


## Chapter 12

# The Moderating Effect of Family Management on R&D Productivity in Privately Held Firms

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### ABSTRACT

*The aim of this chapter is to analyze the moderating effect of family management on the relationship between R&D inputs and R&D outcomes, that is, R&D productivity. Using a longitudinal sample of 337 Spanish privately held manufacturing firms, the results show that in general terms, although family managed firms invest less in R&D than their non-family managed counterparts, they reinforce the conversion of R&D inputs into R&D outcomes. Moreover, the findings reveal that the strengthening effect of family management on R&D productivity is contingent upon the level of R&D expenditures. Thus, this chapter contributes to shedding some light into the debate regarding innovation management in privately held family firms.*

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## INTRODUCTION

Firms' survival largely depends on the formulation of their innovation strategies, in particular on those related to research and development (R&D) investments (David, Hitt, & Gimeno, 2001). In this regard, firms that make greater efforts in R&D achieve superior technological and market capabilities, which may lead to increases in sales or profits (Bianchini, Pellegrino, & Tamagni, 2018; Chen & Hsu, 2009; Coad, Segarra, & Teruel, 2016). Broadly speaking, R&D investments are essential to advance innovation processes and are widely accepted as mechanisms that enhance firms' competitive advantages (Ettlie, 1998) and innovation productivity (Diéguez-Soto et al., 2018b; Wakelin, 2001).

Nevertheless, innovation is a complex process and cannot be only assessed in R&D expenditures terms. On the contrary, the innovation outputs derived from such investments should also be considered (Tidd & Bessant, 2013). In this sense, different authors (e.g. Cruz-Cázares, Bayona-Sáez, & García-Marco, 2013) agree with the fact that taking into account both R&D expenditures and innovation outputs, constitutes the key to improve firms' performance and competitiveness. In this respect, it has been shown that the way in which innovation inputs are managed may lead to higher (better) or lower (worse) innovation outputs (Diéguez-Soto, Garrido-Moreno, & Manzaneque, 2018a).

Notwithstanding the substantial relevance that the research stream regarding innovation inputs, outputs, and the conversion rate of the former into the latter has acquired in recent years, the specific topic of innovation productivity, and specifically R&D productivity, remains under-researched (Lodh, Nandy, & Chen, 2014).

R&D productivity can be conceived under two different perspectives: on the one hand, as the conversion rate of R&D inputs into R&D outputs; and on the other hand, as the impact of R&D inputs on R&D outcomes (Block, 2012). As we previously mentioned, prior research (e.g. Manzaneque, Diéguez-Soto, & Garrido-Moreno, 2018a) has been devoted to analyse the effect that R&D investments exert on innovation outputs, such as the number of new products or processes. However, there is a substantial lack of studies examining the effect of R&D spending on R&D outcomes, such as cost reductions or sales improvements (e.g. Bertschek, 1995; Guan & Zuo, 2014). In this regard, Block (2012) highlighted that what really matters is how R&D outputs are converted into R&D outcomes, that is, revenues increases or cost decreases.

To further analyse R&D productivity, is highly necessary taking into consideration that firms in general, and SMEs in particular, operate with resource constraints for innovative activities (Duran et al., 2016). As SMEs are in most cases unable to increase their R&D spending in order to keep up with the market competition (Duran et al., 2016), they are forced to work efficiently. Thereby, innovation resources should be effectively managed and leveraged to obtain higher R&D productivity. Accordingly, the role exerted by business managers becomes essential for strategic innovation processes, inasmuch as business managers are one of the most important decision makers within the firm (Vandekerckhof et al., 2015), who ascertain the goals to be accomplished and the means of achieving them (Kor, 2006; Ruiz-Jiménez & Fuentes-Fuentes, 2016).

Within the extensive body of innovation research, family involvement in management has been recognized as an important governance structure that improves the development and exploitation of R&D investments (Diéguez-Soto et al., 2018a). Family managers are strongly committed to their firms (Diéguez-Soto et al., 2018b; Laverty, 1996), positively contributing to competitiveness and innovation productivity. Moreover, R&D investments are in line with the long-term perspective of family managed firms (Chrisman & Patel, 2012; Patel & Fiet, 2011), given their concern for the maintenance and

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