3.1. Sample

We developed our empirical study in the Spanish agri-food industry. According to the Ministry of Industry, Tourism and Trade, the agri-food industry boasts the greatest weight in the Spanish industrial activity in terms of production, number of employees, and firms. It represents 8% of Spanish GDP and 22% of Spanish industrial GDP. This industry is proportionally distributed throughout the national territory, lending it great importance as an axis of territorial development. In the last few years, novel food technologies such as genetically modified foods and food irradiation (Frewer et al., 2011) have brought about several technological changes in the industry to fulfill the changing demands of consumers (Sarkar & Costa, 2008). Moreover, the Spanish Industrial Policy Plan 2020 considers the agri-food industry to be a strategic subsector of the Spanish economy because of its potential growth, its ability to stimulate other industries, and its strong export orientation. To compete globally, this industry combines maturity, tradition, predominance of small firms, and territorial embeddedness, with an increasing internationalization, technological innovation, and development of distribution channels. These features make the agri-food industry an appropriate context in which we can perform our empirical analysis. Firms in this industry relate with other firms to acquire the necessary knowledge and implement their actions. SC is, therefore, a key element in developing both DCs needed to acquire and exploit the potential knowledge and an entrepreneurial behavior.

For the development of our research, we explored several databases to obtain the required information: SABI,[1] Camerdata,[2] INE,[3] and food industry associations. To configure our database, we excluded firms with fewer than 20 employees[4] as an additional requirement. After eliminating duplicate cases, errors, and businesses that had disappeared, 2887 companies remained. Following the suggestion made by Dillman (1978), and to ensure the quality of responses, we organized the questionnaire design process in several steps. In May 2012, we sent a questionnaire addressed to the firms' CEOs by post and by e-mail. We obtained 292 valid questionnaires, representing a response rate of 10.11% for a confidence level of 95% and a more unfavorable situation of $p = q = 0.5$. The obtained sampling error was 5.41%.

To check whether sample data were representative of the population, we conducted a mean difference test. The results of this analysis do not show significant differences in terms of age and size between respondents and nonrespondents.[5] Moreover, we did not observe significant differences in the structural characteristics between early (173 firms) and late respondents (119 firms)[6] for the variables used in our work (Armstrong and Overton, 1977).

Finally, we performed two tests to control the validity of the subjective assessments of individual responses. First, we performed the Harman test[7] (Podsakoff, MacKenzie, Podsakoff and Lee, 2003). Second, we sent back the same questionnaire to those firms that had responded previously for it to be completed by another manager. We obtained a subsample of 49 firms (16.78% of the total sample), similar to the rates observed in previous studies (Molina-Morales and Martínez-Fernández, 2006; Tomlinson & Fai, 2013). We did not find significant differences between the first and second manager in each of the constructs used in our study through an ANOVA test.

### 3.2. Measures[8]

The scales used to measure the constructs were obtained from previous literature. All items were measured on seven-point Likert scales, ranging from "1" (strongly disagree) to "7" (strongly agree), except for the EO scale in which we used pairs of opposing statements.[9]

*Entrepreneurial orientation*: Following the proposal of Lumpkin and Dess (1996), we analyzed this variable through five dimensions: innovativeness, proactiveness, risk-taking, competitive aggressiveness, and autonomy. The first three dimensions of the construct were measured through the scale of nine items proposed by Covin and Slevin (1989), widely used in the literature. To measure the two additional dimensions of the extended proposal, we used the scale proposed by Lumpkin and Dess (2001) to measure competitive aggressiveness and the scale proposed by Lumpkin, Cogliser, and Schneider (2009) to measure autonomy. In the EO literature, there is a broad debate about its dimensionality (Anderson, Kreiser, Kuratko, Hornsby, & Eshima, 2014; George, 2011). The approach depends on the consistency between conceptualization of the EO construct and the empirical data used (Covin & Lumpkin, 2011). Therefore, we agree with Covin and Wales (2012) that researchers are free to choose the measurement approach that best serves their purposes. Following the Covin, Green, and Slevin (2006) approach, we analyzed EO as an aggregate construct that includes the five dimensions that are correlated and converge in a single construct of EO.

*Social capital*: We analyzed this variable through the different dimensions proposed by Nahapiet and Ghoshal (1998), namely structural, relational, and cognitive. To measure structural dimension, we observed network ties and network configuration. We used the scale proposed by Maula, Autio, and Murray (2003) to measure network ties. This scale measures the frequency of interactions and the closeness and strength of the relationships. In addition, we analyzed network configuration through network density. The scale used was adapted from Molina and Ares (2007), which has been used itself in recent studies (Parra-Requena, Ruiz-Ortega, & Garcia-Villaverde, 2012). We selected the scale proposed by Kale et al. (2000) to measure trust, i.e., relational SC. Finally,

[1] SABI is a directory of Spanish and Portuguese firms that shows general information and financial data. It compiles information of >95% of the firms with total yearly revenues >360,000–420,000 €.

[2] Camerdata database compiles a directory of all Spanish firms from the local Chambers of Commerce.

[3] Spanish National Institute of Statistics (INE).

[4] This requirement has been proposed in previous works in the field of business management and has been justified by the need to control the effects related to the size and flexibility of the organizational structure and to ensure a minimum operating structure (Spanos & Lioukas, 2001).

[5] The average sizes for all respondents (83.64) and nonrespondents (84.03) did not show significant differences ($F = 0.01$; $p = 0.973$). The minimum and maximum values of the size were 20 and 1640 for respondents and 20 and 3497 for nonrespondents, respectively. Similarly, the average ages for all respondents (25.40) and nonrespondents (26.42) did not show significant differences ($F = 1.068$; $p = 0.301$). The minimum and maximum values of the age were 2 and 111 for respondents and 2 and 122 for nonrespondents, respectively.

[6] Number of firms between early respondents (within 2 months) and late respondents (after 2 months).

[7] The principal component factor analysis of all the variables used in our model explains a 70.64% of the variance in the data and the unrotated factor structure does not show a general factor—the first factor accounted for 30.06% of the variance (Gruber, Heinemann, Brettel and Hungeling, 2010).

[8] We have included the items in the Appendix.

[9] The minimum and maximum values of each of the variables in our paper coincided with the extreme values of the scales used, i.e., 1 and 7.

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cognitive SC was measured by shared goals and culture, the items used in Tsai and Ghoshal (1998) and Yli-Renko et al. (2001) being used here to measure shared goals. Finally, we selected the scale validated by Simonin (1999) to measure the shared culture between network actors.

*Dynamic capabilities*: We used the classification proposed by Wang and Ahmed (2007) to measure DCs. This is similar to Teece's (2007) classification and distinguishes three categories of capabilities: adaptive, absorptive, and innovative. We adapted the scale proposed by Gibson and Birkinshaw (2004) to measure adaptive capacity. To measure absorptive capacity, we selected the scale proposed by Flatten, Engelen, Zahra, and Brettel (2011). Finally, we used the scale proposed by Akman and Yilmaz (2008) to measure innovative capacity. We produced a reflective second-order construct with these three capabilities.

*Control variables*: In the present study, we introduced six control variables. *Firm size* was measured by the number of employees. Larger firms tend to be more technocratic in decision-making and more mechanical in their structures (Green et al., 2008), which may hinder their EO. Nevertheless, previous literature has obtained conflicting results: some studies showing a positive relationship between size and EO (Simsek et al., 2010; Su, Tsang, & Peng, 2009). The *firm age* measures the difference between the firm's year of establishment and the date of data collection. Older firms have a greater experience in entrepreneurial practices that favor the development of their EO (Kyrgidou & Spyropoulou, 2013). However, the firm's age can also be a negative factor because it creates a higher rigidity in the firm (Lee, 2008). *Firm type* represents a dummy variable distinguishing between an independent firm (0) and a corporation business unit (1). Thus, subsidiaries must deal with rules and more bureaucratic regulations than independent firms, which hinders change and adaptation (Bradley, Aldrich, Shepherd, & Wiklund, 2011), worsening their EO. However, the direct links of a subsidiary can improve it if the parent company has a more innovative or proactive behavior (Bradley et al., 2011; Covin & Slevin, 1991). We also incorporated a *subindustry variable* to control the heterogeneity of firms in each agri-food industry subsectors: foods (0) and beverages (1). We included this dummy variable because the characteristics and the particular competitive aspects of each branch of the industry can affect the overall processes and behaviors of firms (Bremmers, Omta, Kemp, & Haverkamp, 2007). We adapted the measure of *environment hostility* from the scale proposed by Covin, Slevin, and Heeley (2000). The previous literature shows that this variable is a key determinant of a firm's EO (Green et al., 2008). However, this literature has provided contradictory results, even showing a negative correlation between increases in the hostility level and a firm's innovativeness (Miller & Friesen, 1983). Finally, we included the *firm's family condition*, adapting the scale proposed by Zahra (2005) in this one item. The literature indicates that family business is characterized by being conservative (Sharma, Chrisman and Chua, 1997), which contradicts the characteristics of an entrepreneurial firm (Naldi, Nordqvist, Sjöberg and Wiklund, 2007). However, there are counterarguments that suggest that family firms promote their entrepreneurial capacity and perform risky actions and business (Zahra, Hayton, & Salvato, 2004).

#### 3.2.1. Analysis

To develop our empirical analysis, we used structural equation analysis because it has some advantages over traditional multivariate analysis (Haenlein & Kaplan, 2004). In this sense, we used partial least squares (PLS) with SmartPLS software. This technique is appropriate for data analysis during the early stages of theory development when the theoretical model is not definitively determined. We considered PLS to be a suitable analysis technique for our study because it establishes minimum requirements on the sample, on the measurement scale (nominal, ordinal, interval, or ratios), and on the distribution of observable variables; also, it does not need the normality of the data and is more suitable for small samples (Falk & Miller, 1992). In addition, PLS is robust in relation to three potential shortcomings: skewed distributions in the manifest variables, multicollinearity of latent variables and between indicators, and the incorrect specification of the structural model due to omission of regressors. Furthermore, structural equation modeling techniques are recommended to test the mediation hypothesis (James, Mulaik and Brett, 1982).

## 4. Results

### 4.1. Evaluation of the measurement model

To evaluate the reliability and validity of the measurement model, we performed four analyses through PLS: individual item reliability, scale reliability, convergent validity, and discriminant validity. First, we assessed individual item reliability through the analysis of the loading items ($\lambda$). All indicators exceeded the proposal of Carmines and Zeller (1979, pp. 7–17), i.e., 0.707. In addition, we studied composite reliability ($\rho_c$) to analyze scale reliability. As shown in Table 1, all values exceed the threshold of 0.8 (Nunnally, 1978), showing a strict reliability. We analyzed the average variance extracted (AVE) to evaluate convergent validity. All of them had an AVE above the recommended value of 0.5 (Fornell and Larcker, 1981).

To analyze discriminant validity, Barclay, Higgins, and Thompson (1995) proposed that the variance shared with other variables must be lesser than the variance between a variable and its indicators. As shown in Table 1, the results obtained confirm the validity of our constructs because each construct is most intensely associated with its indicators rather than with other constructs of our model.

In addition, we developed a confirmatory factor analysis (CFA) with EQS 6.1 software. This analysis allowed us to assess the correspondence between the characteristics of the construct and the data on it. Once the CFA indicators are removed, we note that, in general, we have obtained a good fit (Table 2).

### 4.2. Evaluation of the structural model

The results in Table 3 show that structural SC has a negative but not significant effect on EO; therefore, we cannot confirm hypothesis 1 ($\beta = -0.044$). Relational SC has a positive and significant influence on firms' EO, allowing us to corroborate hypothesis 2 ($\beta = 0.220$; $p < 0.01$). Finally, the results allow us to accept Hypothesis 3, which proposed a positive and significant effect of cognitive SC on a firm's EO ($\beta = 0.210$; $p < 0.01$).

Table 4 shows the effect of SC dimensions on DCs. The results show the existence of a positive and significant effect of SC on DCs; therefore, we can accept Hypothesis 4. In this analysis, we highlight the key role of cognitive SC for the building and development of a firm's DCs. In addition, the results show that DCs exert a positive and significant influence on a firm's EO, corroborating Hypothesis 5.

To analyze the mediation hypothesis, we must check the four conditions proposed by Baron and Kenny (1986). With regard to the first condition, the direct relationship between the independent variable, i.e., SC dimensions, and the dependent variable, i.e., EO, must be significant. This condition is fulfilled for relational and cognitive SC. However, we cannot confirm this first condition for the structural dimension. The second condition analyzes the relationship between the independent variable and mediating variable.

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**Table 1**
Correlation matrix, scale reliability, and convergent and discriminant validity.

| | Mean | Standard deviation | Average variance extracted | Composite reliability | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Innovativeness | 3.961 | 1.386 | 0.707 | 0.878 | **0.841** | | | | | | | | | | | | | | | | |
| 2. Proactiveness | 4.267 | 1.326 | 0.769 | 0.909 | 0.648 | **0.877** | | | | | | | | | | | | | | | |
| 3. Risk-taking | 3.702 | 1.258 | 0.794 | 0.920 | 0.607 | 0.663 | **0.891** | | | | | | | | | | | | | | |
| 4. Aggressiveness | 3.94 | 1.323 | 0.878 | 0.935 | 0.488 | 0.543 | 0.658 | **0.937** | | | | | | | | | | | | | |
| 5. Autonomy | 3.508 | 1.165 | 0.658 | 0.884 | 0.377 | 0.453 | 0.486 | 0.458 | **0.811** | | | | | | | | | | | | |
| 6. Structural social capital | 4.936 | 0.925 | 0.742 | 0.851 | 0.274 | 0.223 | 0.202 | 0.210 | 0.118 | **0.861** | | | | | | | | | | | |
| 7. Relational social capital | 4.965 | 0.975 | 0.615 | 0.888 | 0.286 | 0.302 | 0.243 | 0.243 | 0.236 | 0.678 | **0.784** | | | | | | | | | | |
| 8. Cognitive social capital | 4.62 | 1.032 | 0.826 | 0.904 | 0.317 | 0.282 | 0.284 | 0.301 | 0.184 | 0.592 | 0.629 | **0.909** | | | | | | | | | |
| 9. Adaptive capacity | 4.6758 | 1.131 | 0.752 | 0.900 | 0.415 | 0.391 | 0.325 | 0.324 | 0.388 | 0.452 | 0.461 | 0.445 | **0.867** | | | | | | | | |
| 10. Absorptive capacity | 4.587 | 1.105 | 0.728 | 0.914 | 0.470 | 0.487 | 0.437 | 0.414 | 0.410 | 0.522 | 0.535 | 0.578 | 0.646 | **0.853** | | | | | | | |
| 11. Innovative capacity | 4.7 | 1.757 | 0.757 | 0.939 | 0.535 | 0.554 | 0.481 | 0.448 | 0.393 | 0.494 | 0.494 | 0.522 | 0.680 | 0.838 | **0.870** | | | | | | |
| 12. Age | 32.48 | 31.78 | 1 | 1 | −0.006 | 0.020 | −0.008 | −0.020 | 0.016 | −0.008 | −0.028 | −0.027 | 0.009 | −0.067 | −0.054 | **1** | | | | | |
| 13. Size | 77.66 | 119.3 | 1 | 1 | 0.169 | 0.105 | 0.113 | 0.136 | 0.038 | 0.210 | 0.071 | 0.125 | 0.153 | 0.153 | 0.117 | 0.043 | **1** | | | | |
| 14. Firm type | – | – | 1 | 1 | −0.043 | −0.099 | −0.112 | −0.103 | −0.050 | 0.005 | 0.046 | −0.013 | −0.023 | −0.051 | 0.009 | 0.084 | −0.175 | **1** | | | |
| 15. Subindustry | – | – | 1 | 1 | 0.028 | 0.039 | −0.001 | −0.027 | −0.043 | 0.035 | 0.033 | 0.047 | 0.028 | 0.019 | 0.024 | 0.051 | −0.025 | −0.063 | **1** | | |
| 16. Familiar | – | – | 1 | 1 | −0.063 | −0.051 | −0.024 | −0.009 | −0.079 | 0.047 | 0.042 | 0.032 | −0.050 | −0.020 | 0.032 | 0.178 | −0.066 | 0.192 | −0.068 | **1** | |
| 17. Hostility | 5.121 | 0.979 | 0.618 | 0.761 | 0.087 | 0.115 | 0.123 | 0.171 | 0.097 | 0.183 | 0.182 | 0.185 | 0.166 | 0.219 | 0.247 | 0.013 | 0.079 | 0.046 | 0.016 | −0.003 | **0.786** |

Bold numbers are the square root of the AVE of each construct.

We have observed that the relationship between SC dimensions and DCs is significant; therefore, we can corroborate this second condition. The third condition establishes a significant relationship between the mediator variable and the dependent variable. This condition is corroborated as we can observe a positive and significant relationship between DCs and EO ($\beta = 0.610$; $p < 0.001$). To fulfill the fourth condition, the relationship between the independent variable and the dependent variable should be substantially reduced or even eliminated when we introduce the mediating variable. In our case, when we introduced the mediating variable, we observed that the effect of relational and cognitive SC on EO disappeared ($\beta = 0.083$, n.s.; $\beta = 0.024$, n.s., respectively). However, regarding structural SC, when we introduce the mediating variable, the direct relationship between this variable and EO becomes more negative and significant ($\beta = -0.155$; $p < 0.05$).

Thus, we can observe a total mediation effect of DCs in the relationship between relational and cognitive SC on a firm's EO. However, we cannot observe a mediating effect of DCs in the relationship between structural SC and EO because the first condition is not fulfilled, although an indirect effect can be observed. According to these results, we can partially confirm Hypothesis 6.

In Fig. 1, we observe the results of our global model. It explains 38.2% of our dependent variable (EO), showing a significant change in the $R^2$ from the initial model. Similarly, to check the overall fit of our model, we analyzed the goodness-of-fit index. In our case, we obtained a greater value than the threshold of 0.31 proposed by Tenenhaus, Vinzi, Chatelin, and Lauro (2005) in both the direct model (0.3492) and mediation model (0.5413). Finally, to measure the predictive relevance of our model, we used the index Stone-Geisser's $Q^2$ (Geisser, 1974; Stone, 1974). The results of this analysis confirm the predictive relevance of our global model with a value > 0 of this index (0.1306).

Moreover, when we analyze only the significance of the regression coefficients, the results can lead to confirmation of a wrong mediating effect. It is therefore essential to examine not only the significance of this but also its absolute effect (Holmbeck, 1997). Following the proposal of Hayes (2009), to analyze indirect effects, we used a nonparametric approach through a bootstrapping resampling. This method has a greater power and control over type I error. Thus, according to Preacher and Hayes (2008), we analyzed the significance of indirect effects using a macro for SPSS[10] and extracted the confidence intervals. The results of the indirect effects of SC dimensions on firm's EO through DCs confirmed their validity (Table 5).

Despite the generalized use of the Baron and Kenny methodology to study the significance of mediating effects, previous literature suggests that this method can produce biased and inconsistent estimators derived from the possible existence of correlations between the error terms of the mediation equations (Shaver, 2005). We therefore controlled for possible endogeneity in our model using the process followed by Meissner and Wulf (2014). To this end, we chose to test our mediation hypothesis using the two-stage least-square technique (Bascle, 2008). This technique, in the first step and using all the exogenous variables, estimates the values of the endogenous variable. In the second step, the estimated values of the mediating variable are used to estimate the coefficients of the dependent variable regression (Greene, 2003). Following the indications of Shaver (2005), to implement our mediating variable, we introduced three instruments: knowledge acquisition, bridging ties, and availability of financial resources. These concepts were also measured in the questionnaire. Previous literature suggests that these concepts are causally related to DCs

[10] We used the macro PROCESS for SPSS version 2.15.

**Table 2**
Construct validity.

| Variable | $\chi^2$ | Degrees of freedom | Incremental Fit Index | Normed Fit Index | Comparative Fit Index | Root mean square error of aproximation |
|---|---|---|---|---|---|---|
| Structural social capital | 23.087 | 8 | 0.938 | 0.919 | 0.936 | 0.066 |
| Relational social capital | 14.4563 | 5 | 0.949 | 0.912 | 0.948 | 0.059 |
| Cognitive social capital | 51.0958 | 19 | 0.952 | 0.931 | 0.951 | 0.052 |
| Entrepreneurial orientation | 141.6627 | 80 | 0.969 | 0.931 | 0.968 | 0.051 |
| Dynamic capabilities | 325.2181 | 194 | 0.964 | 0.924 | 0.963 | 0.054 |

**Table 3**
Direct effect of SC on firm's EO.

| Variable | *Path* | t | $R^2$ |
|---|---|---|---|
| Structural social capital | −0.044 | 0.519 | 0.171 |
| Relational social capital | 0.220 | 2.439** | |
| Cognitive social capital | 0.210 | 2.516** | |
| Age | 0.025 | 0.447 | |
| Size | 0.087 | 1.998* | |
| Firm type | −0.093 | 1.928* | |
| Hostility | 0.076 | 1.180 | |
| Subindustry | −0.021 | 0.420 | |
| Family condition | −0.053 | 1.018 | |

*p < 0.05; **p < 0.01.

**Table 4**
Mediating effect of DCs.

| Variable | Entrepreneurial orientation | | |
|---|---|---|---|
| | Path | t | $R^2$ |
| Structural social capital | −0.155 | 2.325* | 0.378 |
| Relational social capital | 0.083 | 1.040 | |
| Cognitive social capital | 0.024 | 0.328 | |
| Dynamic capabilities | 0.610 | 11.268*** | |
| Size | 0.053 | 1.078 | |
| Age | 0.044 | 0.924 | |
| Firm type | −0.079 | 1.612* | |
| Hostility | 0.009 | 0.147 | |
| Subindustry | −0.020 | 0.465 | |
| Family condition | −0.040 | 0.822 | |
| **Variable** | **Dynamic capabilities** | | |
| | **Path** | **T** | **$R^2$** |
| Structural social capital | 0.201 | 2.850** | 0.431 |
| Relational social capital | 0.205 | 2.573** | |
| Cognitive social capital | 0.304 | 4.847*** | |
| Size | 0.049 | 1.416 | |
| Age | −0.029 | 0.632 | |
| Firm type | −0.019 | 0.540 | |
| Hostility | 0.100 | 2.054 | |
| Subindustry | −0.006 | 0.153* | |
| Family condition | −0.029 | 0.647 | |

*p < 0.05; **p < 0.01; ***p < 0.001.

(Ambrosini et al., 2009; Helfat and Martin, 2015; Zhang and Wu, 2013). These variables also satisfy the conditions proposed by Shaver (2005): First, they have a direct relationship with the mediating variable and indirect relationship with the dependent variable. Second, these variables explain a significant percentage of the variance of the mediating variable.

The results obtained in the two-stage least-square analysis (Table 6) confirm a mediating effect of DCs on the relationship between SC dimensions and EO. The first-stage F statistic assumes a value of 74.50, which is significantly higher than the threshold value of 9.08 proposed by Stock and Yogo (2004) for the analysis of the three instruments. In addition, Sargan statistics (Chi square = 0.16, n.s.) suggests that the three instruments are exogenous. The results of the two-stage least-square analysis suggest a positive and significant effect of DCs on EO ($\beta = 0{,}477$; $p < 0.05$), conditional to the instruments used. These analyses indicate that endogeneity and reverse causality have no influence on our mediated relationship. Therefore, we can infer that the causality between our variables follows the relationship proposed and does not head in opposite direction.

Finally, we controlled for possible endogeneity in the relationship between SC and EO. Previous literature suggests that to sustain their entrepreneurial behavior, firms should seek beneficial relationships with other actors. Thus, the higher a firm's EO, the higher will be its SC. Following Davidson and MacKinnon (1993), we performed an augmented regression test, which is conducted by adding the residuals of the endogenous variable, as a function of the exogenous variables, in our original regression of the dependent variable. The results obtained indicated that the coefficient of the residuals of each SC dimension test in the original regression are not significant ($p > 0{,}05$). Thus, we can confirm that SC dimensions are exogenous (Wooldridge, 2010). Moreover, and following Calantone and Rubera (2012), we ran a Durbin–Wu–Hausman test in Stata to control for endogeneity and the reverse causality of our variables and verify the causality proposed in this paper. The test failed to reject the null hypothesis for each SC dimension ($\chi^2 = 0.5637$; 2.3567; 0.9442; $p > 0.05$), thus indicating that endogeneity does not bias our results and estimators are consistent. This result reinforces the positive causal relationship of SC and DC on a firm's EO, thus limiting the reverse effect of the dependent variable.

## 5. Discussion and conclusions

With this study, in response to the long-felt need for a closer examination of the heterogeneous effect of each SC dimension, we provided a better understanding of the controversial effect of each SC dimension on EO through DCs. We extend EO research, which has mostly analyzed the influence of EO on the firm's performance, through several contingent models. In this sense, several researchers highlighted the interest of new studies that analyze the antecedents of EO, that is, understanding its foundation and development (Covin & Lumpkin, 2011). Thus, in line with previous demands (Wales et al., 2013), in this paper, we analyzed how SC and DCs can foster the firm's EO.

The results obtained allow us to bridge the gap identified in the literature and resolve the dispute about the divergent effects of each type of SC on the EO. Thus, although the relational and cognitive SC have a positive and significant effect on EO, structural SC has a trivial negative effect. As mentioned above, this effect may be due to the combination of the advantages and disadvantages of the structural SC. Thus, dense networks can promote quick flows of information, mostly of the tacit type, and identify more opportunities than isolated entrepreneurs, but they can also create redundancy information problems, myopia, inertia, and internal blocking resulting from the situation of the firm in a dense network with strong ties. The results show that in the analyzed sample, there a significant predominance of the negative effects was absent. This could be because in the agri-food sector, firms in dense networks not only obtain redundant information but also access

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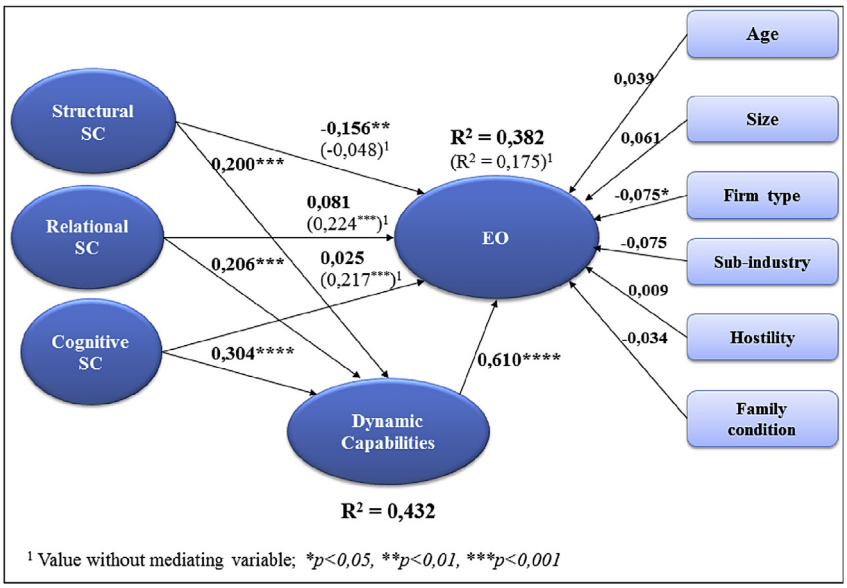


**Fig. 1.** Structural model.

**Table 5**
Test of mediation effect of SC dimensions. Bootstrap results.

| Indirect effect | | | | | | |
|---|---|---|---|---|---|---|
| | Coeffic. | Standard Error | Lower Limit of Confidence Interval (95%) | Upper Limit Confidence Interval (95%) | Lower Limit of Confidence Interval (99%) | Upper Limit Confidence Interval (99%) |
| Structural social capital | 0.391 | 0.055 | 0.2936 | 0.5087 | 0.2660 | 0.5413 |
| Relational social capital | 0.326 | 0.047 | 0.2390 | 0.4246 | 0.2076 | 0.4406 |
| Cognitive social capitalBo | 0.303 | 0.0405 | 0.2303 | 0.3917 | 0.2110 | 0.4159 |
| **Direct effect** | | | | | | |
| | **Coeffic.** | **SE** | **Lower Limit of Confidence Interval (95%)** | **Upper Limit Confidence Interval (95%)** | **Lower Limit of Confidence Interval (99%)** | **Upper Limit Confidence Interval (99%)** |
| Structural social capital | −0.139 | 0.066 | −0.270 | −0.008 | −0.3118 | 0.337 |
| Relational social capital | 0.0276 | 0.063 | −0.096 | 0.1512 | −0.1352 | 0.1904 |
| Cognitive social capital | 0.0251 | 0.058 | −0.089 | 0.1392 | −0.1253 | 0.1755 |

**Table 6**
Results of the two-stage least-square analysis.

| Variables | Entrepreneurial orientation |
|---|---|
| Structural social capital | −0.203* |
| Relational social capital | 0.140 |
| Cognitive social capital | 0.095 |
| Dynamic capabilities | 0.477* |
| Age | 0.001 |
| Size | 0.002 |
| Firm type | −0.265 |
| Sector | −0.037 |
| Family condition | −0.084 |
| Hostility | 0.030 |
| $R^2$ | 0.3715 |
| F | 7.15* |
| Cragg–Donald Wald *F* statistic | 74.59 |
| Sargan statistic | 0.165 |

*p < 0.05.

valuable knowledge. Specifically, in the agri-food sector networks, firms are in continuous contact with customers or distribution channels, providing an adequate flow of knowledge (Kaasa, 2009). Firms can therefore access information on changing customer preferences or new segments that may arise (Atuahene-Gima et al., 2006).

In line with the proposals of Von den Driesch et al. (2015) and Helfat and Martin (2015), we demonstrated the key role of SC in generating DCs. In addition, the three dimensions of SC showed a positive and significant effect on DCs. Cognitive SC plays a particularly significant role in explaining the development of these capabilities. Thus, we observe how sharing goals and values with the actors with which firms interact is a key element in generating DCs. Moreover, membership of a dense network with strong ties and trust also favors the development of DCs.

Finally, we highlighted the key role of DCs in linking SC dimensions with the firms' EO. As we expected, DCs fully mediated the relationship between relational and cognitive SC and a firm's EO, and the direct effects of both dimensions completely

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disappeared when we included the mediating effect. It is particularly interesting to analyze the role of DCs in the relationships between structural SC and firms' EO. In line with our hypothesis, structural SC had a negative effect on the EO, although this effect was not significant. When we included DC as a mediating variable, we observed that a significant negative effect of structural SC on EO emerged. In this sense, and following on from the previous studies of Levin and Cross (2004) and Branscombe, Schmitt, and Harvey (1999) when we disaggregated the initial effect, we observed a significant negative direct effect of structural SC on the firm's EO and a positive indirect effect through DCs. The obtained results showed that the noninclusion of the mediating variable softens and hides the direct real effect of our dependent variable, i.e., structural SC. The initial effect of structural SC on a firm's EO appeared negative but was not significant because the positive indirect effect of this SC dimension (via DCs) suppressed its real direct negative effect. Therefore, a wrong conclusion of the real effect of structural SC on the firm's EO could have been drawn if this relationship was not analyzed more deeply, separating the direct and the indirect (through DCs) effects. In this sense, DCs allowed us to resolve any doubts surrounding the effect of SC on EO.

### 5.1. Theoretical implications

In this study, we focused on the antecedents of EO as several studies highlight their significance (Huang et al., 2010; Morris et al., 2011; Wales et al., 2013). It is an important item on the research agenda to focus on determining factors, and specifically on those conditions of a firm's network, that allow us to understand how and why some firms can renew themselves regularly over time through new growth paths.

With this study, in line with Burt (2000), we theoretically and empirically researched the network forms of SC and contributed to show how the generation and development of DCs leads firms' SC to EO. In this line, we highlighted the important role of DCs as drivers of SC, and its dimensions (structural, relational, and cognitive) toward a higher EO. With this study, we responded to the demands of Wales et al. (2013) on the need to provide a detailed analysis of the main antecedents of EO, linking three theoretical approaches, namely SC, EO, and DCs, that represent a growing interest in the last two decades in management literature.

Our study analyzes the heterogeneous effects of each SC dimension on strategic orientation, specifically on EO, in depth. These effects are diluted in studies that analyze SC as a one-dimensional construct. We also found that although relational and cognitive SC dimensions enhance firms' EO, structural SC hinders it. Thus, we identified the perverse effects of structural SC suggested in the literature, resulting from an excessive density in the relationship network and from strength of ties in it. Moreover, we linked two theoretical approaches, SC and DCs, which were scarcely analyzed previously, together to explore firms' EO antecedents. We found a common bridge in DCs to lead SC dimensions to EO.

### 5.2. Practical implications

The results of the present study allow us to suggest several implications for managers and institutions. First, the development of SC will be essential to generate an EO. This SC will facilitate the sharing of resources, thus allowing firms to modify their DCs to better confront changes in the environment. However, these efforts require more resources than the potential benefits, which firms may receive from them. Therefore, managers should also control their propensity to maintain an imitator, reactive and risk-averse behavior derived from a high density of their network. In this sense, we suggest that firms should try to drive structural SC to develop and enhance DCs, which in turn can develop and increase EO. In addition, common goals and culture among actors should be promoted between firms. The congruence between goals and values reduces the likelihood of conflicts and misunderstandings and leads firms to share more tacit and useful knowledge. We also encourage managers to supplement their trust, shared goals, and culture with the exploration of new relationships with agents outside their current network. Finally, we would make several recommendations to the institutions involved in the agri-food industry. First, we suggest that they should promote actions to facilitate a knowledge flow between firms. They should facilitate relationships between firms to improve the amount of potentially available knowledge that firms can access. Furthermore, institutions should develop new opportunities for firms in the industry that otherwise would not be available, mainly those related to external trade.

### 5.3. Limitations and future research

Despite the precautions taken in the preparation of this paper, we should note some limitations. First, we analyzed EO and DCs as higher order constructs, contrary to works suggesting the need for analysis of each dimension of these constructs and their individual effects. Regarding EO, we followed the definition proposed by Miller (1983), in which all dimensions must be present to consider a firm to be entrepreneurial. In relation to DCs, according to Biedenbach (2011), it is suitable to use a second-order construct because there is a high correlation between their dimensions. Second, despite previous efforts to validate the scales and measures used, we cannot exclude a potential bias in their use. However, we have selected reliability and validity scales, ensuring, as far as possible, their validity. Moreover, in line with previous research on management, we believe that managers' perceptions determine the firm's strategic behavior (Covin et al., 2000; Spanos & Lioukas, 2001), reflecting the firm's reality, even more accurately than some objective values. Furthermore, we controlled the common method bias through a subsample of firms with a second response, which provides greater validity to managers' perceptions about the variables used in our work. Third, we recognized the absence of longitudinal information to contrast our hypothesis. However, the research design allowed us to obtain relevant information about the factors analyzed. Finally, in the DC field, we considered multiple classifications of the dimensions of the construct (Teece, 2007; Wang & Ahmed, 2007). However, the wide development of the scales proposed by Wang and Ahmed (2007) and their adaptation to the context of our study led us to their selection.

As future lines of research, we propose the exploration of the potential heterogeneity in the effects of SC dimensions on each individual dimension of a firm's EO. We believe it would be expedient to analyze the heterogeneous effect of SC on EO dimensions separately. In addition, it would be beneficial to analyze the independent role of each DC (adaptive, absorptive, and innovation) proposed by Wang and Ahmed (2007) on EO. A deeper analysis of the relationship between EO and performance can also shed further light on this topic. Our proposal is to analyze how SC and DCs affect this relationship, both independently and jointly. Moreover, we propose the study of potential curvilinear relationships between SC dimensions and EO, as previous literature has suggested. Finally, we propose an analysis of the possible long-term interdependence between SC and EO through a longitudinal study.

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## Appendix

*Variables*[11]

*Social interaction*

We are in contact frequently with our contacts.
We know our contacts on a personal level.
We maintain close social relationships with our contacts

*Density*

The exchanges of resources and information among our contacts usually have a similar content.
The contacts with whom we maintain frequent relationships, in general, know each other.
The contacts from whom we receive advice and information for making important decisions know each other.

*Trust*

There are personal relationships with our contacts.
The relationships are characterized by mutual respect between the parties.
The relationships are characterized by mutual trust between the parties.
The relationships are characterized by high reciprocity between the parties.
The relationships are characterized by personal friendship between the parties.

*Shared norms*

We share the same ambition and vision as our contacts.
The firm is enthusiastic about pursuing the collective goals and missions of our relationships.
We share our goals and objectives with our contacts.
We understand our contacts' strategy and needs.
My firm's employees and my contacts' employees have positive attitudes toward a cooperative relationship.
My firm and my contacts tend to agree on how to make the relationship work.

*Shared culture*

The business practices and operational mechanisms of your contacts are very similar to your firm.
The corporate culture and management style of your partner is very similar to your firm.

*Innovativeness*

In general, the top managers of my firm favor a strong emphasis on the marketing of tried and true products of services/A strong emphasis on R&D, technological leadership, and innovations.
How many new lines of products or services has your firm marketed in the past 5 years? No new lines of products or services/Many new lines of products or services.
Changes in product or service lines have been mostly of a minor nature/Changes in product or service lines have usually been quite dramatic.

*Proactiveness*

In dealing with its competitors, my firm typically responds to actions that competitors initiate/Typically initiates actions that competitors then respond to.
Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc./Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.
In general, the top managers of my firm have a strong tendency to "follow the leader" in introducing new products or ideas/A strong tendency to be ahead of other competitors in introducing novel ideas or products.

*Risk-taking*

In general, the top managers of my firm have a strong proclivity for low-risk projects/A strong proclivity for high-risk projects.
In general, the top managers of my firm believe that owing to the nature of the environment, it is best to explore it gradually via timid, incremental behavior/Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.
When confronted with decision-making situations involving uncertainty, my firm typically adopts a cautious "wait and see" posture to minimize the probability of making important decisions/Typically adopts a bold, aggressive posture to maximize the probability of exploiting potential opportunities.

*Competitive aggressiveness*

My firm makes no special effort to take business from the competition/My firm is very aggressive and intensely competitive.
Typically seeks to avoid competitive clashes, preferring a "live and let live" posture/Typically adopts a very competitive, "undo the competitors" posture.

*Autonomy*

My firm requires individuals or teams to rely on senior managers to guide their work/Supports the efforts of individuals and/or teams that work autonomously.
In general, the top managers of my firm believe that the best results occur when the CEO and top managers provide the primary impetus for pursuing business opportunities/The best results occur when individuals and/or teams decide for themselves what business opportunities to pursue.
In my firm, individuals and/or teams pursuing business opportunities are expected to obtain approval from their supervisor(s) before making decisions/Individuals and/or teams pursuing business opportunities make decisions on their own without constantly referring to their supervisor(s)

[11] Considered as contact: people, firms, or institutions with whom a relationship exists.

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In my firm, the CEO and top management team play a major role in identifying and selecting the entrepreneurial opportunities my firm pursues/Employee initiatives and input play a major role in identifying and selecting the entrepreneurial opportunities my firm pursues.

*Adaptation capacity*

Our employees are encouraged to develop alternative ways to do their work and challenge outmoded traditions.
We are flexible enough to allow our firm to respond quickly to changes in our markets.
We evolve rapidly in response to shifts in our business priorities.

*Absorption capacity*

The search for relevant information concerning our industry is everyday business in our firm.
Our management motivates the employees to use information sources within our industry.
Our management expects that the employees deal with information beyond our industry.
In our firm, ideas and concepts are communicated cross-departmentally.
Our management emphasizes cross-departmental support to solve problems.
In our firm, there is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments.
Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements.
Our employees have the ability to structure and use collected knowledge.
Our employees are used to absorb new knowledge and prepare it for further purposes and to make it available.
Our employees successfully link existing knowledge with new insights.
Our employees are able to apply new knowledge in their practical work.
Our management supports the development of new products.
Our firm regularly reconsiders technologies and adapts them accordant to new knowledge.
Our firm has the ability to work more effective by adopting new technologies.

*Innovative capacity*

We have an organizational culture that support innovation.
We are able to use knowledge from different resources for product development activities efficiently and rapidly.
Our firm is able to reflect changes at market conditions to own products and processes as soon as possible.
Our employees are supported and encouraged to participate in activities such as product development and innovation process improvement, and to produce new ideas.
We are able to evaluate continuously new ideas that come from customers, suppliers, etc. and try to use these ideas into product development activities.

*Hostility*

The failure rate of firms in my industry is high.
Competitive intensity is high in my industry.
Severe price wars are characteristic of my industry.

*Family condition*

The family members are part of the management team and they have a significant number of actions in decision-making.

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