





#### **ARTICLE**

# Management capabilities, innovation, and gender diversity in the top management team: An empirical analysis in technology-based SMEs



Jenny María Ruiz-Jiménez\*, María del Mar Fuentes-Fuentes

University of Granada in Spain, Department of Business Administration, School of Economics and Management, Campus de Cartuja, s/n, CP 18071 Granada, Spain

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Management capabilities; Gender diversity; Upper Echelons Theory; Innovation performance; Top management team Abstract The paper analyzes the influence of management capabilities on the innovation performance of technology-based SMEs and the role that gender diversity in the top management team plays in this relationship. We use a sample of 205 Spanish SMEs from technology sectors and a hierarchical regression analysis to test our hypotheses. The results confirm that management capabilities affect both product and process innovation positively. In addition, gender diversity in the top management team moderates this relationship positively. In other words, management capabilities have a greater influence on both product and process innovation when the management team is more balanced in number of men and women. This study contributes to better understanding of the factors that explain how management capabilities translate into greater organizational achievements and argues the need to analyze the role of top management teams and their composition more extensively, especially in the context of technology SMEs. The study also contributes new evidence to the small number of studies that analyze the effect of gender diversity in top management teams on innovation.

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#### Introduction

An organization's management capabilities are crucial to achieving congruence among its competences and the

changing conditions of its environment (Penrose, 1959; Kor and Mesko, 2013). These capabilities combine greater technical, human, and conceptual abilities (Katz, 1974) to construct, integrate, and reconfigure the organization's resources and competences (Adner and Helfat, 2003). In this way, capabilities can achieve greater profits (Castanias and Helfat, 2001) and competitive advantages for their organizations (Carmeli and Tishler, 2004).

E-mail addresses: jmruizj@ugr.es (J.M. Ruiz-Jiménez), mfuentes@ugr.es (M.d.M. Fuentes-Fuentes).

<sup>\*</sup> Corresponding author.

From a theoretical perspective, Kor and Mesko (2013) show that management capabilities contribute to establishing a dominant logic in the firm that takes concrete form in routines, procedures, and capabilities that influence implementation of strategies and the search for new options for growth and innovation. In fact, research in the last decade obtains empirical evidence of the relationship between management capabilities, strategy, and performance (e.g., Adner and Helfat, 2003; Barbero et al., 2011; Carmeli and Tishler, 2004; Castanias and Helfat, 2001; Kearney et al., 2014; Sirmon and Hitt, 2009).

In spite of advances in studying the influence of management capabilities on organizational results, many research questions must still be addressed to achieve greater knowledge of this relationship and of the mechanisms or conditions through which it occurs (Helfat and Martin, 2015).

On the one hand, much empirical research performed to date treats different dimensions of management capabilities—for example, cognitive capabilities and capabilities for managing human and social capital—separately (e.g., Adner and Helfat, 2003; Sirmon and Hitt, 2009; Quintana-García et al., 2013). Few studies have attempted to analyze the interactions between all of these capabilities or have treated them jointly (Carmeli and Tishler, 2004; Hitt and Ireland, 1985). On the other hand, analysis of how the different levels of management capabilities lead to differences in performance achieved have hardly taken into account aspects related directly to the characteristics of the managers who make the decisions. Specifically, Helfat and Martin (2015) suggest that the research on management capabilities can be enriched by incorporating literature on top management teams, since these teams lead organizations' growth, adaptation, and strategic change. In this respect, the framework of Upper Echelons Theory argues that the interpretation of information that surrounds top management teams, and the decisions that top management teams adopt depend substantially on the personal experiences, values, and personalities inferred through their demographic characteristics (Carpenter et al., 2004; Hambrick and Mason, 1984; Hambrick, 2007).

Based on the foregoing, this study aims to contribute new evidence on the relation between management capabilities and performance achieved by considering the characteristics of the top management team. Specifically, it analyzes the influence of management capabilities on innovation performance in technology-based SMEs, and the role of gender diversity of the top management team as a moderating variable in this relationship.

Technology-based firms need managers who exploit the resources and capital of their firms to innovate constantly and respond to the rapid, discontinuous changes in their environment (Makri and Terri, 2010). In this context, achieving results from product and process innovation is crucial for firms' survival and success. Some studies stress that precisely the lack of management abilities, especially in managers in the technology sector, subjects the firm to greater difficulties in achieving success and development of its business (Gapaldo and Fontes, 2001; Storey and Tether, 1998). Further, SMEs have greater resource limitations than large firms, and their administrative support systems for the decision-making processes are less developed. SMEs thus

depend more on the capabilities of management to achieve results (Lubatkin et al., 2006).

Further, study of how management capabilities affect innovation performance in SMEs may be conditioned by their greater administrative flexibility and the strong participation of the top management team in all of the firm's processes and activities (Escribá-Esteve et al., 2009). We believe that a top management team—one that is responsible for strategic or critical decisions for the firm's development (Collins and Clark, 2003; Papadakis and Barwise, 2002) and whose composition favors a climate of cooperation, communication, generation of ideas, and creativity-is a relevant factor in explaining how management capabilities lead to greater innovation performance. For example, it has been shown that organizational cultures more oriented to values such as flexibility, creativity, autonomy, or connection with the organization positively encourage product and process innovations (Naranjo-Valencia et al., 2012). Prior studies like that by Kearney et al. (2014) suggest that small firms' management capabilities sustain development of innovations because these capabilities encourage interaction and use of resources, as well as development of a culture that fosters collaboration among workers and innovation.

Within the literature on the composition of management teams, some studies indicate that women improve management abilities, decision-making processes, and innovation (Bagshaw, 2004; Dessler, 2001; Díaz-García et al., 2013; Torchia et al., 2011). In their role as managers, women tend to be more people-oriented, more democratic and consultative, and more inclined to interpersonal relations (Brown et al., 2002). Gender diversity thus contributes to improving social relations, developing an open work climate (Nielsen and Huse, 2010), and establishing a much more varied view of problems that generates more diverse ideas (Milliken and Martins, 1996).

We draw on both the theoretical support derived from *Upper Echelons Theory*, which argues that managers' demographic characteristics (such as gender) can be used as *proxies* for their models of knowledge and decision making, and the literature on gender, which argues that women have different management styles than men, to suggest that gender diversity in the top management teams of technology-sector SMEs will positively encourage the relationship between management capabilities and innovation performance. The more balanced the composition of men and women in these teams, the better the firm will be able to generate a context and logics with organizational routines and procedures that foster greater impact of management capabilities on innovation performance.

Our research makes three contributions to the literature on management capabilities and innovation, and the gender literature. First, it suggests that management capabilities are an effective resource for SMEs in the technology sector, a resource that can be employed to improve their innovative performance by helping them to face their varied limitations more fully through better management of their resources and capabilities. We thus extend the results obtained previously by Barbero et al. (2011), which show that management capabilities positively influence the growth of SMEs through their positive effect on expansion of the market and innovation; and the study of microfirms in the tourist sector by

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