



# Antecedents, moderators, and outcomes of innovation climate and open innovation: An empirical study in SMEs



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## ABSTRACT

In recent years, open innovation (OI) has attracted much attention in innovation management research. Although showing signs of advance, most of the existing literature still relies, to a great extent, on case studies and conceptual frameworks, with little empirical research in the specific context of small and medium enterprises (SMEs). This paper adds to the literature by empirically assessing the effects of organizational antecedents and innovation climate on OI as well as its consequences on firm performance in SMEs. In addition, the moderating roles of environmental dynamisms and competitiveness in the relationships between innovation climate and inbound and outbound OI are analyzed. To achieve these goals, this paper develops an integrative research model, which analyses the network relations using covariance-based structural equation modeling (SEM) on a data set of 429 Spanish SMEs. Results revealed that organizational factors such as commitment-based human resources practices have a positive influence on innovation climate and that innovation climate contributes to both inbound and outbound OI. Another important finding is that contingent factors such as environmental dynamism strengthen the positive effect of innovation climate on outbound OI. The main conclusions of this research can be valuable to SMEs that implement or intend to implement OI.

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## 1. Introduction

In today's dynamic and globalized business environment, academics and practitioners agree on an emergent trend toward opening up the innovation strategy (Lichtenthaler and Lichtenthaler, 2009; Spithoven et al., 2013). Thus, an increasing number of firms, especially SMEs, are relying more on external information and research collaborations in order to innovate and gain competitive advantages. This new way of conducting the innovation process has been recently coined as “open innovation” (OI) (Chesbrough, 2003). However, this topic builds upon previous work on well-established concepts such as absorptive capacity, complementary assets or the exploitation versus exploration dyad. In fact, previous literature admits that OI practices, such as looking beyond organizational boundaries for opportunities to grow or using external knowledge to improve internal innovation processes, are not new to companies. The establishment of this new concept and its

coincidence in time with the growing interest for outsourcing, collaboration, organizational agility and flexibility permitted researchers to reconsider innovation strategies in the light of an increasingly networked world (Huggins and Thompson, 2015; Huizingh, 2011). As a consequence, OI has become one of the topics that gained most attention in innovation management research over the last decade (Carayannis and Campbell, 2011; Spithoven et al., 2013).

Previous research on OI has focused mainly on high-tech large enterprises, whereas it is widely accepted in literature that OI practices and consequences depend heavily on firm size. Nonetheless, only a few and recent studies have analyzed OI in the specific context of SMEs (Laursen and Salter, 2006; Lee et al., 2010; Spithoven et al., 2013; Van de Vrande et al., 2009), with most of them contributing to the discussion about the differences between OI in small and large firms. Although previous research showed that OI practices have a significant impact on different measures of performance, the relationship between OI and firm performance of SMEs has received little attention. At the same time, there is a lack of research on the antecedents that stimulate or detract SMEs from pursuing OI practices. In addition, a great part of the studies on OI are descriptive by nature and based upon case studies and in-depth interviews (Chesbrough, 2003; Dodgson et al., 2006; Huston and Sakkab, 2006).

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