



# Technological dynamism and entrepreneurial orientation: The heterogeneous effects of social capital



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## ABSTRACT

This paper analyzes the moderating role of social capital between technological dynamism and entrepreneurial orientation, filling the gap in the process whereby company managers develop an entrepreneurial orientation from their environmental ‘enactment’. We analyze the way in which social capital dimensions exert a divergent influence on the relationship between technological dynamism and entrepreneurial orientation. The main contribution of this paper is to demonstrate how the effect of social capital modifies the influence of technological dynamism, depending on the social capital dimension analyzed.

## 1. Introduction

This paper analyzes the moderating role of the different dimensions of social capital (SC) between technological dynamism (TD) and entrepreneurial orientation (EO). EO has been conceptualized and theoretically contextualized as a firm level phenomenon of entrepreneurship (Lumpkin & Dess, 2001; Zhu & Matsuno, 2016). From this perspective, EO refers to the “processes, practices and decision-making activities that lead to new entry and concerns the intentions and actions of key players functioning in a dynamic generative process” (Lumpkin & Dess, 1996, p. 136). EO reflects a firm’s innovativeness, proactiveness and risk-taking (Miller, 1983). In contrast to the numerous studies examining the relationship between EO and performance, the few studies analyzing EO antecedents have been limited to studying direct effects (Sciascia, Naldi, & Hunter, 2006), to the effect on a specific EO dimension, such as innovativeness (Kyrgidou & Spyropoulou, 2013), or the influence exerted separately by a firm’s internal and external factors (Rosenbusch, Rauch, & Bausch, 2011). Among the internal factors, research highlights the role of technological and marketing capabilities (Ruiz-Ortega, Parra-Requena, Rodrigo-Alarcón, & García-Villaverde, 2013), internal knowledge (De Clercq, Dimov, & Thongpapanl, 2013) and organizational resources, culture, structure and leadership (Wales, Gupta, & Mousa, 2013). The previous literature has also identified several external factors that may affect the firm’s EO –hostility, munificence, heterogeneity,

dynamism, life cycle of the industry and complexity (Covin & Slevin, 1991; Aloulou & Fayolle, 2005; Wales et al., 2013; among others).

The managerial cognition perspective (Nadkarni & Barr, 2008) relates the internal and external background to the development of EO. From this perspective, managers interpret the environment through cognitive processes to take strategic decisions (Grégoire, Barr, & Shepherd, 2010). Managers enact their environment to “make sense” of what happens (Maitlis & Christianson, 2014). The previous literature points to dynamism as the key factor contributing to uncertainty in the environment (Child, 1972). We focus on the least analyzed component of dynamism, – namely the technological dimension- (Cruz-González, López-Sáez, Navas-López, & Delgado-Verde, 2015; Sciascia et al., 2006), which refers to the perception of swift changes in the technological development of the industry in which the firm is immersed (Jaworski & Kohli, 1993). Moreover, managers need access to external knowledge to understand and enact environment changes, and acquire key resources to deal with the environment. The literature suggests that environmental enactment and strategic decisions are developed through social interaction between managers and their external contacts. From this approach, Geletkanycz and Hambrick (1997) call for an examination of the role played by contact networks in strategic decisions, as EO, with the aim of reducing environmental uncertainty. However, there is a clear gap in the literature as to how the characteristics of a firm’s network affect the link between TD and EO.

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Our proposal is that SC theory (Nahapiet & Ghoshal, 1998) can help clarify this question. Firstly, SC is a key managerial resource to obtain information and other resources from the environment when aiming to adopt decisions (Shipilov & Danis, 2006). Secondly, SC theory highlights network paradoxes, which may provide opportunities for the acquisition of relevant environment knowledge but also involves restrictions in detecting and accessing new ideas (Hakansson & Ford, 2002), which in turn affect the path leading from environment enactment to strategic managerial decisions in a firm. Specifically, we propose that SC theory (Nahapiet & Ghoshal, 1998) can help to understand the process connecting TD and EO. We argue that SC is a vital means by which managers interpret and react to TD and interact with environmental agents via EO. Moreover, SC theory allows us to understand how the characteristics of SC affect the process of interpreting TD and obtaining information and other resources from the environment as a means of developing an EO. Our paper analyzes the independent effects of the three SC dimensions (structural, relational and cognitive) proposed by Nahapiet and Ghoshal (1998). The literature establishes several differences in the effects of these dimensions and dissimilarities in their nature and signs (Lee, Lim, & Pathak, 2011). The ambiguous and often contradictory implications of how firms should be immersed in their contact networks in order to utilize EO in managing TD (Rowley, Behrens, & Krackhardt, 2000) lead us to a deeper examination of the differential moderating role played by each SC dimension. In short, the main aim of this work is to study how SC dimensions influence the relationship between TD and a firm's EO.

We highlight three main contributions in this paper. First, we further develop the analysis of a firm's EO antecedents, focusing on the moderating role of SC in managing environmental TD. We thus empirically examine the antecedents of a firm's EO, as has been widely called for in previous literature (Covin & Lumpkin, 2011; De Clercq et al., 2013; Rosenbusch et al., 2011). Second, our work draws a connection between EO and theory (Miller, 2011). The study responds to the demand to advance theoretically grounded frameworks, with a view to connecting well-developed factors in explaining and predicting EO ex-ante (Wales et al., 2013). Third, we help theoretically and empirically to reinforce the multidimensional approach of SC, based on network paradoxes (Hakansson & Ford, 2002; Kaasa, 2009). We present and analyze the heterogeneous role of each SC dimension in the relationship between TD and a firm's EO.

## 2. Theory

### 2.1. Technological dynamism and entrepreneurial orientation

The concept of EO is a widely accepted instrument for capturing a firm's tendency toward entrepreneurship (Rauch, Wiklund, Lumpkin, & Frese, 2009). EO is a key factor in generating differentiation, developing better solutions ahead of competitors, enhancing adaptation to environmental changes and market trends and weakening the ability of rivals to compete and respond to a firm's actions in the future (Hughes & Morgan, 2007).

The works by Miller (1983) and Covin and Slevin (1989) highlight three key aspects that can define a firm's EO: innovativeness, proactiveness and risk-taking. Innovativeness is defined as the propensity to participate in supporting new ideas, creativity and experimentation, which results in new products, services or technological processes (Lumpkin & Dess, 1996). Proactiveness refers to a future perspective where firms try to develop new products or make improvements to others, anticipating changes and opportunities that arise in the environment (Hughes & Morgan, 2007). Finally, risk-taking is associated with the willingness of the firm to inject a higher level of resources in projects where the error cost can be very high (Wiklund & Shepherd, 2005). Our analysis takes EO as an aggregate construct with three components, which is the most widely accepted and researched view (Covin, Green, & Slevin, 2006; Wales et al., 2013).

The scarce literature studying the antecedents of a firm's EO (Wiklund & Shepherd, 2003) calls for further studies to fully understand what factors are most important for its development and how they are combined

(Lumpkin, Brigham, & Moss, 2010; Wales et al., 2013). However, most of the studies analyzing the determinants of EO focus only on direct effects, on specific dimensions of EO or on internal or external factors separately (Rosenbusch et al., 2011; Sciascia et al., 2006). The literature determines various internal antecedents of EO, such as CEO characteristics, top management team, strategy, organizational resources, culture, structure and leadership (Wales et al., 2013). Among the external antecedents of EO, the literature finds complexity, dynamism, heterogeneity, hostility and life-cycle stage of the industry (Aloulou & Fayolle, 2005).

Several studies show that environmental dynamism, in both its technological and market dimensions, is a key determinant of a firm's EO (Miller, 1983; Simsek, Heavey, & Veiga, 2010). Dynamism is the rate of unpredictable change in a firm's environment and affects the ability of managers to predict related future events, their impact on the firm and responses to them (Lumpkin & Dess, 2001). Because the environment is changing quickly in often unpredictable directions, change initiatives are now increasingly common in many organizations (Cruz-González et al., 2015). Thus, in these kinds of environments, managers use their cognitive frameworks (Bogner & Barr, 2000) to make sense of future interactions and they decide which actions they must carry out in order to deal with changes and detect opportunities (Grégoire et al., 2010). Thus, in a technologically dynamic environment, firms tend to develop an innovative behavior, act proactively and exhibit higher levels of risk in order to be more efficient and effective in the discovery and exploitation of new emerging opportunities (Rauch et al., 2009).

The literature acknowledges that organizations do not simply react to their environments but dynamically interact with them, attempting to adapt their strategies to environmental enactment (Child, 1997). In this way, through managerial cognition, managers interpret the environment and make the corresponding strategic decisions (Nadkarni & Barr, 2008). Thus, managers, acting cognitively, often choose to respond to uncertain and adverse environmental conditions with an innovative, proactive and risk-taking behavior, and then by assuming an EO (Miller, 1983).

Focusing on EO dimensions, firms need a highly positive attitude toward innovation to achieve or maintain a strong competitive position. TD forces firms to change products and markets or market segments to retain their competitiveness (Sciascia et al., 2006; Zhou, 2006). In addition, TD encourages managers to engage in more proactive behavior to reach new market segments and anticipate the entry of new rivals (Simsek et al., 2010). Furthermore, higher TD can encourage a firm's managers to assume a higher risk, undertaking actions that are more likely to fail (Meijer, Koppenjan, Pruyt, Negro, & Hekkert, 2010). In short, we consider that TD encourages managers to develop an EO, exhibiting higher innovativeness, proactiveness and risk-taking to face continuous changes and to detect and exploit the opportunities arising in the environment.

### 2.2. The role of social capital

The SC theory has been widely applied in the study of firms, on the grounds that economic actions are embedded in relationship network (Bowey & Easton, 2007). Following Nahapiet and Ghoshal (1998, p. 243), 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”. Adler and Kwon (2002) argue that economic action is embedded in continuously occurring social ties, which can facilitate or hinder exchanges between different actors, promoting the mutual transfer and exchange of information. Granovetter (1992) suggests that individual behaviors and economic institutions cannot be understood separately from their social relationships. The economic interactions are embedded in the network of personal and social relationships and the firm's success depends on its network of contacts<sup>1</sup> (Jayawarna, Jones, & Macpherson, 2011). In the

<sup>1</sup> In this study, we consider network contacts as contacts that firms maintain with different external agents such as suppliers, customers, competitors and institutions.

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