

Beyond technology: Organizational flexibility and innovation in family firms

Dissertation presented to obtain the degree of Doctor in Business Economics

by

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Daar de proefschriften in de reeks van de Faculteit Economie en Bedrijfswetenschappen het persoonlijk werk zijn van hun auteurs, zijn alleen deze laatsten daarvoor verantwoordelijk.

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Introduction

1. The need for organizational flexibility

Over the course of the past decades, the world we live in has become more and more dynamic and unpredictable, affecting both individuals and companies alike. Organizations are not only subject to constant change (Tsoukas and Chia, 2002), but that pace of change is also perceived to be accelerating (Hamel, 2007). With the economic environment constantly evolving, many companies and, in their wake, academics and governments, focus their attention on innovation as a source of competitiveness and growth (OECD, 2015). Increasingly, continuous organizational change and innovation are heralded as major drivers of success at both the macro-economic and the microeconomic level (Kraus, Pohjola and Koponen, 2012).

For a long time, both managers and researchers have in large part concentrated on product and process innovation. At the same time, there has been a predominant focus on R&D and external cooperation as innovation's main determinants. However, this is too narrow a focus, as companies operating in changing environments also need to be inherently flexible. After all, product or process innovation should not be viewed in isolation since they interact with a company's objectives and strategic stance, as well as with its organizational structure. When one of those elements changes, it often impacts other company aspects as well (Lengnick-Hall, 1992). Hence, innovative firms also need to be capable of adapting and changing themselves. This adaptability pertains to the capability to redefine their strategic, long-term objectives but also the way their organization is structured and their decision processes are designed. In other words, the organization itself needs to be flexible (Volberda, 1996; 1997).

Nevertheless, although the concept of organizational flexibility as a supporting factor goes back a long way (e.g. Burns and Stalker, 1961), scholars have only recently started to value it equally as product and process innovation (Teece, 2007; Tether and Tajar, 2008). In their metastudy on management of innovation articles published from 1992 to 2010, Keupp, Palmié and Gassmann (2012) report an overwhelming focus on technical innovation while administrative innovation, including strategic reorientation and organizational change, is only covered by about 15 percent of the 342 studies in their sample.

Therefore, in spite of the conceptual importance attributed to organizational flexibility, important questions about its actual impact in real life remain. Furthermore, while most existing studies focus on the performance effect of one specific aspect of organizational flexibility, there remains a need to include the effects of different aspects of organizational flexibility in one single empirical analysis (see also Zack, McKeen and Singh, 2009). Hence, in this work, we define "organizational flexibility" as a company's ability to flexibly change its internal organizational structure or the organization of its external relations. Lastly, empirical evidence is biased towards product innovations, while evidence on the enabling effect of organizational flexibility on process innovation is lacking.

2. Innovation in family firms

One area in particular where thorough innovation studies are scarce, especially those covering organizational innovation, is the field of family business research. Although, in our modern world, it is tempting to view family firms as an antiquated form of businesses, the reality is quite different. Instead of being replaced by large multinationals, family firms have retained their important role in today's economy (Salvato and Aldrich, 2012). With around three quarters of all companies in Europe being family firms, employing almost half of the workforce (Mandl, 2008), researchers can justly state that *"regardless of the definition used or the geographic scope of investigation, family firms are now acknowledged as the predominant form of business enterprise in the world"* (Sharma, Chrisman and Gersick, 2012, p. 7).

Even though innovation is an important issue for both family and non-family firms, inherent differences between both kinds of companies may lead to different attitudes or abilities with respect to innovation in general and R&D and organizational flexibility in particular. Family firms often have a different entrepreneurial approach and organizational structure, which can lead to improved adaptive capacity but can also have adverse effects on their innovation process. Such unique characteristics of family firms not only influence their level of innovation investments but also how they are able to utilize their inputs to generate innovation output (Röd, 2016). One of the main underlying reasons for the different innovation approach of family firms versus non-family firms is the uncertainty and risk associated with innovation (Shi, 2003), which may have specific implications for family owned firms (Zellweger 2007: Miller, Le Breton-Miller and Lester 2011) and their level of innovation (Kraus et al., 2012). Family firms' focus on family well-being and continuity may lead to risk-aversion and therefore decreased R&D spending (Chen and Hsu, 2009). On the other hand, family firms may be more inclined to engage in R&D than non-family firms, as they typically adhere to long-term goals (Zellweger, 2007), leading them to accept higher risks and hence higher levels of R&D activities (Chrisman and Patel, 2012). However, as De Massis, Frattini and Lichtenthaler (2013) show that most empirical studies find that family firms invest less in R&D than non-family owned firms, family firms' risk aversion seems to predominantly discourage their R&D spending.

However, for family firms in particular, the number of studies that explicitly investigate the different processes that enable them to successfully innovate is quite limited. The family firm research field has long been dominated by succession studies, especially during its early years, i.e. the 1980s and 1990s (Sharma et al., 2012). Although other topics gradually gained importance, family firm succession remains widely studied even now (Yu, Lumpkin, Sorenson and Brigham, 2012; Benavides-Velasco, Quintana-García and Guzmán-Parra, 2013). From the late 1990s on, the focus started to shift to the analysis of family firms' financial performance on the one hand and governance issues concerning the effects of family control and ownership on the other (Yu et al., 2012).

By contrast, a recent metastudy (Benavides-Velasco et al., 2013) found innovation to be the main focus of only about 4 percent of more than 700 academic journal articles on family firms published between 1961 and 2008. Empirical innovation research in particular is lacking in the field of family business studies, while the few existing analyses often yield contradictory results (Kraus et al., 2012). Furthermore, there is a need for additional analyses regarding topics such as strategic reorientation in family firms (Benavides-Velasco et al., 2013) as well as studies that can provide practical insights into how family businesses convert innovation inputs to outputs (Duran, Kammerlander, Van Essen and Zellweger, 2016).

3. Family firms' organizational flexibility advantage

When we turn our attention to the existing research on innovation in family firms, it quickly becomes apparent that it mainly focuses on the role of R&D in family firms' innovation process. In particular, most studies report lower R&D investments in family firms than in non-family firms (De Massis et al., 2013). This is puzzling because, on the output side of innovation, many studies show family firms to be at least as innovative as non-family firms (e.g. Craig and Dibrell 2006; Ayyagari, Demirgüç-Kunt and Vojislav 2011). We believe one solution to this paradox may be found by analyzing the role of family firms' organizational flexibility as a different, but potentially alternative, driver of innovation performance.

As stated earlier, organizational flexibility has been shown to enhance both family and non-family firms' innovative performance (Kraus et al., 2012). However, there are several factors that may cause family firms to adopt a different stance towards organizational flexibility than their non-family counterparts.

Penny and Combs (2013), for example, identify two characteristics, namely the need for control and the family cohesion, that together determine whether a family firm emphasizes stability or rather adaptability, i.e. the development and evolution of their capabilities. Families that value being in control and emphasize tight discipline while at the same time showing little intra-family cohesion or little family loyalty, will have difficulty adapting to a changing environment. As a result, innovation will suffer. However, the opposite is true for family firms with more democratic organization structures and close-knit families at the helm, as they will be able and willing to change course more easily.

Furthermore, family firms often possess unique characteristics and resources that set them apart from non-family enterprises. In certain cases that may lead to a stronger adherence to tradition, hampering innovation within the company. However, the specific family character of the company may also provide a boost to innovation when the family at the helm succeeds in defining innovativeness as one of the core values of the family firm (Bennedsen and Foss, 2015).

In all, a multitude of arguments, including family firms' more flexible and less formalized innovation management (De Massis, Frattini, Pizzurno and Cassia, 2015) and their easier intra-family knowledge sharing, point to family firms having a greater ability to adapt both their internal structures and external relations network (Chirico and Salvato 2008) and hence their organizational flexibility.

4. Managing organizational flexibility

Clearly, existing research points to the relevance and importance of organizational flexibility for innovative family firms. However, much of the literature explores the role and impact of organizational flexibility either from a theoretical perspective or through broad quantitative analyses. Although such studies undoubtedly yield valuable insights, they only provide limited insight into *how* organizational flexibility can be stimulated and managed. In other words, the process of organizational flexibility remains in large part a black box. This is problematic because change is a double-edged sword. Change offers opportunities for rejuvenation and creativity (Parnell, 1994) but it also constitutes a challenge as practice shows that many companies struggle to successfully complete change processes (McKinsey, 2008).

Understanding the reality of organizational flexibility requires more than analyzing a collection of tangible, objective determinants. It requires taking into account psychological factors such as trust between a company's employees and its management (Lengnick-Hall, 1992) as well as the role of organizational culture (Kraus et al., 2012). After all, the successful completion of innovation and change processes not only depends on a company's objective capability but also on the stakeholders' willingness and motivation to do so. Therefore, if the firm's leadership wants to stimulate and manage the latter, it needs to gain as much insight as possible into the psychological processes involved (Holt and Daspit, 2015).

At the same time, family firms provide a distinct and particularly interesting environment for studying the interplay between business processes on the one hand and stakeholders' emotional and psychological processes on the other.

Family firms are often deemed to have an advantage over nonfamily firms when it comes to motivating their employees (Dawson, 2012). As such, certain family firms' high level of innovativeness may in part be explained by their highly motivated workforce (Bennedsen and Foss, 2015). Family firms with an organizational culture that fosters an open and respectful internal dialogue can accumulate a considerable amount of "psychological capital" from their managers (Memili, Welsh and Kaciak, 2014). Such a warm and friendly work environment strengthens the bond between non-family managers and the family firm in which they work and motivates them to go the extra mile in order to help the company prosper (Bammens, Notelaers and Van Gils, 2015).

However, in spite of the acknowledged importance of understanding the role of emotions and psychological processes in family businesses, there are only few research studies that actually tackle such issues in depth (Goel, Mazzola, Phan, Pieper and Zachary, 2012; Yu et al., 2012). It may indeed be the case that family firms are better at optimizing inter-personal interactions or at getting the best out of their employees, but empirical evidence supporting such assumptions remains scarce or inconclusive (Salvato and Aldrich, 2012).

One specific area where useful insights could be gained concerns what role family firm stakeholders' emotions play on a more individual level, as well as the factors that cause such emotions to change and evolve over time (Shepherd, 2016). One internal stakeholder group in particular deserves additional research attention, namely the non-family employees and managers. An increased understanding of how they function within family firms and what their expectations are, can only serve to benefit both the employees and the family firm (Sharma, 2004; Yu et al., 2012; Benavides-Velasco et al., 2013).

Incorporating the impact of emotional bonds between individuals and the company allows us to paint a more complete picture of organizational flexibility in family firms. Whereas financial bonds are often limited to members of the founding family, emotional bonds reach further to include non-family stakeholders. At the same time, when striving to gain meaningful insights, it is essential to make intra-family distinctions by differentiating between family members with varying levels of emotional attachment to the firm (Björnberg and Nicholson, 2012).

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5. The psychological ownership framework

The different research gaps clearly point to the existence of significant barriers hindering an effective analysis of stakeholders' psychological processes. By their very nature, the psychological factors that determine whether individuals support or resist organizational flexibility are hard to objectify or standardize. Fortunately, we believe the concept of psychological ownership offers a very useful framework to better understand the factors that lead to company-internal resistance to or support for organizational flexibility.

Therefore, we build on the concept of psychological ownership, i.e. individuals regarding a company, department or idea as "theirs" (Pierce, Kostova and Dirks, 2001; Pierce and Jussila, 2010), as literature has shown this to be a strong motivational factor (Pierce, Rubenfeld and Morgan, 1991) and one of the main factors ensuring changes' success in family businesses (Lambrechts, Koiranen, Grieten and Bouwen, 2009).

Furthermore, there are several additional reasons why the framework is a good fit for the context of family firms. First of all, the intense involvement of the family in "their" company may strengthen the impact of psychological ownership in family firms (Pierce et al., 2001; Ikävalko, Pihkala and Jussila, 2008). Secondly, the routes leading towards psychological ownership play an important role within family firms (Gómez-Mejía, Takacs-Haynes, Nuñez-Nickel, Jacobson and Moyano-Fuentes, 2007; Sieger, Bernhard and Frey, 2011). Finally, the family business setting offers a potentially wide range of perspectives, both from family and non-family members, which may help us understand different internal stakeholders' disposition towards family firm processes.

From a practical or managerial standpoint however, the current research on psychological ownership too leaves ample room for improvement. Although research on the relationship between organizational flexibility and psychological ownership is not new,

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several additional issues need to be addressed in order to better comprehend stakeholders' disposition towards the family firm. Therefore, we strive to address the call for more empirical validation of the psychological ownership framework (Liu, Wang, Hui and Lee, 2012; Brown, Crossley and Robinson, 2014; Dawkins, Tian, Newman and Martin, 2017) to enhance its practical usefulness.

6. Overview

In the first chapter of this work we start from a broad perspective by analyzing the importance of organizational flexibility as an enabler and promoter of product and process innovation. Specifically, we look at various forms of organizational flexibility, i.e. as a firm's ability to adapt its internal organizational structure or to manage its external relations and its ability to integrate internal and external knowledge into the innovation process. Hence, we want to contribute to the literature on organizational flexibility by obtaining robust insights in the relationship between organizational flexibility on the one hand and various quantifiable aspects of product and process innovation performance on the other.

In the second section of this work we narrow our focus from a general company perspective to the specific environment of the family firm, by analyzing the role of organizational flexibility in the innovation processes of family firms. Building on existing theoretical and empirical work, we analyze the relationship between family ownership on the one hand and both R&D and organizational flexibility on the other hand, and on how this relationship translates into successful innovation. Specifically, we analyze whether family firms invest less in R&D but at the same time display higher levels of organizational flexibility than non-family firms. Subsequently, we analyze whether such higher organizational flexibility leads to a better innovation performance for family businesses. In the third chapter we aim to further bridge the gap between organizational innovation theory and practice. Therefore, we take an in-depth look at one of the main components of organizational flexibility, i.e. changes to the family firm's internal decision structure, through the lens of psychological ownership. In particular, we explore how the sense of control, psychological ownership and motivation of both family-members and non-family managers are interrelated.

Finally, we point to the main implications of our findings, discuss the study's limitations, and suggest interesting avenues for future research.

7. Methodology

Both for analyzing the importance of organizational flexibility as an enabler and promoter of product and process innovation and for investigating the role of organizational flexibility in the innovation processes of family firms we follow a quantitative approach.

Firstly, based on a panel of 4,081 Flemish service and manufacturing firms, we analyze whether a minimal degree of flexibility with respect to (1) the distribution of responsibilities and decision making power, (2) external relationship management, as well as (3) knowledge management systems coincides with product and process innovation performance.

For the second section of this work, where we look at the role of organizational flexibility in family firms, we use a sample of 2,604 Flemish firms and 3,140 year-observations to test hypotheses on the relationship between family ownership and R&D and organizational flexibility, and on how these translate into innovation output.

In order to formulate propositions with regard to our final research question, "How are (sense of) control, psychological ownership and motivation of both family-members and non-family managers interrelated?", we opted for a qualitative approach instead of a quantitative analysis. Such a methodology is better suited to develop an understanding of how the family business setting influences decision making and of the actual execution of those decisions by different stakeholders (Fletcher, De Massis and Nordqvist, 2016). Particularly when we consider the complexity of organizational innovation processes and the many different factors involved, we need to move towards qualitative research, preferably combining insights from the fields of management, innovation and psychology (Hatak, Kautonen, Fink and Kansikas, 2016). We also believe such a research method to be more appropriate as we require insight in people's motivation and decision process (Lewis and McNaughton Nicholls, 2014). Hence, we conducted a multiple case-study analysis of transfers of control from family to non-family managers in five Flemish family firms, resulting in 15 interviews with both family owners and non-family managers.

8. Main results

Our first analysis confirms that organizational flexibility with respect to (1) the distribution of responsibilities and decision making power, (2) external relationship management, as well as (3) knowledge management systems indeed goes hand in hand with product and process innovation performance. Furthermore, when we focus on family firms' innovation performance we find that family firms engage less in R&D, but are more flexible in the way they organize, and that this organizational flexibility is positively associated with the successful development of new products. The results even shows that family firms outperform non-family owned businesses when it comes to process innovation. Finally, our investigation into the interaction between delegation of control, psychological ownership and motivation of both family owners and non-family managers in family firms shows a mixed picture. Our interviews reveal that family owners are often quite willing to delegate operational control but are reluctant to share strategic control. Hence, family firms display high organizational flexibility on an operational level but less so on a strategic level. Our findings stress that stimulating a sense of psychological ownership may make the family firm more agile but may also lead to rigidity.

Chapter 1

Linking organizational flexibility to product and process innovation performance: A statistical decomposition based on CIS survey evidence

1. Introduction

The economic environment has become a much more dynamic and unpredictable place. In order to remain competitive many companies strive for innovation. In doing so, both managers and researchers have long predominantly focused on R&D and external cooperation as the main determinants of product or process innovation. However, companies operating in changing environments also need to be flexible and adapt. Such flexibility not only pertains to their strategic goals but also to their organizational design and decision processes. The organization itself needs to be able to adapt to the new requirements, albeit without becoming adrift (Volberda, 1996; 1997). When the dynamics of the marketplace are high, such organizational flexibility may become a near-continuous effort, with a recurring need to redesign the organization (Donaldson, 2006).

Although the concept of organizational flexibility as a supporting factor goes back a long way (e.g. Burns and Stalker, 1961), scholars have only recently started to value it equally as product and process innovation (Teece, 2007; Tether and Tajar, 2008). Organizational flexibility - including innovations with respect to the internal structure of the company, its external collaboration structure, and the way it integrates internal and external knowledge into the innovation process - is deemed necessary for a company to innovate and renew (Teece, Pisano and Shuen, 1997; Evangelista and Vezzani, 2010; Colombo, Laursen, Magnusson and Rossi-Lamastra, 2011). Organizational flexibility is partly related to organizational ambidexterity in that organizationally ambidextrous companies have the ability to balance different internal structures and procedures in order to pursue both radical and incremental innovation. In turn, sequential ambidexterity requires the organizational flexibility to switch from one structure to another (O'Reilly and Tushman, 2013).

However, in spite of the conceptual importance attributed to organizational flexibility, empirical evidence on the impact of organizational flexibility on product and process innovation performance remains scattered. Specifically, the existing studies have two main limitations. Firstly, most focus on the performance effect of one specific aspect of organizational flexibility, such as the flexible redistribution of responsibilities, novel management of external collaborations or the introduction of new knowledge management systems. Given the potential correlations between different aspects of organizational flexibility, this may lead to omitted variable bias and therefore to imprecise measurement of their effects. There is hence a need to include the effects of different aspects of organizational flexibility in one single empirical analysis (see also Zack, McKeen and Singh, 2009). Second, existing empirical evidence is biased towards product innovations and evidence on the enabling effect of organizational flexibility on process innovation is lacking.

Although organizational flexibility and sequential ambidexterity have large potential for increasing companies' long term innovation performance, it may also create substantial costs, inefficiencies and conflicts in the short run (Chen, 2017). Beyond the theoretical level, however, the practical implications and potential pitfalls of such flexibility remain poorly understood (O'Reilly and Tushman, 2013). Given that recent work has pointed to important cost implications of organizational flexibility (Faems, de Visser, Andries and Van Looy, 2010; Andries and Wastyn, 2012), it is important for companies to have a clear view on its specific benefits, i.e. to know whether and how their investments in organizational flexibility will lead to improved innovation performance. Therefore, this study wants to contribute to the literature on organizational flexibility by obtaining robust insights in the relationship between (a) organizational flexibility and (b) various quantifiable aspects of product and process innovation performance. Considering the relative abundance of theoretical approaches versus the limited number of empirical assessments of the role of organizational flexibility, we explicitly opt for an empirically-focused approach. Based on a panel of 4,081 Flemish service and manufacturing firms, we analyze whether a minimal degree of flexibility with respect to (1) the distribution of responsibilities and decision making power, (2) external relationship management, as well as (3) knowledge management systems coincides with product and process innovation performance.

This chapter consists of four sections. We start with the literature overview and subsequently move on to the data collection and the methodology. Next, the results of the analyses are presented. Finally, we point to the main implications of our findings, discuss the study's main limitations, and suggest interesting avenues for future research.

2. Literature background

Various aspects of organizational flexibility can contribute to product or process innovation. Following the OECD's Oslo Manual (2005), we regard both the development of new goods or services and the significant improvement of existing goods as product innovation, while significant changes in production and delivery methods are considered process innovations. Furthermore, in this chapter we specifically focus on three aspects of organizational flexibility, namely flexibility (1) with respect to the design of the company's internal structure, (2) with respect to the way the firm manages its external collaborations, and (3) with respect to the way it integrates internal and external knowledge into the innovation process.

2.1. Internal structural flexibility and innovation performance

Firstly, for a company to continuously innovate and renew, it should have the flexibility to change its internal structure and decisionmaking processes (Miles, Snow, Fjeldstad, Miles and Lettl, 2010). Whereas earlier strands in the literature have discussed about whether centralization, decentralization, or matrix organizations and crossfunctional teams reflect the most appropriate structure for stimulating

innovation, more recently the understanding has emerged that there is no "one best" organizational structure for innovation (Ravnor and Ahmed, 2013). Instead, its impact may depend on environmental variables, on the kind of innovation that is desired, and even on the specific phase in the innovation process. For example, a mechanistic organizational structure may improve product innovation but discourage service innovation (Calantone, Harmancioglu and Droge. 2010) while radical innovation benefits more from flexible structures than from one static organizational form in particular (Kelley, 2009). Likewise, decentralized control during the creative first stages of innovation can be replaced by more centralization as the innovation becomes more concrete (Freeman and Engel, 2007). This implies that companies continuously need to adapt their internal organization according to the type and the stage of the innovations they are developing. Therefore, a firm's ability to implement a specific organizational form may be less important than its ability to switch from one form to another and back again. Consequently, we hypothesize that:

H1: There is a positive relationship between a firm's internal structural flexibility and its innovation performance.

Given the inherent volatility, the different phases and the diversity of the parties involved in most innovation processes, we hypothesize this positive relationship to hold for both product and process innovation (Miles, Snow, Fjeldstad, Miles and Lettl, 2010), both radical (Kelley, 2009) and incremental.

2.2. External structural flexibility and innovation performance

In today's global economy internal knowledge no longer suffices to remain competitive. Instead, innovation is best achieved by combining internal and external communication (Damanpour, 1991; Brown and Eisenhardt, 1995; Teece, 2007; Colombo, Laursen, Magnusson and Rossi-Lamastra, 2011), as represented in the "open innovation" concept (Chesbrough, 2003). The resulting heterogeneity of knowledge is what many consider to be an indispensable prerequisite for creativity and innovation (Amabile, 1998; Kane and Alavi, 2007). By encouraging employees to scan their environment and to interact in novel ways with external parties, management can help build diverse networks through which external ideas can be captured and introduced in the company (Huston and Sakkab, 2006; Love and Mansury, 2007; Birkinshaw, Hamel and Mol, 2008).

In order to be fully efficient, external cooperation needs an appropriate organizational framework that helps integrate those external inputs (Teece et al., 1997; Dörfler and Baumann, 2014). However, there is no universal rule to decide which external partners are most suitable for a company's innovation efforts and how these relationships are managed. First of all, it depends on the type of innovation. Faems, Van Looy and Debackere (2005), for example, show that incremental innovations benefit most from collaborations with customers and suppliers, while more radical innovations have more to gain from collaborations with universities and research organizations. Secondly, external collaboration may imply everything from a limited to an extended network of partners, combined with either a hierarchical or a flat structure. Each combination of those features requires a contingent management approach to be successful (Pisano and Verganti, 2008). Finally, as a firm's ecosystem grows, the organizational complexity of its networks increases. All those factors imply that companies continuously need to adapt the organization of their external relations according to the type of innovations they are developing at the time. As with the internal structure, flexibility in managing its external innovation network is at least as important for a company as deciding on a specific cooperation structure. We therefore hypothesize that:

H2: There is a positive relationship between a firm's external structural flexibility and its innovation performance.

As for our previous hypothesis, we expect this positive relationship to hold for both product (Brown and Eisenhardt, 1995) and process innovation (Teece, 2007), both radical (Huston and Sakkab, 2006; Teece, 2007) and incremental.

2.3. Knowledge management flexibility and innovation performance

Since innovation requires the combination of numerous pieces of different, specialized knowledge, knowledge integration becomes crucial (Grant, 1996). Clearly, creating new knowledge matters when competitiveness through innovation is the goal, but as with all resources this process needs to be managed appropriately (Teece, 2007). Several studies have described innovation as a knowledge management process (e.g. Madhavan and Grover, 1998). The literature on product innovation, for example, regards the rate of new product introduction not only as a function of a firm's ability to create knowledge, but also of its ability to manage and maintain this knowledge (Kogut and Zander, 1992; Nonaka, 1994). Likewise, an organization's knowledge management capability has been shown to facilitate process innovation (Tarafdar and Gordon, 2007). Knowledge management systems can enhance knowledge sharing and filtering, thereby increasing the usefulness of the acquired information and eventually resulting in more product and process innovation, both incremental and radical (Darroch, 2005; Zack, McKeen and Singh, 2009).

At the same time, however, a "one-size-fits'-all" approach to knowledge management is inappropriate. Instead, a firm needs to align its knowledge management techniques to the type of innovation it wants to develop (Czarnitzki and Wastyn, 2009). For example, if a firm wants to introduce cost-reducing innovations, it should implement a codified knowledge management policy and invest in stimuli for employees to share knowledge. If, however, new product introductions are desired, it is more beneficial to focus on external knowledge integration. In order to fully share and utilize both internally and externally developed insights, companies should be flexible in adapting their knowledge management systems (Zack, McKeen and Singh, 2009). We therefore hypothesize that:

H3: There is a positive relationship between a firm's knowledge management flexibility and its innovation performance.

Again, we hypothesize this positive relationship to hold for both product (Kogut and Zander, 1992; Nonaka, 1994) and process innovation (Tarafdar and Gordon, 2007), both radical (Teece, 2007) and incremental.

3. Data collection and analysis

3.1. Sample and data collection

We combined three consecutive waves of the Community Innovation Survey (CIS) conducted in Flanders. The CIS is an official survey of the European Commission and Eurostat, conducted in several European Union Member States. It seeks to develop insights into the innovative behavior of private organizations.

The three surveys were CIS3, conducted in 2005 and reporting on innovation-related issues for the period 2002-2004, CIS4 in 2007 and covering the period 2004-2006 and finally CIS5 in 2009 with data from 2006 to 2008. For each survey a representative sample of, mostly private, Flemish manufacturing and service firms was selected. 4,024 firms were contacted for CIS3, with 1,669 responding (41%). CIS4 contacted 4,871 firms and received 2,118 responses (43%) while CIS5 contacted 4,969 firms for 2,202 responses (44%). In each wave, followup surveys with non-respondents showed no biases between respondents and non-respondents. Merging these three consecutive waves of the CIS survey led to a total sample of 4,752 firms. Due to missing values for the variables used in our analyses, this sample was restricted to 4,081 firms and 5,582 year-observations.

3.2. Variables and descriptive statistics

Table 1 provides an overview of the descriptive statistics of the main variables used in our analysis, while Table 2 contains the correlations between the variables.

3.2.1. Innovation performance

We used four different dependent variables, representing both product and process innovation performance.

For product innovation performance, we followed the work by a.o. Mohnen and Mairesse (2002), Faems et al. (2005) and Laursen and Salter (2006), who measured product innovation success as product innovations' share in total sales. We distinguished between new to the market and new to the firm product innovation. New to Market Prod measures the successful development and commercialization of radically new products or services as the share of turnover in year t from goods and services that were new to the market and were introduced during the period t-2 to t. The average firm in the sample obtained 4.21% of its turnover from goods and services that were new to the market. Similarly, New_to_Firm Prod represents the successful development and commercialization of new to the firm product or service innovations and is measured as the share of turnover from goods and services that were new to the firm but that were already available on the market and that were introduced during the period t-2 to t. The average firm in the sample obtained 4.27% of its turnover from new to the firm innovations. Both *New_to_Market_Prod* and *New_to_Firm_Prod* are represented as a percentage of total company turnover in year t.

With respect to process innovation success, we measured both their cost and quality implications. *Cost_Reduc* is the percentage average cost reduction per unit in year t due to process innovations that were introduced during the period t-2 to t. *Quality_Impr* is the percentage turnover increase in year t due to quality improvements (of the production process) resulting from process innovations introduced during the period t-2 to t. The average firm in the sample obtained a cost reduction of approximately 1.57% per unit produced due to process innovations. It had an average turnover increase of about 1.39% due to process innovation.

Since the four innovation performance variables have a skewed distribution, we added 1 to all values (to avoid zero values) and then took their natural logarithm when entering them into our regression analyses. We labeled those variables *Ln_New_to_Market_Prod*, *Ln_New_to_Firm_Prod*, *Ln_Cost_Reduc*, and *Ln_Quality_Impr*.

3.2.2. Organizational flexibility

As a proxy for organizational flexibility, we analyze whether in the past two years, the company has altered its internal decision structure, its way of organizing its external relations or its knowledge management systems. We distinguished between those different components of organizational flexibility since an overall indicator may obscure overlapping or even opposite effects of these different types (Armbruster, Bikfalvi, Kinkel and Lay, 2008). The use of these variables corresponds with our hypotheses, as it allows us to assess whether or not some minimal degree of organizational flexibility is present, rather than analyze specific organizational states.

Resp is a binary variable indicating whether or not a company has introduced *"new methods for organizing responsibilities and*
powers of decision within the enterprise" during the period t-2 to t. A value of 1 indicates the company's dynamic capability to reconfigure its own internal structure. Secondly, *Ext_Rel* measures whether or not a company has introduced "new methods for organizing the external relations with other companies or public institutions" during the period t-2 to t. Finally, *Kms* is a binary variable indicating whether or not a company has introduced "new or significantly improved knowledge management systems to better use or exchange information, knowledge and skills within the enterprise or to collect and interpret external information" during the period t-2 to t.

As shown in Table 1, a minority of the firms demonstrate some minimal degree of organizational flexibility. While 23% of the observations show the introduction of new knowledge management systems (*Kms*), 20% report the introduction of new work organization methods (*Resp*). Only in 11% of the cases, new ways of organizing the firm's external relations (*Ext_Rel*) are introduced.

3.2.3. Control variables

R&D intensity

It stands to reason that a direct (though not necessarily immediate) positive effect of internal innovation efforts on a company's innovation performance can be expected (Pakes and Griliches, 1980). Moreover, a company's internal capabilities generate the absorptive capacity required to turn externally acquired knowledge into innovation (Rosenberg, 1990; Rothaermel and Hess, 2007; Spithoven, Frantzen and Clarysse, 2010). In line with previous work, we therefore controlled for the firm's internal innovation efforts by including the variable $RD_Intensity$, measured as the firm's internal R&D expenditures in year t divided by its turnover in year t. Due to its skewed distribution, we transformed this variable by taking the natural logarithm of $\{1 +$

RD_Intensity} (see for example Czarnitzki and Kraft, 2010 for previous use of this measure) and labeled this variable *Ln_RD_Intensity*¹.

External cooperation

As explained in the literature section, collaboration with outsiders is positively connected to innovative outcomes. A higher diversity of external partners can help a company remain innovative (Duysters and Lokshin, 2011), although the effect may differ depending on the kind of external partner (Faems et al., 2005; Un, Cuervo-Cazurra and Asakawa, 2010). In particular, different types of collaboration partner contribute to different innovation outcomes. Faems et al. (2005) show that collaborations with customers and suppliers - labeled as "exploitative" - increase the turnover stemming from improved products, while collaborations with universities and research organizations - labeled as "explorative" - are associated with turnover levels related to radically new products.

The CIS questionnaires ask each company to indicate whether in the past two years, it cooperated with (1) customers, (2) suppliers, (3) universities, and (4) research centers from four geographical zones. We followed Faems et al. (2005) to construct an exploitation oriented and an exploration oriented cooperation index (*Exploitative_Coop* and *Explorative_Coop*). For *Exploitative_Coop* we summed all binary scores representing collaborations with customers or suppliers for the four regions. Summing all binary scores representing collaborations with universities or research institutes for the four regions resulted in the *Explorative_Coop* variable. Hence, both variables range from 0 to 8. Note that both *Exploitative_Coop* and *Explorative_Coop* represent

¹ In line with previous work by Mueller (1966) and Faems et al. (2005), we also experimented with an alternative measurement for R&D intensity, measured as the percentage of personnel active in R&D. This led to very similar regression results but reduced the number of observations due to missing values.

the firms' actual collaboration intensity whereas the previously defined *Ext_Rel* refers to novel methods for organizing external collaboration.

The average of *Exploitative Coop* is 0.51 since a majority (4,511) of the companies does not cooperate with customers or suppliers to achieve innovation. The average scores for Explorative Coop are lower still, with an average of 0.3 and 4,764 companies not cooperating with universities or research institutes. Since both variables have a skewed distribution, we added 1 to all values (to avoid zero values) and then took the natural logarithm before labeled enterina them into our rearessions. We them Ln Exploitative Coop and Ln Explorative Coop.

Group

A company that is part of a larger group may have easier access to capital and knowledge resources and hence have a better chance to introduce innovations than stand-alone companies (Pfaffermayr, 1999; Faems et al., 2010). For product innovations, group members may also benefit from better access to markets through their affiliates' distribution system. Therefore we included the dummy variable *Group*, which takes the value 1 if the company belongs to a larger group and 0 if it is an independent company. Approximately 48% of the observations in our sample belong to a group.

Size

Since the seminal writings of Schumpeter (1939), the relation between size and firm performance has been much debated (Ahuja, Lampert and Tandon, 2008). Several theoretical arguments substantiate potential innovative advantages of both small and large firms (Acs and Audretsch, 1990). While many empirical studies report a positive link between size and innovation (e.g. Skuras, Tsegenidi and Tsekouras, 2008; Un et al. 2010 among many others), others report a negative (Knudsen, 2007; Spithoven, Frantzen and Clarysse, 2010) or a quadratic relation (Arvanitis, 2008). To control for a company's size we added the natural logarithm of the turnover (expressed in euro) in year t to our regressions, together with its squared value to analyze possible curvilinear effects. We label this variable *Ln_Size*. The average turnover of the respondent firms is roughly 47 million euro, with a median turnover of roughly 6 million euro. The biggest firm in the sample has a turnover of more than 6 billion euro.

Clearly, our sample contains mostly SMEs, which makes our research particularly relevant for economies dominated by SME activity (as is the case for Flanders and most of Europe). As most studies rely on public and large-firm data, we consider this representative coverage of SMEs to be a strength of our study.

Age

The firms' age is also used as control variable, as younger firms may be more innovative than older ones (e.g. de Jong and Vermeulen, 2006; Schneider and Veugelers, 2010). In particular, younger firms may achieve a higher share of sales with new products simply because they have less established products than older firms. Based on the firm's founding date, we obtained the firm's age (*Age*). The average age of the respondent firms is 30. The oldest firm in the sample is 257 years old. For the regression analysis we used the natural logarithm of $\{1 + Age\}$. We label this variable *Ln_Age*.

Industry

The literature indicates an industry effect on both innovation and innovation success (Spithoven, Frantzen and Clarysse, 2010; Ettlie and Rosenthal, 2011). Therefore, we distinguished between 12 broad industry sectors and used the sector with the largest number of observations (Information services, n=884) as our reference point.

Year

We included 2 time dummies to account for time-specific impact factors on innovation outcome. The last year for which data entered the sample (2008) serves as our reference point.

Table 1: Descriptive statistics

	Min	Max	Median	Average
New_to_Market_Prod (%)	0	100	0	4.207453
New_to_Firm_Prod (%)	0	100	0	4.273146
Cost_Reduc (%)	0	75	0	1.570539
Quality_Impr (%)	0	100	0	1.388767
RD_Intensity	0	1	0	0.019343
Exploitative_Coop	0	8	0	0.510032
Explorative_Coop	0	8	0	0.295234
Resp	0	1	0	0.203332
Ext_Rel	0	1	0	0.108563
Kms	0	1	0	0.228592
Group	0	1	0	0.479577
Size	470	6.3 bn	5.8 m	46.6 m
Age	0	257	22	30.2

	Та	ble	2:	Corre	lation	matrix ²
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	Ln_New _to_Mar ket Prod	Ln_New _to Firm Prod	Ln_Cost _Reduc	Ln Quality_ Impr	Kms	Resp	Ext_Rel	Ln_RD_ Intensity	Ln_Ex- ploita- tive Coop	Ln_Ex- plorative _Coop	Group	Ln_Size	Ln_Age
Ln_New_to Market_Prod	1												
Ln_New_to Firm_Prod	0.5618*	1											
Ln_Cost Reduc	0.3331*	0.3055*	1										
Ln_Quality Impr	0.3387*	0.2843*	0.5439*	1									
Kms	0.2598*	0.2555*	0.2887*	0.2530*	1								
Resp	0.2407*	0.2439*	0.2913*	0.2460*	0.5030*	1							
Ext_Rel	0.2289*	0.1998*	0.2007*	0.1741*	0.3586*	0.4203*	1						
Ln_RD Intensity	0.5527*	0.5068*	0.3564*	0.3175*	0.3194*	0.2667*	0.2475*	1					

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	Ln_New _to_Mar ket Prod	Ln_New _to Firm Prod	Ln_Cost _Reduc	Ln Quality_ Impr	Kms	Resp	Ext_Rel	Ln_RD_ Intensity	Ln_Ex- ploita- tive Coop	Ln_Ex- plorative _Coop	Group	Ln_Size	Ln_Age
Ln_Exploita- tive_Coop	0.4255*	0.4056*	0.3307*	0.2783*	0.3049*	0.2739*	0.2711*	0.5302*	1				
Ln_Explora- tive_Coop	0.3848*	0.3467*	0.2197*	0.1907*	0.2348*	0.2033*	0.2083*	0.5098*	0.6884*	1			
Group	0.1083*	0.1457*	0.1243*	0.0374*	0.1597*	0.1637*	0.1053*	0.1584*	0.2021*	0.1563*	1		
Ln_Size	0.1369*	0.1886*	0.1855*	0.0829*	0.2037*	0.2015*	0.1047*	0.1762*	0.2657*	0.2131*	0.5025*	1	
Ln_Age	-0.0079	0.0364*	0.0149	-0.0287*	-0.0110	-0.0115	-0.0159	-0.0209	0.0431*	0.0320*	0.0608*	0.2815*	1

* indicates statistical significance at 5%

² Postestimation analysis of the variance inflation factors (VIFs) reveals no VIFs above 2.2 (with the exception of Ln_Size²), hence there is no indication of multi-collinearity issues.

The correlation matrix (Table 2) shows significant positive correlations between the indicators of organizational flexibility and the different innovation outcomes, which is a first indication that our hypotheses may be correct.

4. Results

As explained before, we combined observations from three consecutive CIS surveys into one data set³. Because we use the same sample for all of our models it is likely that the error terms across the models are correlated. To account for this and to obtain more efficient estimates, we use seemingly unrelated regression to estimate the four models simultaneously⁴. Furthermore, observations in different time periods for the same company are clustered to monitor intragroup correlation. Hence the observations are considered to be independent across clusters but not necessarily within clusters.

Table 3 presents the pooled OLS regression results for the four models, each with a different innovation outcome as dependent variable. The analysis shows that *Resp* is positively related to *Ln_New_to_Market_Prod*, *Ln_New_to_Firm_Prod*, *Ln_Cost_Reduc* and *Ln_Quality_Impr*, confirming Hypothesis 1. *Ext_Rel* displays a significant positive link to *Ln_New_to_Market_Prod* and to

³ We were unable to use a panel analysis method because that would have reduced both our sample size and the significance of our results.

⁴ We also compared the results from the seemingly unrelated regression approach with results obtained from an individual pooled OLS approach. This showed almost no difference in either the coefficients or the significance levels for our data set. Although we analyze limited, non-negative, dependent variables, the limit is "real" (i.e. there exist no negative values). Hence, we follow Angrist and Pischke (2009) and use an OLS instead of a Tobit approach. Either way, robustness checks with Tobit analyses of the same models yielded largely the same results.

Ln_Cost_Reduc and *Ln_Quality_Impr*. Furthermore, it is marginally linked to *Ln_New_to_Firm_Prod*. Hypothesis 2 is hence confirmed. Finally, Kms has highly significant positive links to *Ln_New_to_Market_Prod*, *Ln_New_to_Firm_Prod*, *Ln_Cost_Reduc* and *Ln_Quality_Impr*. Therefore, hypothesis 3 is also confirmed.

As for the control variables, a company's internal innovation efforts ($Ln_RD_Intensity$) show a highly significant positive relationship with both product innovation outcomes ($Ln_New_to_Market_Prod$, $Ln_New_to_Firm_Prod$) but not to process innovation outcomes ($Ln_Cost_Reduc, Ln_Quality_Impr$). While exploitative cooperation with external partners ($Ln_Exploitative_Coop$) shows a significant positive link to all innovation performance outcomes, explorative cooperation ($Ln_Explorative_Coop$) only has a significant positive effect on $Ln_New_to_Market_Prod$. Hence, our results for explorative cooperation mirror Faems et al.'s (2005) earlier conclusions. With regard to exploitative cooperation we find a positive link to both new to the firm and new to the market product innovation, whereas Faems et al. (2005) only report the former, which may be explained by differences in sample size and variable operationalization.

Company size (Ln_Size) shows a significant inverse U-shaped relationship to both product innovation outcomes and (Ln New to Market Prod, Ln New to Firm Prod) to Ln Quality Impr⁵. Company age (Ln Age) is negatively related to both Ln_Cost_Reduc and Ln_Quality_Impr while group membership (Group) unexpectedly displays negative relationship а to Ln Quality Impr. As far as the industry influence is concerned, the Wald test shows that the 11 industry dummies are jointly significant in all the regressions. Firm characteristics hence do matter as well. The

⁵ Although company size eventually has a negative effect on innovation performance, this only occurs for very large firms. Hence, this result should not be interpreted as an overall indication that medium-sized firms are better innovators than large firms.

time dummies on the other hand are only jointly significant in the process innovation models.

	Ln New to	Ln New to	Ln Cost	Ln Quality
	Market_Prod	Firm_Prod	Reduc	Impr
Resp	0.176**	0.233**	0.275**	0.210**
Ext_Rel	0.224**	0.122*	0.117**	0.110**
Kms	0.185**	0.213**	0.230**	0.200**
Ln_RD_Intensity	3.501**	1.430**	0.038	0.463
Ln_Exploitative_	0.539**	0.572**	0.347**	0.285**
Соор				
Ln_Explorative	0.199**	0.114	-0.053	-0.028
Соор				
Group	-0.027	0.043	0.010	-0.075**
Ln_Size	0.191**	0.277**	0.031	0.234**
Ln_Size_sq	-0.006**	-0.008**	0	-0.008**
Ln_Age	-0.025	0.015	-0.037**	-0.038**
_cons	-1.116	-2.108**	-0.229	-1.524**
Test on joint	Chi²(11) =	Chi²(11) =	Chi ² (11) =	Chi²(11) =
significance of	134.08**	64.47**	35.48**	31.83**
industry dummies				
Test on joint	Chi²(2) =	Chi²(2) =	Chi²(2) =	Chi²(2) =
significance of	2.51	3.04	24.42**	12.79**
time dummies				
Ν	5,582	5,582	5,582	5,582
Number of	4,081	4,081	4,081	4,081
clusters				

Table 3: Regression results

* and ** indicate statistical significance at 10% and 5% respectively

4.1. Additional analyses

4.1.1. Differences in effects between types of organizational flexibility

As different types of organizational flexibility likely have different cost implications for the company, it may be useful to know whether some aspects of organizational flexibility are more effective than others. We therefore tested whether the coefficients of *Resp, Ext_Rel* and *Kms* are significantly different from each other. Wald tests revealed that this is only the case in the *Ln_Cost_Reduc* model, where the coefficient for Resp is significantly larger than that of *Ext_Rel*. This implies that flexibility with respect to the internal structure of the organization is more important than flexibility with respect to the organization of external relations when it comes to achieving cost reductions from process innovations.

We also tested whether specific aspects of organizational flexibility affect the various performance measures differently, for example, whether *Kms* is more important for cost reductions resulting from process innovations (*Ln_Cost_Reduc*) than for quality improvements resulting from process innovations (*Ln_Quality_Impr*). However, we did not find significant differences for any of the three organizational flexibility variables.

4.1.2. Robustness checks

We performed several additional analyses to verify the robustness of our results. Firstly, we included interaction effects between organizational flexibility and some of the control variables, namely the product of *Resp* and *Ln_RD_Intensity* and the product of *Kms* and *Ln_RD_Intensity*. After all, new methods for organizing responsibilities and novel knowledge management systems might moderate the effect of a firm's internal innovation efforts. We also

included the product of *Ext_Rel* and *Ln_Exploitative_Coop* and the product of *Ext_Rel* and *Ln_Explorative_Coop* since the effect of a firm's external collaborations might depend on how they are organized and managed. The regression results for the interaction models are very similar to the results for the basic models. Only the interaction between *Kms* and *Ln_RD_Intensity* shows a marginally significant negative coefficient in the *Ln_New_to_Firm_Prod* model.

Secondly, we reran our analyses with (the natural logarithm of) the absolute values of *New_to_Market_Prod*, *New_to_Firm_Prod*, *Quality_Impr* and *RD_Intensity*, which yielded largely similar results as those obtained from the base model.

Finally, we ran regressions on different subsamples (innovators only, small versus medium versus large firms, low tech versus high tech and manufacturing versus services). This reduced the sample size and hence the significance of our results, but did not otherwise contradict the results obtained from the entire sample.

5. Discussion and conclusion

Although organizational flexibility is widely believed to foster firms' ability to innovate successfully, empirical evidence remains scattered. Empirically addressing questions as to the actual impact of organizational flexibility in innovation settings therefore is a valid and relevant endeavor. The current chapter contributes to the literature by demonstrating that organizational flexibility indeed correlates with firms' innovation performance. In particular, flexibility with respect to (1) the distribution of responsibilities and decision making power, (2) external relationship management, as well as (3) knowledge management systems show a positive relationship with (a) turnover from goods and services that were new to the market, (b) turnover from goods and services that were only new to the firm but not to the market, (c) cost reductions due to process innovations, and (d) turnover increase due to quality improvements of the production process.

This observation is especially important in light of recent work stressing implications of organizational flexibility. the cost Organizational changes require work to be diverted away from the company's existing business, creating opportunity costs (Ambrosini and Bowman, 2009). Furthermore, such organizational changes often require significant investments. Organizational flexibility may even end up hindering the innovation process. People need time to adjust to the new working pattern and this may initially disrupt several organizational processes, including product and process innovation. Fortunately, our study demonstrates that there is more to organizational flexibility than merely costs, and that organizational flexibility and firms' innovative performance are highly intertwined. In turn, this may stimulate managers to look beyond the cost side of organizational flexibility and encourage them to take a broader approach toward innovation.

This chapter's distinctive contribution consists of the analysis of four different measures of companies' innovation performance and three different types of organizational flexibility in the same analysis. Whereas the number of studies that analyze the impact of a specific aspect of organizational flexibility on innovation performance is on the rise, most do not compare the impact of different aspects of organizational flexibility on different innovation outcomes. By taking a broader analytical view, we reduce potential omitted variables biases. In particular, we find that all three aspects of organizational flexibility are equally relevant. Flexibility with respect to (1) the distribution of responsibilities and decision-making power, (2) external relationship management, as well as (3) knowledge management systems have a similar structural relationship to innovation performance. Only for process innovation performance, does flexibility with respect to the distribution of responsibilities and decision-making power appear slightly more relevant than flexibility with respect to external relationship management. Furthermore, all types of innovation outcomes seem to be equally intertwined with organizational flexibility.

Chapter 1

6. Limitations and suggestions for further research

A first important limitation of this study pertains to the measurement of organizational flexibility. We use binary variables indicating whether or not a company has introduced (a) new methods for organizing responsibilities and powers of decision (b) new methods for organizing the external relations with other companies or public institutions, and (c) new or significantly improved knowledge management systems. Although this operationalization allow us to proxy organizational flexibility rather than simply analyzing specific organizational states and to distinguish between three aspects of organizational flexibility, it has some limitations. In particular, due to their binary nature, these measures only mirror whether some minimal degree of organizational flexibility is present in the organization, but provide no information regarding the precise degree of flexibility. For instance, they do not communicate whether a firm changed the distribution of responsibilities and decision power, external relationship management, and knowledge management systems only once or several times during the past period. Neither do these measures reflect the extent to which organizational flexibility is present in the organization as a whole, or only in some business units. Future research should use more detailed measures for each aspect of organizational flexibility.

Secondly, although the CIS data allow us to distinguish between four kinds of innovation performance, other and more detailed innovation performance indicators could add additional value. For example, future research could take process innovations' radical or incremental nature into account. Furthermore, organizational flexibility may impact on marketing innovations or employee motivation, which in turn may positively affect firm performance. Therefore, future research could analyze other outputs, in addition to product and process innovation performance.

Chapter 1

In this study we use similar timeframes to measure organizational flexibility and innovation performance. We measure organizational flexibility during the period t-2 to t, and product and process innovation performance in year t due to innovations developed during the period t-2 to t. We acknowledge that organizational flexibility introduced during the period t-2 to t may not lead to new products in that same period. The timeframe in this study may hence be too short to fully grasp the positive effect of organizational innovations. Thus, the current study may be underestimating the positive effects of organizational flexibility on innovation performance. Also, it is important to note that our analysis does not allow us to draw causal conclusions and that endogeneity issues complicate the discussion of the results. Organizational flexibility may spur product or process innovation but firms heavily involved in such innovation projects may also feel a stronger need to implement organizational innovations. Furthermore, other, unobserved variables may influence product, process and organizational innovation at the same time.

Finally, we acknowledge that our study does not incorporate the cost implications of organizational flexibility, and can therefore not provide any conclusions on the ultimate financial effects of organizational flexibility. The main goal of this chapter was to verify whether organizational flexibility is indeed related to product and process innovation performance, and whether some aspects of organizational flexibility matter more than others in this respect. Comparing these performance effects with the cost implications of organizational flexibility is a relevant topic for further research.

Chapter 2

Innovation processes in family firms: the relevance of organizational flexibility

1. Introduction⁶

In this second chapter we move from a broad perspective on organizational flexibility as an enabler and promoter of product and process innovation to the more specific environment of the family firm.

Management and economics scholars are increasingly paying attention to the family firms' innovative performance (De Massis, Frattini and Lichtenthaler, 2013). Whereas the successful development of new products and processes is deemed crucial for firms' long term performance, innovation is inherently risky and uncertain (Shi, 2003). As Classen, Carree, Van Gils and Peters (2014) point out, these characteristics of innovation may have specific implications for family owned firms (Zellweger, 2007; Miller, Le Breton-Miller and Lester, 2011) and several studies investigated whether family firms have a higher innovation performance than non-family owned firms. Unfortunately, the results are rather inconclusive, with some studies finding a positive (e.g. Craig and Dibrell, 2006; Avyagari et al., 2011), and others a negative relationship between family ownership and innovation performance (e.g. Block, Miller, Jaskiewicz and Spiegel, 2013; Chin, Chen, Kleinman and Lee, 2009). Classen et al. (2014) show that family SMEs outperform non-family SMEs regarding process innovation outcomes - but not product innovation outcomes - when controlling for innovation expenditures. Why this is the case is unclear as few studies explicitly investigated the different processes that enable family firms to successfully innovate.

In fact, research on determinants of family firms' innovative performance is mainly restricted to their research and development (R&D). As De Massis et al. (2013) show, most empirical studies find that family firms invest less in R&D than non-family owned firms. This

⁶ Published in Small Business Economics, 47 (3), 2016, p771-785. The final publication is available at Springer via http://dx.doi.org/10.1007/s11187-016-9760-7

is puzzling, as it appears to contradict the empirical findings of superior innovation performance in the studies mentioned above. One possible explanation is that studies of family firms' engagement in R&D – which focus mostly on large, publicly traded enterprises (Classen et al., 2014) - are biased and that the average family firm does not have an R&D disadvantage. Another possibility is that family firms compensate their R&D disadvantage through other processes.

The current chapter intends to broaden our understanding of the processes underlying successful innovation in family firms by studying both R&D and organizational flexibility, which we define in this work as a firm's ability to adapt its internal organizational structure or the organization of its external relations, as drivers of innovation performance. These two underlying processes appear particularly interesting as existing literature suggests that family firms and nonfamily firms may differ in their ability to develop them. In fact, one can argue that some organizational processes stimulating innovation and organizational flexibility may be different for family firms and non-family firms (Hatum and Pettigrew, 2004).

Building on existing theoretical and empirical work, we formulate hypotheses on the relationship between family ownership and R&D and organizational flexibility, and on how these translate into innovation output. Using a sample of 2,604 firms and 3,140 year-observations, we find that the average family firm engages less in R&D activities, but is more flexible in the way it organizes. This organizational flexibility is positively associated with family firms' ability to attain similar product innovation performance levels, and even to outperform their non-family counterparts with respect to successful new process development.

This research contributes to the family business field by extending the literature on innovation in family firms. In particular, it demonstrates that not only R&D but also organizational flexibility underlies the relationship between family ownership and innovation performance. Furthermore, this chapter responds to the call for additional research into how family firms' specific processes can result in a competitive advantage (Astrachan, 2010), as it shows that family firms are particularly strong in flexibly adapting their organizational structure, potentially giving them an advantage when it comes to developing process innovations. Our research has important implications for business families and family firm managers as it encourages them to continue reconfiguring and enhancing their internal and external organization. It demonstrates that R&D is not the only road to innovation and renewal and that family firms' most efficient choices are not necessarily the same as those of non-family owned firms.

2. Literature background

2.1. <u>R&D and organizational flexibility as underlying processes for</u> <u>innovation</u>

Before exploring the relationship between family firms, R&D and organizational flexibility, we clarify the impact of both R&D and organizational flexibility on innovation performance. R&D activities are generally regarded as one of the main determinants of companies' innovative performance. As Eisenhardt and Martin (2000, pp.1107) explain, R&D routines *"by which managers combine their varied skills and functional backgrounds [...] create revenue-producing products and services"*. R&D is not the only possible or even a necessary road to innovation, but with R&D activities as an important enabler of technological innovation, a direct (though not necessarily immediate) positive effect of R&D on a company's innovation performance can be expected (Pakes and Griliches, 1980). Even from the perspective of open innovation and innovation though external cooperation, internal R&D remains important. After all, a company's internal capabilities generate the absorptive capacity required to turn externally acquired knowledge into innovation (Rosenberg, 1990; Spithoven, Frantzen and Clarysse, 2010). This brings us to our first confirmatory hypothesis:

H1: There is a positive relationship between a firm's R&D activities and its innovation performance.

Although R&D is an important driver of innovation performance, other processes may be equally crucial. In particular, we argue that organizational flexibility, i.e. a firm's ability to adapt its internal organizational structure or the organization of its external relations, is crucial for renewal. Firstly, for a company to continuously innovate, it should have the flexibility to change its internal structure and decisionmaking processes (Miles, Snow, Fjeldstad, Miles and Lettl, 2010). Whereas earlier strands in the literature focused on finding the most appropriate structure for stimulating innovation, more recently the understanding has emerged that there is no "one best" organizational structure for innovation (Raynor and Ahmed, 2013). Instead, which structure is most helpful may depend on environmental variables, on the kind of innovation that is desired (Kelley, 2009; Calantone, Harmancioglu and Droge, 2010), and even on the specific phase in the innovation process (Freeman and Engel, 2007). Secondly, organizational flexibility also pertains to the organization of a firm's external relations. Cooperation with external partners can yield external ideas (Birkinshaw, Hamel and Mol, 2008) but to be fully efficient, such cooperation needs an appropriate organizational framework that manages these relationships and integrates the external inputs (Teece et al., 1997). Furthermore, different external partners stimulate different types of innovations. For example, whereas collaborations with customers and suppliers help achieve incremental product innovations, collaborations with universities and research organizations are more useful for radical product innovation (Faems, Van Looy and Debackere, 2005).

Clearly, companies continuously need to adapt both their internal organization and the organization of their external relations to

innovate successfully. Therefore, a firm's ability to implement a specific organizational form may be less important than its ability to switch from one form to another and back again, which brings us to our second confirmatory hypothesis:

H2: There is a positive relationship between a firm's organizational flexibility and its innovation performance.

Given the inherent volatility, the different phases and the diversity of the parties involved in most innovation processes, we hypothesize this positive relationship to hold for both product (Brown and Eisenhardt, 1995) and process innovation (Teece, 2007; Miles, Snow, Fjeldstad, Miles and Lettl, 2010), both radical (Huston and Sakkab, 2006; Teece, 2007; Kelley, 2009) and incremental.

2.2. Family firms and R&D activities

Family ownership can be expected to have an important impact on R&D activities. On the one hand, it is widely believed that family firms engage less in R&D activities than their non-family-owned counterparts. There are two theoretical arguments to support this. Firstly, family firms often use different success or performance measures than non-family firms. Their goals are also targeted at value creation for the family, family harmony and maintaining the continuity of family control over the firm (Berrone, Cruz and Gomez-Mejia, 2012). Such objectives may lead to a preference of paying out profits to family members over re-investing them in the business or in R&D (Miller et al., 2011). Moreover, a focus on family well-being and continuity may also lead to risk-aversion and therefore decreased R&D spending (Chen and Hsu, 2009).

Whether due to different long-term priorities or risk-aversion, many empirical studies find engagement in R&D to be lower for family

firms than for non-family firms (Muñoz-Bullón and Sanchez-Bueno, 2011; Block, 2012; Chrisman and Patel, 2012), although there are significant differences within family firms, depending on the family firm definition used (Block, 2012) and on the family generation in control (Beck, Janssens, Debruyne and Lommelen, 2011).

On the other hand, many authors argue that family firms may be more inclined to engage in R&D than non-family firms, as they typically adhere to long-term goals (Zellweger, 2007). In the presence of long-term family firm goals, such as transferring family control over the firm to the next generations, families may accept higher risks and hence higher levels of R&D activities (Chrisman and Patel, 2012). Additionally, maintaining family control over the company when faced with increasing buyer or supplier power may necessitate a higher level of R&D activities (Kotlar, De Massis, Fang and Frattini, 2014; Kotlar, Fang, De Massis and Frattini, 2014). Likewise, industries with a high potential for growth may prompt family firms to focus more on R&D than non-family firms to secure their long-term viability and control over the company (Choi, Zahra, Yoshikawa and Han, 2015).

Moreover, even family firms with short-term orientation may decide to invest heavily in R&D. When family firms are faced with disappointing company results, they tend to invest more in R&D than non-family firms do in an effort to return to a satisfactory performance level or to secure the firm's competitiveness (Chrisman and Patel, 2012, Kotlar, et al., 2014a). More specifically, families tend to prefer exploitative R&D activities when their firm is doing well but they focus more on risky, exploratory R&D when times are rough (Patel and Chrisman, 2014). A related factor that mitigates the family's risk assessment is what portion of the family's overall wealth is invested in the family firm. When only a small part of that wealth depends on the firm's performance, the controlling family may be more willing to undertake risky R&D activities (Sciascia, Nordqvist, Mazzola and De Massis, 2015).

All in all, family managers' long-term horizon may be a more important consideration than risk aversion. This could lead to higher levels of actual R&D activities in family firms, even though that may not always be apparent from the company's annual reports since many family managed firms tend to downplay the importance of their R&D processes, possibly in an effort not to deter potential external investors (Schmid, Achleitner, Ampenberger and Kaserer, 2014).

Clearly the literature offers arguments both for and against family firms' ability to engage in R&D. However, taking into account the empirical evidence showing a negative link, we hypothesize:

H3: There is a negative relationship between a firm's level of family ownership and its R&D activities.

2.3. Family firms and organizational flexibility

An argument can be made that the family influence is a barrier to organizational flexibility. Strong bonds to the company or to certain parts of it can lead to a desire to preserve the status quo and to resist changes. Family traditions, especially when handed down across generations, may create strong path dependencies that inhibit the family firm's adaptability and thereby also its ability to innovate (Chirico and Salvato, 2008; Chirico and Nordqvist, 2010). Strong family members that cling to tradition may preserve a closed company culture that blocks new ideas and change (Hall, Melin and Nordqvist, 2001). Safeguarding the previous generations' legacy may become the family firm's primary goal, making it nearly impossible for successors to change the company's course (Steier and Miller, 2010). Likewise, successors may feel morally or financially obliged to follow in their parents' footsteps or they may feel it's the easiest way to get a job (Sharma and Irving, 2005), possibly leading to organizational stasis. Family firms' stronger focus on the long term could also lead to ingrained organizational routines and an outspoken preference for existing network partners and stakeholders. Hence, such traditionalism

may prove to be a substantial barrier for organizational flexibility instead of an impetus for innovation (Bennedsen and Foss, 2015). Even so, long-standing family traditions may not affect every aspect of innovation in the same way as some research shows product innovation but not process innovation decreasing with subsequent family generations (Werner, Schröder and Chlosta, 2018).

On the other hand, one can also argue that family firms are especially endowed with organizational flexibility. Family firms may benefit from a tradition of innovation and flexibility that helps to strengthen their resolve to remain organizationally flexible throughout different generations (Hatum and Pettigrew, 2004). Overall, family firms' innovation management tends to be more flexible and less formalized than is the case in non-family firms (De Massis, Frattini, Pizzurno and Cassia, 2015). One reason is that family firms can usually benefit from extensive and strong social capital resources, both internally and externally (Arregle, Hitt, Sirmon and Very, 2007). Such social capital includes not only a static repository of knowledge but also the management skills to disseminate and integrate it. Long term and close intra-family cooperation can lead to more frequent and more indepth discussion about company issues and processes. As a result, knowledge can be shared and integrated more efficiently between family members, increasing the family firms' ability to adapt its internal structures and external relations (Chirico and Salvato, 2008), while mutual trust between family members can speed up decision making and further enhance a family firm's flexibility. Externally, family firms' social capital and keener communication skills may help explain their more externally-oriented innovation approach (De Massis, et al., 2015b). Such external cooperation entails family firms' increased exposure to a multitude of different perspectives and attitudes, making them more flexible and innovative (Chrisman, Fang, Kotlar and De Massis, 2015). Furthermore, their long term orientation gives family firms the time and patience to build trust, which facilitates knowledge sharing among partners (Sirmon and Hitt, 2003). Finally, families can boost their organizational flexibility further if they succeed in extending

their own sense of commitment and group feeling to the non-family employees. Not only does this increase overall motivation but it also stimulates essential components of organizational flexibility like employee creativity and responsiveness to change (Reichers, Wanous and Austin, 1997; Zahra, Hayton, Neubaum, Dibrell and Craig, 2008).

In conclusion, although family firms' long term stance may entail barriers to flexibility, we believe there is a multitude of compelling arguments in favor of family firms' organizational flexibility. Business families may use their long term orientation to their advantage if they succeed in adopting innovation and adaptability as core family values and strengths. For such family firms, flexibility becomes part of their family tradition and identity (Hatum and Pettigrew, 2004; Salvato, Chirico and Sharma, 2010; Bennedsen and Foss, 2015). Moreover, striking the right balance between family control over the company and allowing external, non-family stakeholders to help shape the company's strategic management can also bolster the family firm's innovative posture and flexibility (Distelberg and Sorenson, 2009; Hiebl, 2015; Diéguez-Soto, Manzaneque and Rojo-Ramírez, 2016). Hence, we state as our fourth hypothesis:

H4: There is a positive relationship between a firm's level of family ownership and its organizational flexibility.

Figure 1 visualizes our hypothesized model



Figure 1: Hypothesized path model

3. Data collection and analysis

3.1. Sample and data collection

We combined two consecutive waves of the Community Innovation Survey (CIS) conducted in Flanders. The CIS is an official survey of the European Commission and Eurostat, conducted in several European Union Member States. It develops insights into private organizations' innovative behavior. The use of CIS data has a long-standing tradition in innovation economics (Cassiman and Veugelers, 2002; Belderbos, Caree, Diederen, Lokshin and Veugelers, 2004; Czarnitzki and Toole, 2011) and recently also in management (Laursen and Salter, 2006; Leiponen and Helfat, 2010; Klingebiel and Rammer, 2014).

The Flemish CIS is a stratified (according to sector and size class) random sample that complies with the guidelines and definitions of the Oslo Manual (OECD, 2005) for surveys on innovation activities, and covers both production and service firms. Each year, several questions not included in the standard CIS instrument are added to the Flemish CIS for academic research, such as the items on family ownership used in this chapter.

The CIS5 wave, conducted in 2009 and reporting on the period 2006-2008, contacted a representative sample of 4,969 firms and received 2,202 responses (44%). The CIS6, conducted in 2011 with data from 2008 to 2010, contacted 6,493 firms for 3,100 responses (48%). After merging these two consecutive waves of the CIS survey and eliminating data due to missing values, our final sample contained 2,604 firms and 3,140 year-observations.

3.2. Variables and descriptive statistics

Table 4 provides an overview of the descriptive statistics and correlations of the variables used in our analysis.

3.2.1. Family ownership

When categorizing firms as family or non-family firms we are constrained by the information available in the CIS. Although the CIS gathers data on family ownership, it does not contain information about the family's management or board presence. Therefore, we limit ourselves to an ownership-based definition of family firms. In line with previous research (López-Gracia and Sánchez-Andújar, 2007; Feito-Ruiz and Menéndez-Requejo, 2010; Ben-Amar, Francoeur, Hafsi and Labelle, 2013, among others), we use the percentage of company shares owned by one person or one family during the period t-2 to t to distinguish four categories. A value of 0 indicates that there is no main family shareholder. The variable takes the value of 1 when one person or family owns between 0 and 25% of all shares, the value of 2 for 25% to 49% and the value of 3 when one person or family owns at least 50% of the company's shares.

Our sample contains mostly firms that have either no family ownership (44%) or at least 50% family ownership (48%). Additionally, 5% and 3% of the firms in the sample report a family ownership of less than 25% or between 25 and 50% respectively.

Due to differences in family firm definitions, the literature shows considerable variation in sample composition between family firms and non-family firms. Our proportion of family firms is slightly below the numbers found in some European samples (e.g. around 60% (European Commission, 2009; Classen et al., 2014) to around 75% (Mandl, 2008; Beck et al., 2011), while it corresponds to other sample compositions (e.g. around 50% (López-Gracia and Sánchez-Andújar, 2007)).

3.2.2. <u>R&D activities</u>

In line with previous work (e.g. Czarnitzki and Kraft, 2010), we represent the firm's R&D activities by including the variable RD, measured as the firm's internal R&D expenditures in year t divided by its turnover in year t. Due to its skewed distribution, we transformed this variable by taking the natural logarithm of {1 + RD } and labeled it Ln_RD .

As is evident from Table 4, the average firm in our sample spends about 2% of its total turnover on R&D. A more detailed look into the sample shows that only 31% of the firms engages in any R&D activities.

3.2.3. Organizational flexibility

To measure organizational flexibility, we analyze whether the company has introduced "new business practices for organizing tasks or procedures", "new methods for organizing responsibilities and powers of decision within the enterprise" or "new methods for organizing the external relations with other companies or public institutions" during the period t-2 to t. We sum the three binaries to get one indicator for organizational flexibility and label the variable

*Org_Flexibility*⁷. The average firm in our sample scores 0.57 on this measure.

3.2.4. Innovation performance

We used four alternative variables representing both product and process innovation performance.

For product innovation performance, we followed previous work (Faems et al., 2005; Laursen and Salter, 2006), measuring product innovation success as product innovations' share in total sales. We distinguished between new to the market and new to the firm product innovation. New to Market Prod measures the successful development and commercialization of radically new products or services as the share of turnover in year t from goods and services that were new to the market and were introduced during the period t-2 to t. The average firm in the sample obtained 4.32% of its turnover from such radically new goods and services. Similarly, New to Firm Prod represents the successful development and commercialization of new to the firm product or service innovations and is measured as the share of turnover from goods and services that were new to the firm but that were already available on the market and that were introduced during the period t-2 to t. The average firm in the sample obtained 4.53% of

⁷ Although our measure shares similarities with process innovation, it is important and relevant to distinguish the two as this yields a more nuanced and complete approach to the study of innovation. Both the CIS survey and the Oslo Manual go to considerable lengths to explicitly explain the difference between organizational flexibility (which CIS labels 'organizational innovation') and process innovation. Amongst other things, the Oslo Manual notes that "*A starting point for distinguishing process and/or organisational innovations is the type of activity: process innovations deal mainly with the implementation of new equipment, software and specific techniques or procedures, while organisational innovations deal primarily with people and the organisation of work.*" (OECD, 2005, p. 55). Additionally, the survey respondents are presented with extensive definitions and examples.

its turnover from new to the firm innovations. Both *New_to_Market_Prod* and *New_to_Firm_Prod* are represented as a percentage of total company turnover in year t.

With respect to process innovation success, we measured both the cost and quality implications of process innovations (OECD, 2005). *Cost_Reduc* is the percentage average cost reduction per unit in year t due to process innovations that were introduced during the period t-2 to t. *Quality_Impr* is the percentage turnover increase in year t due to quality improvements (of the production process) resulting from process innovations introduced during the period t-2 to t. The average firm in the sample obtained a cost reduction of approximately 1.52% per unit produced due to process innovations. It had an average turnover increase of about 1.35% due to process innovation.

Because of skewed distributions, we added 1 to all values (to avoid zero values) and then took their natural logarithm when entering them into our analyses. We labeled those variables *Ln_New_to_Market_Prod, Ln_New_to_Firm_Prod, Ln_Cost_Reduc,* and *Ln_Quality_Impr*.

3.2.5. Control variables

External cooperation

A higher diversity of external partners can help a company remain innovative (Duysters and Lokshin, 2011). The CIS questionnaires ask each company to indicate whether it cooperates with each of 7 different partner categories (i.e. suppliers, customers, universities), into four possible geographical categories, resulting in a 7x4 answer matrix. We obtain our external cooperation variable by summing all binary scores and applying a logarithmic transformation.

Size

Several theoretical arguments substantiate potential innovative advantages of both small and large firms (Acs and Audretsch, 1990). To control for a company's size we added the natural logarithm of the turnover in year t to our model.

Age

The firm's age is also used as a control variable, as younger firms may be more innovative than older ones (Schneider and Veugelers, 2010). For the path analysis we used the natural logarithm of {1 + the firm's age}.

Industry

The literature indicates an industry effect on both innovation and innovation success (Spithoven, Frantzen and Clarysse, 2010). We use the companies' main NACE code to create a first industry dummy, distinguishing manufacturing firms from service firms. Based on the sector's average R&D intensity (R&D expenditures/value added) Eurostat also classifies the NACE codes into high-tech, medium-hightech, medium-low-tech, and low-tech sectors. Our second industry dummy distinguishes between high tech (high-tech or medium-hightech) and low-tech companies (medium-low-tech or low-tech).

Table 4: Descriptive statistics and correlations

	Mean (of absolute values)	SD (of absolute values)	Ln_New_to_Market_ Prod	Ln_New_to_Firm Prod	Ln_Cost_Reduc	Ln_Quality_Impr	Ln_RD	Org_Flexibility	Family_ownership	Ln_Size	Ln_Age	Ln_Ext_cooperation	Services	Hitech
Ln_New_to_Market_Prod	4.31	13.18	1.00											
Ln_New_to_Firm_Prod	4.52	12.55	.54***	1.00										
Ln_Cost_Reduc	1.52	5.37	.31***	.30***	1.00									
Ln_Quality_Impr	1.35	6.06	.31***	.25***	.52***	1.00								
Ln_RD	.02	.09	.57***	.52***	.33***	.28***	1.00							
Org_Flexibility	.57	.91	.30***	.29***	.34***	.28***	.35***	1.00						
Family_ownership	1.54	1.45	02	01	.00	.07***	02	04*	1.00					
Ln_Size	42 M	203 M	.11***	.16***	.17***	.04*	.20***	.20***	23***	1.00				
Ln_Age	27.63	22.96	06**	.02	.02	04*	04*	05*	.07***	.28***	1.00			
Ln_Ext_cooperation	1.17	2.94	.44***	.43***	.29***	.24***	.59***	.32***	07***	.26***	.01	1.00		
Services	.44	.50	04*	03	10***	08***	08***	.03	10***	08***	18***	08***	1.00	
Hitech	.33	.47	.17***	.12***	.02	.03†	.26**	.13***	05**	09***	19***	.16***	.08***	1.00
SD, standard deviat	ion. † p	< .10; *	p < .05;	** p < .()1; *** p •	< .001.								

4. Results

Given the complexity of our hypothesized model and the need to analyze multiple regressions simultaneously, we use a path analysis approach. As we have a large sample, we use Browne's asymptotically distribution-free (ADF) estimation method to counter estimation problems that may result from the non-normality of some of our (categorical) variables (Norman and Streiner, 2003). Since we want to distinguish between four different variables measuring specific innovation performances, we analyze a total of four path models.

To assess how well the models fit the data we evaluate some common goodness-of-fit indices. As can be seen in Table 5, both the goodness-of-fit index (GFI) of 0.9999 and the adjusted goodness-of-fit index (AGFI) with values between 0.9965 and 0.9985 lie well above the generally accepted cutoff point of 0.9 (Sharma, 1996; Norman and Streiner, 2003). Instead of using the GFI and the AGFI, in the case of the ADF method, Hu and Bentler (1998) recommend looking at alternatives like the Standardized Root-Mean-Square Residual (SRMR) and the Comparative Fit Index (CFI). Commonly accepted values to indicate a good fit are below 0.05 for the SRMR and above 0.95 for the CFI. Our models yield SRMR values between 0.007 and 0.01 and CFI values consistently over 0.99.

Ideally, the chi² value for the models should indicate nonsignificance, but such is not the case with our sample. However, as previously shown (Sharma, 1996; Norman and Streiner, 2003), the chi² statistic easily becomes significant for large samples, even when there is no actual reason to question the model's fit. Therefore, and given the positive signal from the other goodness-of-fit indices, we do not reject our model.

Next, we analyze the relationships between our main variables, as hypothesized in the literature section, by looking at the standardized results of the four models. As shown in Table 6, all models reveal a

significant negative relationship between Family ownership and *Ln RD*, confirming hypothesis 3. However, the results concerning the relationship between Ln RD and innovation performance are less uniform. Although we find the expected positive link between Ln RD and both product innovation outcomes New to Market Prod (%) and New to Firm Prod (%) (models 1 and 2 in Table 6), the links with process innovation performance measured as Cost Reduc (%) and Quality Impr (%) are not significant (models 3 and 4 in Table 6), thereby only partially supporting hypothesis 1. Our analysis yields significant positive relationships between firms' level of Family ownership and Org Flexibility and between Org Flexibility and all four innovation performance measures, be it related to product or process innovation. Hence, both hypotheses 4 and 2 are supported.

The overall, total effect of family ownership on innovation performance is significantly positive where process innovation is concerned (see the last row of Table 6). As for product innovation, *Family_ownership* has no significant overall effect on product innovation performance. Figure 2 shows the main results for our models.



Figure 2: Standardized results

Table 5: Goodness-of-Fit measures for different models

	(1)	(2)	(3)	(4)
Goodness-of-Fit Index (GFI)	1.00	1.00	1.00	1.00
Adjusted Goodness-of-Fit Index (AGFI)	1.00	1.00	1.00	1.00
Standardized Root-Mean-Square	.01	.01	.01	.01
Residual (SRMR)				
Bentler Comparative Fit Index (CFI)	1.00	1.00	1.00	.99
Chi ²	7.68	7.52	7.57	18.09
Degrees of freedom	2.00	2.00	2.00	2.00
Pr>chi ²	.02	.02	.02	.00
Akaike Information Criterion (AIC)	93.68	93.52	93.57	104.09

(1) Ln_New_to_Market_Prod model, (2) Ln_New_to_Firm_Prod model, (3) Ln_Cost_Reduc model, (4) Ln_Quality_Impr model
Path from -> to	(1)	(2)	(3)	(4)
Direct effects				
Family_ownership	-0.05**	-0.05**	-0.05**	-0.05**
-> Ln_RD	(-3.21)	(-3.21)	(-3.19)	(-3.29)
Ln_Size	-0.13***	-0.13***	-0.13***	-0.13***
-> Ln_RD	(-8.36)	(-8.48)	(-8.64)	(-8.7)
Ln_Age	-0.03	-0.03	-0.02	-0.02
-> Ln_RD	(-1.63)	(-1.64)	(-1.6)	(-1.62)
Ln_Ext_cooperation	0.36***	0.36***	0.36***	0.36***
-> Ln_RD	(16.32)	(16.41)	(16.47)	(16.52)
Services	0.12***	0.12***	0.12***	0.13***
-> Ln_RD	(8.66)	(8.75)	(8.76)	(8.8)
Hitech	0.17***	0.17***	0.17***	0.17***
-> Ln_RD	(12.12)	(12.24)	(12.37)	(12.45)
Family_ownership	0.04*	0.04*	0.04*	0.04*
-> Org_Flexibility	(2.38)	(2.39)	(2.38)	(2.33)
Ln_Size	0.16***	0.16***	0.16***	0.16***
-> Org_Flexibility	(8.57)	(8.61)	(8.6)	(8.46)
Ln_Age	-0.07***	-0.07***	-0.07***	-0.07***
-> Org_Flexibility	(-3.84)	(-3.84)	(-3.91)	(-3.85)
Ln_Ext_cooperation	0.28***	0.28***	0.28***	0.28***
-> Org_Flexibility	(12.81)	(12.95)	(12.87)	(12.96)
Services	0.05**	0.05**	0.05**	0.05**
-> Org_Flexibility	(2.97)	(3.02)	(2.98)	(2.94)
Hitech	0.08***	0.08***	0.08***	0.08***
-> Org_Flexibility	(4.34)	(4.36)	(4.37)	(4.41)
Ln_RD	0.20***	0.10***	-0.02	0.00
-> Innovation	(6.76)	(3.92)	(-0.68)	(0.09)
Org_Flexibility	0.16***	0.13***	0.25***	0.24***
-> Innovation	(7.87)	(6.81)	(11.98)	(10.35)
Ln_Size	-0.01	0.02	0.03†	-0.09***
-> Innovation	(-0.48)	(1.25)	(1.69)	(-5.22)
Ln_Age	-0.04*	0.02	-0.03	-0.04†

Table 6: Standardized path coefficients and (t-Values)

-> Innovation	(-2.35)	(1.4)	(-1.52)	(-1.92)
Ln_Ext_cooperation	0.30***	0.30***	0.18***	0.14***
-> Innovation	(11.87)	(12.63)	(6.92)	(5.3)
Services	-0.03*	0.00	-0.07***	-0.06***
-> Innovation	(-2.33)	(-0.26)	(-3.9)	(-3.54)
Hitech	0.05**	0.03†	-0.03	-0.02
-> Innovation	(3.06)	(1.96)	(-1.53)	(-0.98)
Total effects				
Family_ownership	-0.00	0.00	0.01*	0.01*
-> Innovation	(-0.91)	(0.04)	(2.41)	(2.13)

⁽¹⁾ Ln_New_to_Market_Prod model, (2) Ln_New_to_Firm_Prod model, (3) Ln_Cost_Reduc model, (4) Ln_Quality_Impr model

† p < .10; * p < .05; ** p < .01; *** p < .001.

5. Discussion

This chapter wanted to broaden our understanding of the processes underlying successful innovation in family firms by taking into account not only R&D but also organizational flexibility. Firstly, our results confirm previous empirical evidence showing that family firms invest less in R&D than other firms. Although several studies argued that family firms' long term orientation may spur R&D activities (Zellweger, 2007), our findings support the contrasting argument that family firms' focus on value creation for the family, family harmony and continuity (Berrone, Cruz and Gomez-Mejia, 2012), and the accompanying risk aversion (Naldi, Nordqvist, Sjoberg and Wiklund, 2007; Chen and Hsu, 2009) will lead to decreased R&D spending. However, this study also shows that the impact of this lesser R&D engagement on innovative performance is not at all straightforward. Whereas R&D is clearly positively associated with eventual product innovation performance, it has little or no link to process innovation. This may be due to the fact that product innovations are often

developed internally and therefore depend on a company's internal knowledge and capabilities, while process innovations rely considerably more on external suppliers' input⁸. Other factors that may help explain the weaker link between R&D and process innovation performance are sectoral differences and firms' underreporting of R&D or innovation activities. In particular, previous literature has suggested that family firms or SMEs tend to downplay the importance of their R&D processes in formal reports (Duran et al., 2016), possibly in an effort not to deter potential external investors (Schmid et al., 2014).

Furthermore, our main finding indicates that family firms are actually better than non-family firms where certain aspects of organizational flexibility are concerned. In particular, family firms seem more adept at flexibly changing their internal and external organization, which is in turn linked to improved innovation performance. This supports our argument that family firms are especially endowed with at least certain aspects of organizational flexibility, possibly because (a) their focus on non-financial and long-term goals leads to a more dynamic attitude if they perceive innovation to be in their long-term interest, (b) mutual trust between family members speeds up decision making, improves knowledge exchange, and enhances flexibility, and (c) when the family succeeds in extending its own sense of commitment and group feeling to its non-family employees, this stimulates essential components of organizational flexibility like employee creativity and responsiveness to change.

We find that family firms' R&D disadvantage is in fact compensated by their organizational flexibility. This leads to similar product innovation performance as observed in non-family-owned firms. Novel and recent research on new product development (NPD) projects in family firms leads to similar insights (De Massis, Kotlar,

⁸ Whereas 69% of the product innovators in our CIS6 subsample developed their product innovations without the help of external partners, this was only the case for 32% of the process innovators.

Frattini, Chrisman and Nordqvist, 2016). Among other things, the authors find that family firms' specific organizational characteristics allow employees to flexibly switch between the innovation project and their 'normal' tasks and to achieve better NPD results than full-time cross-functional innovation teams. At the same time such an approach keeps costs under control, effectively allowing those family firms to achieve better innovation performance with less R&D efforts by tailoring the design of their innovation process to their specific family firm characteristics.

Furthermore, as R&D activities turn out to be less relevant for process innovation, family firms' advantage regarding specific aspects of organizational flexibility may even allow them to outperform their counterparts when it comes to process innovation performance. Classen et al. (2014) already showed that family SMEs tend to outperform non-family SMEs regarding process innovation outcomes when controlling for innovation expenditures. Our findings complement those results by proposing that family firms' elevated organizational flexibility is at the basis of this outperformance and, even more, that R&D activities are of little importance in this respect. As our results indicate that family firms' organizational flexibility grants them an advantage when it comes to the development of process innovations, this chapter responds to the call for additional research into how family firms' specific processes can result in a competitive advantage These insights reconcile (Astrachan, 2010). the apparently contradicting results of previous empirical studies that family firms engage less in R&D than non-family owned firms, but display superior innovation performance.

We believe our research has important implications for future family firm research. By disentangling R&D and several components of organizational flexibility as separate underlying processes of innovation performance and by distinguishing between product and process innovation performance, we paint a more nuanced and comprehensive picture of the relationship between family ownership and innovation, which can inform future research and theorizing on innovation in family firms. Firstly, our results demonstrate the clear necessity of distinguishing between product innovation and process innovation. Lumping together measures of product and process innovation performance may obscure the true processes and effects that are going on in family firms. Secondly, the study clearly demonstrates the need to move away from a focus on R&D activities, and in addition investigate other processes underlying innovation performance, specifically the ones concerning organizational flexibility. Distinguishing between product and process innovation and the distinct processes underlying these specific innovation outcomes, may help overcome and explain the inconsistencies of previous studies, thereby moving the field further forward. In this respect, the recently proposed Family-Driven Innovation (FDI) framework (De Massis, Di Minin and Frattini, 2015) looks guite promising as it offers an integrated and detailed approach to analyzing family firm innovation. Specifically, the FDI framework emphasizes the need for family firms to achieve a fit between their unique characteristics as a family firm and the approach they take towards innovation. This means that they should strive for compatibility between their goals and motivations, their organizational structure and their available resources on the one hand and their choices on where to search for knowledge, how to manage the innovation process and what kind of innovation (e.g. product or process innovation) to pursue on the other hand (De Massis, et al., 2015a).

Our research has important implications for business families and family firm managers as the development of R&D and organizational flexibility require significant investments of time and money. While this may be obvious for R&D, also the cost implications of organizational flexibility and change have started to receive more attention. Changes require work to be diverted away from the existing company's business, creating opportunity costs. Organizational ecologists (Hannan and Freeman, 1989) and organizational scholars (Kotter, 1995) argued that change is costly and complicated, and can lead to firm failure (Barnett and Freeman, 2001), decreased market shares (Greve, 1999), and employee turnover (Baron, Hannan and Burton, 2001). Demonstrating that flexibly adapting their internal and external organization in fact helps family firms overcome their R&D disadvantage and is positively linked to successful product and process development, can strengthen family firms' resolve to look beyond these short-term costs. Our findings can hence encourage family owners to continue reconfiguring and enhancing their internal and external organization. Developing internal R&D activities is not the only road to innovation and renewal, especially if the ultimate goal is process innovation. Family managers should realize that the most efficient choices for them are not necessarily the same as those for non-family owned firms.

6. Limitations and suggestions for further research

We acknowledge that our work does not incorporate the cost implications of R&D and organizational flexibility, and can therefore not provide any conclusions on their ultimate financial effects. It would be interesting to study this further, also distinguishing between different types of organizational changes, as it could help managers prioritize certain organizational changes. Furthermore, we acknowledge that the turnover and cost savings effects of R&D projects and organizational changes introduced during the period t-2 to t may not fully materialize by time t. The timeframe in this study may hence be too short to fully grasp the positive effect of R&D and organizational flexibility. Thus, the current study may be underestimating their positive effects on innovation performance.

There are limitations regarding the measure we used to indicate the extent to which a company can be considered to be a family firm. The operationalization of family ownership in the CIS is rather limited. Further analyses could benefit from more detailed information about the family's influence in the firm. While family firms' typical ownership and control characteristics will give them a better ability to innovate than non-family firms, their specific goals and motivations may decrease their willingness to do so (Chrisman, Chua, De Massis, Frattini and Wright, 2015). Thus, although family ownership as we measure it indicates family firms' ability to behave differently from nonfamily firms, a more accurate definition of family firms should also include willingness indicators (Chrisman, Chua, Pearson and Barnett, 2012; De Massis, Kotlar, Chua and Chrisman, 2014). Ownership and other demographic indicators of being a family firm should ideally be combined with essence indicators that more directly measure actual differences in behavior (Chua, Chrisman and Sharma, 1999; Chrisman, Chua and Sharma, 2005; Basco, 2013) to reveal greater variety within family firms. Moreover, information on family ownership should ideally be combined with information on the actual family management of the firm. Due to agency complications, managers with little or no ownership share have a different attitude towards R&D than manager-owners (Czarnitzki and Kraft, 2004; Beyer, Czarnitzki and Kraft, 2012). Finally, it could be interesting to distinguish lone founder firms from other types of family firms to see whether our results hold for both groups (Miller et al., 2011).

In addition to including more detailed information about the family's influence in the firm, the field of family firm innovation may benefit from more in-depth analyses of the relationships between specific strategic innovation decisions and various family firm characteristics. In particular, more research is needed into how family firms can achieve a good fit between their unique characteristics and the innovation options available to them (De Massis, et al., 2015a). For example, further research could lead to more and better understanding of the positive link between family firms and organizational flexibility that we find in our study, as well yield more insight into how this flexibility can lead to better innovation performance. Which family firm goals, which organizational structures, which management methods or resources are most compatible with the desired level of flexibility? How does such flexibility impact the family firm's innovation process and eventually lead to product versus process or radical versus incremental

innovation? Considering the nature of those research questions, we believe qualitative approaches will be most appropriate to advance our understanding of such complex processes.

7. Conclusions

The current study attempts to broaden our understanding of the processes underlying successful innovation in family firms by studying not only research and development (R&D) but also certain aspects of organizational flexibility as drivers of innovation performance. Building on existing theoretical and empirical work, we formulated hypotheses on the relationship between family ownership and R&D and organizational flexibility, and on how these translate into successful product and process development. We found that family firms engage less in R&D, but are more flexible in the way they organize, and that this organizational flexibility coincides with the successful development of new products and that family firms even outperform non-family owned businesses when it comes to process innovation. The study contributes to the field of family businesses by substantiating the need to distinguish between product and process innovation performance and by demonstrating that not only R&D but also organizational flexibility underlies these distinct innovation outcomes. It has important implications for business families and family firm managers as it highlights how family firms' organizational flexibility can result in an innovation advantage vis-à-vis non-family owned firms.

Chapter 3

Limits to psychological ownership in the family business

1. Introduction⁹

In this third chapter we aim to further bridge the gap between organizational flexibility theory and practice. Therefore, we take an indepth look at one of the main components of organizational flexibility, i.e. changes to the family firm's internal decision structure, through the lens of psychological ownership.

The notion of psychological ownership, i.e. the sense that the family firm is "mine" or "ours" (Pierce, Kostova and Dirks, 2001; Pierce and Jussila, 2010) is an important topic for family businesses as it fits closely with a family firm's DNA (Ikävalko, Pihkala and Jussila, 2008; Rantanen and Jussila, 2011) and can potentially propel the family business forward. In particular, family owners' sense of psychological ownership motivates them to do their utmost for their company. Moreover, a wide proliferation of psychological ownership can extend such a motivational effect to non-family managers, thereby creating a great asset for the family firm as a whole (Pierce, Rubenfeld and Morgan, 1991; Henssen, Voordeckers, Lambrechts and Koiranen, 2014). Hence, it is deemed important to nurture a strong sense of psychological ownership among both family and non-family managers.

Specifically, there are three main routes leading towards the formation of psychological ownership – intimate knowledge of the firm, self-investment in the firm and a sense of control over (parts of) the firm (Pierce et al., 2001). Although each of those routes plays an important role within family firms (Gomez-Mejía, Takacs-Haynes, Nuñez-Nickel, Jacobson and Moyano-Fuentes, 2007; Sieger, Bernhard and Frey, 2011), especially a sense of control, the ability to influence the course of the company, is known to lead to increased

⁹ Final version forthcoming in Journal of Family Business Management, accepted for publication on 9 May 2018.

feelings of psychological ownership (Hall, Melin and Nordqvist, 2001), and thereby to motivation.

In general, both family-members and non-family members working for a family firm have a higher sense of control and higher feelings of psychological ownership than individuals working for nonfamily-firms. On the part of the family members, family firm owners often attach greater importance to maintaining control over their company than non-family owners (Ward, 1988; Miller and Le Breton-Miller, 2005; Croci, Doukas and Gonenc, 2011; Mullins and Schoar, 2016; Thiele, 2017). As a result, this high degree of family control gives rise to a strong sense of psychological ownership among family owners (Pierce et al., 2001). Furthermore, as many family owners regard their non-family managers as "quasi-family" (Miller and Le Breton-Miller, 2005; Karra, Tracey and Phillips, 2006), this leads the family to delegate more responsibilities to non-family managers. Since control options and psychological ownership are interconnected, such delegation of responsibilities from family owners is expected to strengthen the non-family managers' sense of psychological ownership.

However, although granting individual control or autonomy to non-family managers may stimulate psychological ownership (Chi and Han, 2008; Liu, Wang, Hui and Lee, 2012) and motivation, existing research provides little insight into the potentially detrimental sideeffects of doing so. Whereas the existing literature has focused on the beneficial effects of (sense of control and) psychological ownership on motivation, some authors have pointed to the potential negative effects of psychological ownership (Brown, Crossley and Robinson, 2014). consequences include, Such negative may among others. psychological owners protecting and refusing to share "their" accumulated knowledge and experience, thereby hampering effective team work and decision making (Pierce et al., 2001; Brown, Crossley and Robinson, 2014). Furthermore, psychological owners may start to focus strongly on preserving the status quo by resisting change and innovation (Pierce et al., 2001). With both family and non-family

psychological owners protecting what they perceive to be "theirs", the family firm may become a battlefield of conflicting interests. The current literature calls for additional insight in how non-family managers function within family firms (Sharma, 2004; Yu et al., 2012; Benavides-Velasco et al., 2013). In particular, the non-family managers' perspective on delegation of control by the family and the related interaction between them and the family owners has received relatively little attention. In this article we therefore contribute to the family firm literature by explicitly taking into account how non-family managers experience the distribution of control in the family firm by investigating in detail *how (sense of) control, psychological ownership and motivation of both family-members and non-family managers are interrelated*.

Our empirical approach consists of a multiple case-study analysis of transfers of control from family to non-family managers in five Flemish family firms. Based on our interviews with 15 family and non-family members we find that family members are frequently willing to grant non-family members operational autonomy but limit non-family managers' participation in strategic decision making. We find that when family owners limit such delegation of control, demotivation on the part of non-family managers ensues. We argue that transforming nonfamily members into psychological owners raises those managers' expectations about their role in the company. In particular, they start to feel *entitled* to more control. This leads to a situation where non-family managers are striving to acquire more control over the company while family owners are striving to protect their level of control over the family business. As a result, both parties' expectations come into conflict. Additionally, non-family managers may become demotivated when family owners set limits to non-family managers' participation in the company's decision making process because of this control protection. Based on our qualitative study, we hence formulate the proposition that "non-family managers' psychological ownership in family firms conflicts with family-owners' desire to maintain control."

This study contributes to the family firm literature by explicitly taking into account how non-family managers experience the distribution of control in the family firm, thereby answering the calls to seek additional insight in how non-family managers function within family firms (Sharma, 2004; Yu et al., 2012; Benavides-Velasco et al., 2013). By shedding light on the complex relationship between (sense of) control, psychological ownership and motivation in family firms, our research responds to the call for more empirical validation of the psychological ownership framework (Pierce et al., 2001; Liu et al., 2012; Dawkins et al., 2017), particularly in a family firm context (Dirks et al., 1996). Moreover, our findings highlight the importance of taking into account not only the advantages but also the disadvantages of stimulating psychological ownership and thereby address calls for research into the potential *negative* effects of psychological ownership in the family business (Brown et al., 2014; Ramos, Man, Mustafa and Ng, 2014). These insights have important implications for practitioners.

In the following section we provide an overview of the relevant literature, where we elaborate on the role of psychological ownership and control for motivation in the family business, both on the part of family owners and non-family managers. Subsequently, we explain how we collected and analyzed our data. We continue with the presentation of our findings. Finally, we point to the main implications of our findings, discuss the study's limitations, and suggest interesting avenues for future research.

2. Literature review

In this chapter, we aim to better understand how the (sense of) control, psychological ownership and motivation of family-members and non-family managers interrelate. In essence, psychological ownership indicates someone's sense that a company or a job is "mine" or "ours" (Pierce et al., 2001; Pierce and Jussila, 2010). In addition,

family members may also experience a sense of psychological ownership of something less tangible, like the entrepreneurial spirit of the family firm (Salvato, Chirico and Sharma, 2010). Among the many perspectives that help us understand family businesses, the psychological ownership framework stands out for two reasons, both of which we will elaborate on at the start of this conceptual framework. First, we discuss psychological ownership's close fit with a family firm's DNA (Ikävalko, Pihkala and Jussila, 2008; Rantanen and Jussila, 2011) and, secondly, we clarify psychological ownership's potential to propel the family business forward.

Compared to non-family firms, the family business environment often provides fertile ground for the emergence and promotion of a strong sense of psychological ownership, not only among family owners but also among non-family managers. Specifically, Pierce et al. (2001) identify three motives or "roots" of psychological ownership - the pursuit of efficacy, self-identity and having a "home" - and three main routes leading towards the formation of psychological ownership, namely acquiring intimate knowledge of the business, self-investment in the firm and gaining a sense of control. Each of those routes and roots encompasses goals or characteristics most family firms hold dear (Gomez-Mejía et al., 2007; Steier and Miller, 2010; Sieger, Bernhard and Frey, 2011), making the concept of psychological ownership highly relevant in a family firm context. For example, family owners often strive to keep long-term control over their company (control route) (Gomez-Mejía et al., 2007) and offer many opportunities for family members to get actively engaged in the business (self-investment route), which in turn allows passing on skills and traditions to new family generations (intimate knowledge route) (Steier and Miller, 2010).

Among those different routes towards psychological ownership, it is first and foremost the sense of control that plays a prominent role for family businesses. Notwithstanding the considerable heterogeneity within family firms, one of the main features that frequently sets them apart from their non-family counterparts is the family owners' strong desire to protect their strategic and financial control (Berrone, Cruz and Gomez-Mejia, 2012; Thiele, 2017). Maintaining financial independence is crucial for many family firms (Ward, 1988; Miller and Le Breton-Miller, 2005), as is their desire to preserve a high level of equity ownership within the family (Mullins and Schoar, 2016). For example, the literature points to family firms' preference of internal over external financing as well as to the family's preference of external debt financing over external equity financing (Romano, Tanewski and Smyrnios, 2001). Hence, when family businesses do turn to outside funding, they choose debt financing more often than non-family firms and equity capital less often, as the latter decreases their control (Croci, Doukas and Gonenc, 2011). In summary, much of the literature links family owners' psychological attachment to the company to their insistence on preserving a high level of control. In turn, the family's consistent practice of being firmly and actively in control, rather than merely having formal ownership of the company, can be expected to give rise to a strong sense of psychological ownership (Pierce et al., 2001).

Family owners' unique insistence on maintaining control is one important reason why there is an excellent fit between psychological ownership and family businesses but it is only part of the story. There is a second important area where the psychological ownership framework proves its worth, namely by shedding light on the role of non-family managers in the family firm and how they can benefit the family firm. The psychological ownership framework is particularly well suited for such analyses, as not only legal (family) owners but also nonfamily managers can become psychological owners (Wagner, Parker and Christiansen, 2003). An increased understanding of how nonfamily managers function within family firms and what their expectations are, can only serve to benefit both the managers and the family firm (Sharma, 2004; Yu et al., 2012; Benavides-Velasco et al., 2013).

Not only does family ownership often coincide with a strong family sense of psychological ownership but at the same time many family owners regard their non-family managers as "quasi-family" (Miller and Le Breton-Miller, 2005; Karra et al., 2006), which leads the

family to delegate more responsibilities to non-family managers. Since control options and psychological ownership are interconnected, such delegation of responsibilities from family owners strengthens the nonfamily managers' sense of psychological ownership. This is important for the company as a whole, since one of the crucial consequences of psychological ownership is its motivational effect (Pierce et al., 1991; Henssen et al., 2014). Specifically, a psychological owner tends to protect "his" company or job and wants to make it prosper. Hence, such psychological owners will behave more like stewards (Zhu, Chen, Li and Zhou, 2013). Likewise, family firms with an organizational culture that fosters an open and respectful internal dialogue can accumulate a considerable amount of "psychological capital" from their managers (Memili, Welsh and Kaciak, 2014). Such a warm and friendly work environment strengthens the bond between non-family managers and the family firm in which they work and motivates them to go the extra mile in order to help the company prosper (Bammens, Notelaers and Van Gils, 2015). As such, the psychological ownership framework could explain the recurring observation that family firms are deemed to have an advantage over non-family firms when it comes to motivating their employees (Dawson, 2012).

Because non-family managers' sense of psychological motivation, ownership inspires strong wide proliferation of а psychological ownership among those managers can prove to be a tremendous asset for the family firm. One of the principal ways of stimulating psychological ownership is to delegate responsibilities from family owners to non-family managers, since providing control options and psychological ownership are interconnected. Just as having control is a potential source of psychological ownership for family owners, so is granting individual control to non-family managers and involving them in decision making a source of psychological ownership and motivation for those outside the business family (Dirks, Cummings and Pierce, 1996; Kets de Vries and Balazs, 1998; Isaksen, 2007; Chi and Han, 2008; Liu et al., 2012). In turn, such sharing of power between family and non-family managers leads to a loyal and dedicated management team and a more successful and flexible family firm (Zahra, Hayton, Neubaum, Dibrell and Craig, 2008; Patel and Cooper, 2014). Similarly, the literature on perceived organizational support stresses that companies need to value and take into account their employees' contributions in order to enhance those coworkers' sense of well-being (Baran et al., 2012). Coworkers' active participation in decision-making processes raises both job satisfaction (Goñi-Legaz and Ollo-López, 2017) and the level of commitment those coworkers feel towards their company (Scott-Ladd et al., 2006; Riggle et al., 2009; Park, 2015), which ultimately leads to better employee performance and lower employee turnover (Riggle et al., 2009). In practice, such coworker participation in decision making can take many forms, ranging from non-family managers providing feedback on company processes to having the autonomy and control to make actual decisions (Goñi-Legaz and Ollo-López, 2017).

In this chapter, we contribute to the scarce literature on *inter-family* transfers of power, i.e., transfers of power from family owners to non-family managers, by analyzing the psychological effects of delegating control from family owners to non-family managers. While the family firm literature pays considerable attention to the concentration or delegation of power and control (Hall, Melin and Nordqvist, 2001), the main focus remains on *intra-family* transfers of control (Debicki, Matherne, Kellermanns and Chrisman, 2009; Litz, Pearson and Litchfield, 2012), where intergenerational changes to the balance of power may lead to tensions, conflict and resistance (Hall, 2003; Mitchell, Hart, Valcea and Townsend, 2009; Henssen et al., 2014).

The foregoing shows that family firms provide a fertile ground for the development of a strong sense of psychological ownership and, hence, motivation for both family owners and non-family managers. There is, however, one crucial caveat, which is largely ignored in many empirical analyses of psychological ownership. Despite the existing literature on psychological ownership's beneficial effects, current research leaves several important questions unanswered, especially regarding the potential *negative* effects of psychological ownership amongst non-family members in the family business (Brown et al., 2014; Ramos et al., 2014). For example, delegating control from family owners to non-family managers may create resistance among family members (Baer and Brown, 2012), thus setting the stage for possible de-motivation and conflicts between family owners and non-family managers. Family owners' psychological ownership and desire to protect their own level of control over the family business may urge them to preserve the current status quo (McIntyre, Srivastava and Fuller, 2009). Therefore, as the family limits further delegation of control, conflicts with their non-family managers may ensue (Patel and Cooper, 2014). In order to improve our understanding of these potential negative effects, we want to investigate in detail *how (sense of) control, psychological ownership and motivation of both familymembers and non-family managers are interrelated*.

Before describing our own interview-based findings, we first elaborate on the methodology in the next section.

3. Methodology

We opt for a multiple case-study approach through personal interviews as the subject at hand requires insight in the motivation and decision processes of the people involved (Lewis and McNaughton Nicholls, 2014). Qualitative research not only has a great potential to generate new insights but it also allows practitioners to more clearly distinguish between cause and effect (Miles and Huberman, 1994). Furthermore, qualitative methods are appropriate when dealing with complex issues or processes (Ritchie and Ormston, 2014).

Yin (1989) describes a case study as an empirical research method that uses multiple sources to study a phenomenon within its natural environment. Case studies are an appropriate research method when the boundaries between the phenomenon that is analyzed and the context surrounding it are vague (Yin, 1989) and are perfect for answering "how"- and "why"-questions and for studying dynamics within organizations (Eisenhardt, 1989; Chetty, 1996). Specifically, qualitative research in family firms offers an opportunity to fill a research gap by analyzing how psychological ownership influences both family members' and non-family members' behavior in the organization (Sieger, Zellweger and Aquino, 2013).

3.1. Data collection

We initially selected 9 firms from a previous survey of 120 Flemish family businesses. All respondents were CEOs of small, midsize, and large family firms in the Flemish speaking part of Belgium. As outlined before, we explicitly focused on the control-related dimensions of organizational change as they emerged from the rich case materials. As we focus on the consequences of transfers of control from family owners to non-family managers, we purposively selected 9 family firms that had introduced a new CEO or new methods for organizing responsibilities and powers of decision within the enterprise, as indicated in the original survey. In order to maximize the potential for diversity with regard to the sense of psychological ownership, we specifically set out to collect data not only from family owners but also from different family generations as well as from non-family managers. Hence, we opted to only contact family firms with at least several employees and with family managers or owners from the second generation or higher to enhance our chances of being able to interview a wide variety of different stakeholders within each company.

Subsequently, each of those 9 companies was contacted via an introductory email and/or telephone call explaining the current research topic and setup. The CEOs were asked whether they would like to participate, which 5 of them agreed to do. Finally, each CEO was asked to suggest additional interview partners within their company and/or within the family. This process of purposive and (internal) "snowball"

sampling (Warren, 2001) eventually yielded a total of 15 interviews with different stakeholders. No company in our sample has more than 48 full-time employees, hence they can all be considered small enterprises. Table 7 lists an overview of the respondents. All interviews were performed between 15 December 2014 and 26 March 2015. The interviews ranged from 30 minutes to 75 minutes and were all recorded and transcribed afterwards.

Table 7: Sample overview

Company	Industry	Interviewees		
А	Services	- Non-family manager (CEO)		
В	Manufacturing	-	- Family owner (CEO), 1st	
			generation	
		-	Family owner (director), 2nd	
			generation	
С	Services	-	Family owner (CEO), 1st	
			generation	
		-	Family owner (director), 2nd	
			generation	
		-	2 non-family managers	
D	Manufacturing	-	Family owner (CEO), 2nd	
			generation	
		-	Family owner, 3rd generation	
		-	2 non-family managers	
E	Manufacturing	-	Family owner (director), 2nd	
			generation	
		-	Family owner (CEO), 3rd	
			generation	
		-	Family owner, 3rd generation	
		-	1 non-family manager	

In addition to the interviews, we obtained secondary data regarding the companies' history, structure and activities from internet and media sources, as well as from the companies' websites and annual reports. Those secondary data helped us in further understanding the companies' past and present situation and the environment they operate in.

3.2. Interviews

We opted for semi-structured interviews as this allowed us to combine within-interview flexibility with a guiding structure that preserves between-interview consistency (Arthur, Mitchell, Lewis and McNaughton, 2014). At the start of the interviews, the respondents were asked to describe the internal transfers of responsibilities since they joined the company and to clarify their position in the company. A second set of questions probed the respondents' sense of psychological ownership, both in the company in general as during the periods when control was internally transferred. By asking the respondents whether they considered the company or part of it to be "mine", "theirs" or "ours", we were able to get a good indication of their sense of psychological ownership (Pierce et al., 2001; Pierce and Jussila, 2010). The last set of guestions was aimed at investigating the interaction between their sense of psychological ownership and the transfers of control. This involved asking multiple in-depth questions about the reasons behind the respondents' reactions to the distribution of responsibilities.

3.3. Data analysis

With our research questions in mind, we used the literature review to identify an initial list of key concepts and determinants, i.e. first order codes, which could help us to describe and analyze how individual control, psychological ownership and motivation are interrelated. As a first step towards analysis, all interview transcripts were reread and sections of the interview transcripts that were of particular interest to the research questions received short, descriptive code labels to group them into one or more categories and to aid later within-case and between-case analyses (Eisenhardt, 1989; Spencer, Ritchie, Ormston, O'Connor and Barnard, 2014). While reading the transcripts, we expanded that literature-based list with additional labels that seemed relevant. This process allowed us to incorporate determinants that surfaced during the interviews but were more nuanced than the ones from the literature review, resulting in a more open-minded and reality-based coding scheme (Miles and Huberman, 1994). Furthermore, such an abductive approach or "systematic combining", where "empirical observations inspire changes of the view of theory and vice versa" (Dubois and Gadde, 2002, p. 558), lends itself to more fruitful analyses of case studies.

Following the concepts of "hierarchical coding" (King, 2012) and "pattern coding" (Miles and Huberman, 1994), we then grouped related first order code labels and created more general, higher level code categories. This second level coding resulted in four broad topics, namely control, psychological ownership, benefits and drawbacks. Two other researchers independently went through the same process, applying first and second level labels. Their results were subsequently compared and the differences were discussed until a consensus was reached. Table 8 in the appendix presents an overview of the relevant first and second order labels applied to the interview transcripts, each with representative quotes from our interviews.

Subsequently, all those sections of the interview transcripts with identical second order codes were grouped by company. This created an overview of what different interviewees within the same firm had said about the same subject (e.g., autonomy in the firm). These overviews formed the basis for within-case analyses in order to find important overall patterns within each company (Eisenhardt, 1989). Both the first and second level codes helped identify commonalities and differences and aided in structuring the findings. When additional

details or clarifications were necessary, we again revisited the full interview transcripts. After the within-case analyses we proceeded to between-case analyses to learn from the similarities between the companies, as well as the differences between them (Eisenhardt, 1989). The second level codes formed the primary categories for our between-case analyses.

4. Findings

4.1. Family owners' sense of control and psychological ownership

In line with the literature (Gomez-Mejía et al., 2007; Berrone et al., 2012; Thiele, 2017), our interviews with family owners confirm the family's strong adherence to control. In terms of legal share ownership, all five companies we visited were fully family-owned, with transfers of ownership limited to intra-family transfers. None of the family interviewees indicated the possibility of non-family members obtaining company shares. On the contrary, one non-family manager's explicit proposal to buy company shares had previously been rejected by the family CEO, mirroring business families' insistence on financial independence as reported in the literature (Ward, 1988; Miller and Le Breton-Miller, 2005; Mullins and Schoar, 2016).

At the same time, we observed that the family's consistently high level of control within all five companies did not give rise to a uniform sense of psychological ownership among the family members. In other words, even though all family members enjoyed substantial control, not all of them considered themselves to be psychological owners. Instead, we spoke to some family executives with a strong sense of psychological ownership, while other family owners were much more reserved: "I have three children, the third one being the company." (Company B, family owner) "We [siblings] are owners but I don't feel like an owner." (Company C, family owner)

Hence, being part of the business family does not automatically translate into being a psychological owner. This is in line with Pierce et al.'s (2001) findings that legal ownership and psychological ownership are not necessarily intertwined. Legal ownership among family members may exist in the absence of psychological ownership and vice versa.

Equally important, however, is the question how psychological ownership relates to non-family managers in the family firm.

4.2. <u>Non-family managers' sense of control and psychological</u> <u>ownership</u>

Our subsequent interviews with non-family managers yielded remarkably similar results regarding the importance of control and their sense of psychological ownership. As was the case for the family owners, we found that non-family managers' perspective on control was strongly linked to their sense of psychological ownership. This finding corresponds to insights from the literature, indicating that control, i.e. individuals having the autonomy to make their own decisions, is one of the main "routes" leading to a sense of psychological ownership (Pierce and Jussila, 2010; Rantanen and Jussila, 2011; Sieger et al., 2011).

We noticed that non-family managers with higher levels of ambition in particular, i.e. those with a strong personal desire for autonomy and control, developed a sense of psychological ownership when those desires were granted. It quickly became evident that many of them expressed a strong sense of psychological ownership, even in the absence of actual shareholdership: "Everything [in the multinational] that happens regionally, remains regional, as if it were my SME. Basically, I'm a family CEO." (Company A, non-family manager)
"For many years, I worked as if I was an owner. Many people asked me whether it was my company." (Company D, non-family manager)

This further confirms that being a legal shareholder of the founding family is not the only predictor of the presence of a sense of psychological ownership and that the psychological ownership framework also applies to non-family managers (Wagner et al., 2003).

4.3. <u>Psychological ownership's motivational effect</u>

Having established that not only family owners but also nonfamily managers can experience a clear sense of psychological ownership, we proceed by examining its effects. In particular, the literature mainly focuses on the benefits by highlighting psychological owners' strong motivation to propel "their" company forward (Pierce et al., 1991; Henssen et al., 2014; Bammens et al., 2015).

Our own interviews clearly corroborate the positive link between psychological ownership and work-related motivation. Our conversations with family owners consistently showed those family members with the strongest sense of psychological ownership also to be the most driven and passionate:

"The challenge of directing my 17 people each day, gives me a boost. It gives me satisfaction." (Company B, family owner)
"My father also directs the succession process. He's best placed to do it, he is the pater familias, the company is his fourth child. He is very motivated and positive." (Company C, family owner)

Equally important, however, is that we received the same message from the non-family managers. As the previous section

showed, company A's non-family CEO had a strong sense of psychological ownership. This coincided with a very pronounced motivation to propel the company and the people forward. Although he works for a family owned multinational, he is nevertheless one of the few national non-family CEOs closest to the family owners and the driving force behind the creation of the multinational's advisory board. His main mission is to *"take people to a higher level"*, which he told us gives him a *"huge boost"*. Moreover, he extends this drive outside the company, by actively coaching 15 SMEs in a regional entrepreneurial network organization.

We noticed a similar sense of motivation in one of company D's non-family managers, who professed a close personal bond with the family CEO and who indicated that, especially during his first years in the company, he would have done anything for the firm or for the family owners. In fact, he regularly and gladly worked late hours and during the weekends:

"I was closely involved in production, I knew a lot, I saw a lot. It was partly mine. [...] That feels good." (Company D, non-family manager)

4.4. Family owners' resistance to delegation of control

With high individual control stimulating psychological ownership and ultimately motivation, we next turn our attention to the sharing of control between the company's family owners and their non-family management.

Among the family owners we interviewed, there was general agreement that non-family members are a precious resource for the family firm and that it is in the company's best interest to grant non-family managers a certain level of autonomy and control. Hence, the family owners in our sample echoed findings from previous research (Zahra et al., 2008; Patel and Cooper, 2014; Sanchez-Famoso, Akhter, Iturralde, Chirico and Mased, 2015) and clearly acknowledged the

importance of delegating control to their non-family managers, as demonstrated by quotes such as:

"You need to have the courage to delegate, sometimes that's the only way to progress." (Company E, family owner)
"You can't expect people to feel involved if you don't involve them in anything. Having them assume responsibility also means granting them responsibility." (Company B, family owner)

However, in spite of the family owners' expressed willingness to transfer decision making powers, it was quite clear that in reality there are important limits to the family's willingness to delegate control. More specifically, the family members in our sample drew a clear line between two different levels of decision making, namely the operational level versus the company-wide, strategic level. Although non-family managers were actively encouraged to assume operational responsibilities, the same did not apply to responsibilities on the company level. Instead, many family owners viewed decisions on the highest level, where the company's strategic course and the main goals are set, as their exclusive authority. Further questioning revealed this stance to be primarily rooted in the family owners' desire to first and foremost protect their sense of autonomy and control. As one of the family owners put it:

"If I had to make a living some other way, it would need to be in a similar structure, with me in charge." (Company B, family owner)

Moreover, most family owners considered it quite obvious that the two levels of control should be treated differently. Hence, because the family owners considered the preservation of *strategic* control within the family to be self-evident, they understood "delegation of control" to non-family members to be limited to the delegation of *operational* control. As two family owners put it: "I wish to delegate and to give more autonomy but I also want to create a structure that allows me to exercise some control." (Company E, family owner)
"In the end we [the family] decide because this is not a democracy. But you do send a democratic signal and you take into account employee feedback." (Company B, family owner)

This stands in stark contrast to the non-family managers' perception. More specifically, most our non-family interviewees told us that family owners were (too) reluctant to delegate (strategic) control:

"I think sometimes the family is afraid to delegate. They always reason 'What we do ourselves, we do better.'" (Company D, nonfamily manager)

"I think many people [struggle to understand] that you have to give in order to receive more. This is even more so for family owners, also in this company. It is incredibly hard for the family to just let go once in a while." (Company A, non-family manager)

4.5. Non-family managers' sense of entitlement of control

Our findings that "control" is often perceived differently by nonfamily managers than by family owners echoes other research that found a similar discrepancy between employees and employers on what participation in decision making should really entail (Scott-Ladd et al., 2006). By itself, the difference in perspective between family owners and non-family managers seems trivial but in practice it rarely is, especially when the family firm's non-family managers have developed a strong sense of psychological ownership throughout the years.

During our interviews with both family and non-family members, we noticed a distinct feedback loop from psychological ownership to control. In particular, we observed that the interaction between both doesn't stop once a sense of control has led to psychological ownership. Instead, a strong sense of psychological ownership now urges the non-family managers to protect their acquired level of control or even leads them to desire additional, strategic control. In other words, many of the non-family managers developed a sense of entitlement to control, especially control at the company's strategic level:

"Promoting my most important [non-family] coworkers to the board of directors went very well. [...] When doing so, we tried to avoid people invading other persons' territory and that was the biggest problem." (Company C, family owner) "I have worked here for 20 years now and while I have more responsibilities than in the past, I would like to do even more." (Company D, non-family manager)

The other non-family manager in company D recalled a series of attempts by the family owners to hire a high level sales manager and explicated that his main concern during that time was the potential loss of control and decision making authority this could entail for him. That concern was allayed once it became clear that the coordinating position would be filled by a family member known to respect other people's experience and input.

Similarly, company A's non-family CEO observed that, in order to realize his main personal objective of taking people to a higher level, he needed and expected to have the strategic control and authority to do so. If that were to become impossible, he stated that he would rather leave the company and seek opportunities to achieve his vision elsewhere. Chapter 3

4.6. Towards conflict and demotivation

We observe that when all the aforementioned elements come together, they set the stage for potential conflicts between the family firm's family owners and its non-family managers. On the *operational* level, the family's willingness to grant their non-family managers control and autonomy usually coincides with the non-family managers' expectations and desires. However, for some non-family members, having mere operational control and no strategic control fell short of their expectations. Their perception of lower control options – especially at the strategic level - leads to a weakened sense of psychological ownership among those non-family managers (Sieger et al., 2011), which could ultimately lead to demotivation and to conflicts with the family owners (Patel and Cooper, 2014).

We observed that many non-family managers not only wanted operational control but also had a desire for control and participation on a higher, strategic level. It is their sense of psychological ownership that urges non-family managers to expect and protect a high level of strategic control as this allows them to protect "their" company. It is on that strategic level that conflicts may arise with the family owners, who want to protect their own strategic control over the company. The difference in perspective between family and non-family on what it means to delegate "control" may therefore cause resentment on the part of non-family members, who expect more than what the family is willing to offer:

"We [brainstorming team] reached a point where decisions needed to be made and at that moment [the family CEO] said: 'But now the [family] management will decide what to do.' Then I thought: 'If that's how it's going to be, I'll just shut up. What's the use in doing this?' I think that's a pity" (Company D, non-family manager) At the same time, the family owners often remain unaware of any disappointment on the part of non-family members because the family is under the impression that it already delegates a sufficient and considerable amount of control, albeit operational control. As a result, the message we received from the family owners was markedly different from what the non-family managers told us, with only one family member indicating that there might be a potential problem:

"What we try to avoid, even though we may not always succeed, is building a wall around the family. We try to do that by including other people in our board of directors." (Company C, family owner)

Overall, our interviews with family owners and non-family managers therefore lead us to propose the following:

Proposition: Non-family managers' psychological ownership in family firms conflicts with family-owners' desire to maintain control.

5. Discussion

Overall, our interviews with family owners and non-family managers confirm important key findings from the literature that indicate that not only family owners but also non-family managers can develop a strong sense of psychological ownership (Wagner et al., 2003), which can then act as a powerful source of motivation (Pierce et al., 1991; Henssen et al., 2014; Bammens et al., 2015). Furthermore, we can clearly confirm the importance of being in control as a main prerequisite of psychological ownership (Pierce et al., 2001). Even though the other routes to psychological ownership, i.e. gaining information and self-investment, were also acknowledged during some of the interviews, it was the control route that stood out as the primary source of psychological ownership. Nearly all interviewees that

expressed a strong sense of psychological ownership indicated that those feelings were primarily caused by the opportunity for control they received and valued.

In addition to confirming the relevance of the psychological ownership framework for a family firm context, our interviews provided us with an enhanced insight into the complex interaction between psychological ownership, family control and non-family control. The results not only point to psychological ownership's benefits but also to its drawbacks (Figure 3). Therefore, we believe we are able to make several relevant contributions to both the family firm literature and the literature on psychological ownership.



Figure 3: Overview

Although previous research frequently draws attention to business families' strong adherence to control over their firm (Gomez-Mejía et al., 2007; Berrone et al., 2012; Thiele, 2017), while also acknowledging the importance of delegating control to their non-family managers (Zahra et al., 2008; Patel and Cooper, 2014; Sanchez-Famoso et al., 2015), the non-family managers' perspective on these issues and the related interaction between them and the family owners has received relatively little attention. In this article we contribute to the family firm literature by explicitly taking into account how non-family managers experience the distribution of control in the family firm, thereby answering the calls to seek additional insight in how non-family managers function within family firms (Sharma, 2004; Yu et al., 2012; Benavides-Velasco et al., 2013).

What clearly emerges from our interviews, both with family owners and with non-family managers, is that control is much more intertwined with psychological ownership than could be assumed based on the theoretical literature. However, in order to understand that complex interaction, it is essential to look beyond the business family's perspective on control by also taking into account the point of view of the company's non-family managers.

Specifically, the cases show a clear feedback effect from an individual's sense of psychological ownership to control. Hence, nonfamily managers with a strong sense of ownership also develop a sense of entitlement, which not only leads them to protect the level of control they already have but also to expect additional strategic control on a higher company level. Those expectations, however, often clash with family-owners' desire to maintain strategic control over their company, which limits the family's willingness to delegate control to non-family managers.

As our interviews reveal, the problem is compounded by the fact that family members often have a different perspective on control than their non-family managers. The family owners' interpretation of "control" is usually limited to "operational control", i.e., lower to middle level responsibilities in the company. However, many non-family managers also want to participate in strategic, high level decision making. Hence, they interpret "control" as "operational and strategic control". Much of that difference in perspective was never explicitly stated in the companies that we visited. which lead to misunderstandings and unfulfilled expectations. Although family owners genuinely feel they already devolve considerable responsibility and control, many non-family managers do not share that view. In part,

our findings echo early research (Bailyn, 1985) pointing to the importance of clearly distinguishing operational autonomy from strategic autonomy since different individuals within the firm may desire different levels of control, depending on both personal and job characteristics. Hence, for some employees the mere possibility of providing feedback may suffice while others may get demotivated if their feedback isn't turned into action.

We argue that a mismatch between different perspectives on "control" poses a considerable problem for family firms, as it may cause resentment and conflict. On the one hand, conflicts need not always have a detrimental effect on performance. Task and process conflicts in particular, i.e. disagreements about the content of a task and how it should be done or delegated, may benefit performance and innovation (Jehn, 1997; Jehn and Bendersky, 2003). But on the other hand, relationship conflicts may also lead to demotivation and a higher turnover of non-family managers (Patel and Cooper, 2014). On the part of family owners, families that are highly protective of their level of control may ultimately become averse to welcoming non-family members to their management team (Romano, Tanewski and Smyrnios, 2001; Lutz and Schraml, 2011; Hiebl, 2013). Given the significant advantages of keeping non-family managers with a strong sense of psychological ownership on board, such aversion could quickly backfire. As non-family managers complement the skills and experience of the business family, they are a valuable human resource for family firms. By introducing non-family perspectives and skills, family firms are able to extend and diversify their professional network and their available resources. Hence, a resistance against non-family management participation in decision making risks excluding essential external expertise and could ultimately lead to a weakened family business (Patel and Cooper, 2014; Sanchez-Famoso et al., 2015).

Therefore, even though we find that delegating control from family to non-family stimulates the latter's sense of psychological ownership and acts as a strong motivator, our results caution against a one-sided positive view. Instead, it is essential to recognize that the same sense of psychological ownership on the part of non-family managers may also give rise to conflicts and demotivation, especially when family owners impose limits to non-family control. In those cases psychological ownership may become a liability instead of an asset. Hence, psychological owners may not always behave as stewards as the literature suggests (Zhu et al., 2013). For several interviewees, their sense of psychological ownership led them to primarily protect their level of control, rather than their company. As long as family owners allow their non-family managers to enjoy a high level of strategic control, there is no problem and the non-family managers will likely behave as stewards (Henssen et al., 2014). However, when they lose their strategic or even operational control within the firm, their stewardship behavior might also suffer or they may opt to leave the company altogether.

By shedding light on the complexity of psychological ownership in family firms our research responds to the call for more empirical validation of the psychological ownership framework (Pierce et al., 2001; Liu et al., 2012; Dawkins et al., 2017), particularly in a family firm context (Dirks et al., 1996). Moreover, our findings highlight the importance of taking into account not only the advantages and but also the disadvantages of stimulating non-family managers' sense of psychological ownership by delegating control from family owners to non-family managers. In doing so, we address calls for research into the potential *negative* effects of psychological ownership in the family business (Brown et al., 2014; Ramos et al., 2014).

6. Contributions to practice

For practitioners and managers our findings stress that stimulating a widespread sense of psychological ownership is no perfect or easy recipe for success. Promoting a sense of psychological ownership throughout the company is indeed a strong motivator for non-family managers but family owners should also consider the potential downside. Non-family managers with a strong sense of psychological ownership have strong feelings about how the company should be run. Therefore, they will expect to have a greater say in decision-making. This may benefit the company but may also hinder the cooperation between family and non-family.

The key is finding the right balance between the family owners' desire to remain in control and the extent to which they want to propagate a sense of psychological ownership to their non-family managers. In other words, family owners need to weigh the downside of relinquishing a certain measure of control against the potential benefits of maximizing their non-family managers' level of motivation. The optimal solution ultimately depends on the individual need for control of both family owners and non-family managers as well as on clear communication. Family firm owners need to gain as much information as possible on what their managers expect and on how specific organizational decisions will align with those expectations. This process ideally starts at the moment of recruitment or selection. Hiring ambitious new managers may propel the family firm forward but only when family owners are willing to allow the fulfillment of such ambitions by delegating a sufficient degree of control. Hence, there must be a fit between the personalities of family owners on the one hand and nonfamily managers on the other. Transparency and open communication are crucial to ensure that both parties know what to expect, not only at the moment of selection but throughout the managers' entire career.

7. Limitations and suggestions for further research

In this chapter, we argue that non-family managers' psychological ownership in family firms leads to conflicts with the family-owners' desire to maintain control. This represents a verifiable proposition that future research can use as a starting point for more
extensive empirical validation. Furthermore, given the considerable potential benefits of a strong and widespread sense of psychological ownership on family firms' performance, future research should investigate how the family's and non-family's psychological ownership can be reconciled. More specifically, family firms could benefit from solutions that allow them to reap psychological ownership's motivational benefits while keeping its drawbacks at bay. Our findings indicate that increasing delegation of operational control from family owners to non-family managers at the same time increases positive results. such as motivation, as the risk of negative results, such as conflicts. Allowing non-family managers to have more operational control may cause them to expect more strategic control, which may be a step too far for many family owners. Hence, one interesting avenue for future empirical research could be to analyze whether there exists some tipping point at which the disadvantages of delegating more control start to outweigh the advantages.

During our analysis we focused on the diversity of perspectives. Hence, we interviewed different people, with a variety of perspectives and positions in the family firm. Much of the information gained is based on managers' recollections of the past and on their own interpretation, with hindsight, of the events. An alternative approach could be to perform longitudinal qualitative research, where a limited number of individuals are observed during a longer period in which responsibilities are delegated from the family to non-family managers. That way the individuals' reactions could provide more insight into the complex interactions between them. Chapter 3

Appendix

Table 8: Interview labels and quotes

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
Control	Centralization	<i>"We hold a yearly management meeting, where we consolidate everything for the next year. That strategy meeting is directed by me." (Company A, non-family manager)</i>
		"In the end we [the family] decide because this is not a democracy. But you do send a democratic signal and you take into account employee feedback." (Company B, family owner)
		"Usually we're merely informed about who joins or leaves [the board of directors]. [] They ask our opinion but actually the decision has already been made." (Company C, non-family manager)

¹⁰ Text sections between "[]" denote the author's own phrasing, clarifications or omissions.

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
		"You also have purely operational people of whom you know that they will do what is being asked, but nothing more." (Company E, family owner)
		"I wish to delegate and to give more autonomy but I also want to create a structure that allows me to exercise some control." (Company E, family owner)
		"If you had asked me five years ago, I would have probably said 'team management' [with my mother and sister]. Now my opinion has changed: one captain on the ship." (Company E, family owner)
	Decentralization	"You can't expect people to feel involved if you don't involve them in anything. Having them assume responsibility also means granting them responsibility." (Company B, family owner)
		"What we try to avoid, even though we may not always succeed, is building a wall around the family. We try to do that by including other people in our board of directors." (Company C, family owner)
		"The need to delegate to enough people is something you gradually learn." (Company D, family owner)
		<i>"I'm not a harsh changer that says 'Now I'm in charge and this is how we will do it.' I prefer to do it together." (Company D, family owner)</i>
		<i>"We ask that everyone, within his job description, assumes responsibility and comes to work as if it would be his own company." (Company E, family owner)</i>

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
		"You need to have the courage to delegate, sometimes that's the only way to progress." (Company E, family owner)
	Crisis	<i>"Having a source of external pressure is an advantage. They have no choice but to change."</i> (Company C, non-family manager)
Psychological ownership	Psychological ownership	"Everything that happens regionally, remains regional, as if it were my SME. Basically, I'm a family CEO." (Company A, non-family manager)
		<i>"I have three children, the third one being the company. In principle, your three children all evoke the same measure of passion and emotion." (Company B, family owner)</i>
		"We [siblings] are [legal] owners but I don't feel like an owner." (Company C, family owner)
		"I can truly say that this is really my domain. […] I always said that, if I were to win the jackpot, I would invest in the company. I think that says it all." (Company C, non-family manager)
		"My people are more important than my entrepreneurship. [] The first thing I see here [in my company] is my vision and my mission." (Company D, family owner)
		<i>"For many years, I worked as if I was an owner. Many people asked me whether it was my company." (Company D, non-family manager)</i>

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
		"You can commit yourself to a certain company, as if it were your own, for as long as it gives you satisfaction." (Company E, family owner)
		<i>"My father founded this company and I continue his dream. I certainly feel this to be my own company." (Company E, family owner)</i>
		<i>"I would consider myself to be a kind of owner of [product group]. I do a great deal for that [product group]." (Company E, non-family manager)</i>
Drawbacks	Resistance to delegation	<i>"I have worldwide management experience, which allows me to signal the family that it might be time to accept some external influence. This is a very difficult topic." (Company A, non-family manager)</i>
		"I think many people [struggle to understand] that you have to give in order to receive more. This is even more so for family owners, also in this company. It is incredibly hard for the family to just let go once in a while." (Company A, non-family manager)
		<i>"If I had to make a living some other way, it would need to be in a similar structure, with me in charge." (Company B, family owner)</i>
		"The problem in this company is that a lot of decisions are made within the family and even then some decisions are made without the knowledge of some family members." (Company D, non-family manager)

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
		"I think sometimes the family is afraid to delegate. They always reason 'What we do ourselves, we do better."" (Company D, non-family manager)
		"My mother isn't ready yet to really let go, to cut the ties with our company. She has clearly delegated tasks but is still physically present in the company. [] You can muddle along for years like this." (Company E, family owner)
		"As more responsibilities should be transferred [from mother to daughter] we are actually moving backwards. [] It is now always easy." (Company E, family owner)
		<i>"I have delegated a lot but I want to continue doing the financials. I don't know why, I want that kind of commitment." (Company E, family owner)</i>
	Entitlement	"Promoting my most important [non-family] coworkers to the board of directors went very well. [] When doing so, we tried to avoid people invading other persons' territory and that was the biggest problem." (Company C, family owner)
		"[It created problems] because she wanted to present herself clearly as the primus inter pares and sometimes she did this in an awkward, forceful way." (Company C, family owner)
		"[Change is not always pleasant because some people reason:] 'I've been doing it like this for 15 years now and I did it well. I see that something needs to change but why does it have to be this? Precisely mine!'" (Company C, family owner)

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
		"Sometimes it's hard because everyone has his own territory, which no-one is allowed to enter. [] my decisions were sometimes revoked, counteracted or ignored by other directors, even though the decisions were mine to make." (Company C, non-family manager)
		<i>"I have worked here for 20 years now and while I have more responsibilities than in the past, would like to do even more." (Company D, non-family manager)</i>
		"During changes, a sense of ownership may help, when that person moves the change forward, but it may also cause him to become very protective towards the status quo and then he will counter the change. It can go both ways, it's not the case that ownership should always be stimulated, that it is always a positive thing." (Company E, family owner)
	Demotivation	"Feeling left out of the decision process is the most frustrating thing." (Company B, family owner)
		"When I'm in a job, I need to be able to give it all I have. I used to have that feeling of ownership very strongly and now it has diminished because I'm not sure whether I can still progress [within the company], as there are young people, who will become [legal] owners, getting ready." (Company C, non-family manager)
		"We [brainstorming team] reached a point where decisions needed to be made and at that moment [the family CEO] said: 'But now the [family] management will decide what to do.' Then I thought: 'If that's how it's going to be, I'll just shut up. What's the use in doing this?' I think that's a pity" (Company D, non-family manager)

Main concept (2 nd order label)	Sub concept (1 st order label)	Quotes ¹⁰
		"I now feel more like a manager running the show than like a real owner because of the succession process, which I think has been dragging on for too long." (Company E, family owner)
		<i>"It is precisely the succession process between different generations [proceeding too slowly] that demotivates me." (Company E, family owner)</i>
Benefits	Motivation	<i>"It is my personal mission to take people to a higher level. In doing so, I am also opportunistic because it gives me a huge boost." (Company A, non-family manager)</i>
		"The challenge of directing my 17 people each day, gives me a boost. It gives me satisfaction." (Company B, family owner)
		"My father also directs the succession process. He's best placed to do it, he is the pater familias, the company is his fourth child. He is very motivated and positive." (Company C, family owner)
		<i>"I was closely involved in production, I knew a lot, I saw a lot. It was partly mine. […] That feels good." (Company D, non-family manager)</i>
		<i>"If people feel involved [in the decision making process] they will be much more motivated to implement [such decisions]" (Company E, family owner)</i>

Throughout this work we have strived to further our knowledge on the role of organizational flexibility in the broader context of companies' innovation processes. We studied the importance of organizational flexibility with regard to product and process innovation, analyzed its potential as an alternative to R&D as an innovation input in family firms and looked deeper into the process of actually stimulating and managing flexibility within the family firm.

Combining the findings from the literature on those issues with the results of our own empirical analyses allows us to draw several important conclusions regarding companies' innovation process.

First and foremost, we find that organizational flexibility indeed coincides with firms' ability to innovate successfully and that this may even constitute an innovative advantage for family firms.

Our findings on the importance of organizational flexibility as an integral part of the innovation process hold for different aspects of such flexibility but also for different types of innovation outcomes. Generally speaking, we find a significant positive relationship between organizational flexibility and both product and process innovation. More specifically, flexibility with respect to (1) the distribution of responsibilities and decision making power, (2) external relationship management, as well as (3) knowledge management systems show a positive relationship with (a) turnover from goods and services that are only new to the market, (b) turnover from goods and services that are only new to the firm but not to the market, (c) cost reductions due to process innovations, and (d) turnover increase due to quality improvements of the production process.

Further analysis pointed to the importance of distinguishing between family firms and non-family firms when considering the role of organizational flexibility. In particular, our data revealed that family firms are actually better than non-family firms at flexibly changing their internal and external organization. In turn, family firms' organizational flexibility advantage is significantly and positively linked to both product and process innovation performance. Overall, we find that family firms achieve a level of product innovation performance that is similar to the one observed in non-family-owned firms and that they even outperform non-family firms in the field of process innovation.

The literature on family firms proposes several family firm characteristics that may serve as a basis for such enhanced flexibility. One possible explanation points to family firms' more dynamic attitude because of their focus on non-financial and long-term goals. Their enhanced speed of decision making due to high levels of mutual trust between family members is another potential source of increased flexibility. Furthermore, business families may have the potential to extend their own sense of commitment to their non-family employees, thereby stimulating essential components of organizational flexibility like employee creativity and responsiveness to change.

Hence, our findings reconcile the apparently contradicting results of previous empirical studies that family firms display superior innovation performance even though they engage less in R&D than non-family owned firms. On the one hand, our results confirm that family firms indeed invest less in R&D than non-family firms but at the same time we find that such an R&D disadvantage is compensated by family firms' greater organizational flexibility. Moreover, our study shows that R&D is clearly linked to product innovation performance but shows little or no link to process innovation. This further indicates that family firms' innovative "handicap" due to their lower R&D activity may be less pronounced than assumed in previous studies, as this lesser engagement in R&D may not affect their process innovation performance.

Secondly, this work furthers our understanding of how family firms can manage organizational flexibility in practice, by clarifying how internal stakeholders' sense of psychological ownership affects their motivation and their disposition towards changes in the family firm's decision making process. We show that family owners are quite adept at stimulating a strong sense of psychological ownership and motivation in their non-family managers, in large part by delegating operational control. However, non-family managers with a strong sense of psychological ownership develop a sense of entitlement, which leads them to expect additional strategic control. Those

expectations often clash with family-owners' desire to maintain strategic control over their company, thereby demotivating the nonfamily managers and hindering organizational flexibility. Therefore, it is essential to recognize that a strong sense of psychological ownership may at the same time enhance and impede a family firm's organizational flexibility with regard to the internal distribution of responsibilities and decision making power. Hence, our interviews with family owners and non-family managers offer more insight but also add more nuance to our previous findings regarding the positive relationship between family firms and organizational flexibility. While our qualitative research confirms family owners' flexibility towards the internal distribution of responsibilities, it also reveals the limits of such flexibility and some of the potential downsides of family owners' ability to extend their own sense of commitment to their non-family managers.

Finally, we believe this work makes an important contribution to the family firm literature by moving away from a limited focus on intergenerational psychological differences within the family towards a broader perspective that allows us to analyze how non-family managers experience changes in the family firm and how they react to them. In that regard, it is important to point out that our interviews reveal that family owners often have a different perspective on control than their non-family managers, which may lead to conflicts or demotivation. All in all, acknowledging this variety and complexity helps to shed more light on how non-family managers function within family firms.

Practical implications

For business families and family firm managers, the results of our research imply that flexibly adapting their internal and external organization can help them overcome their R&D disadvantage and can lead to successful new product and process development. This is especially important in light of the often significant investments of time and money associated with organizational flexibility. After all,

organizational flexibility requires significant resources to be diverted away from the company's existing business. Furthermore, the inevitable adjustments during organizational changes may initially disrupt several other organizational processes, including product and process innovation itself. Our findings can strengthen family firms' resolve to look beyond these short-term costs and encourage family owners to continue reconfiguring and enhancing their internal and external organization.

Family managers and practitioners should be aware that creating a strong sense of psychological ownership is a potentially powerful instrument for stimulating organizational flexibility. However, they should at the same time take into account that a strong sense of psychological ownership may facilitate but also hinder flexible redistributions of control. In practice, family firms can utilize their nonfamily managers' sense of psychological ownership to their advantage if they succeed in achieving a good fit between the non-family managers' expectations and the family owners' willingness to relinquishing a certain measure of control. Transparency and open communication about these issues are therefore crucial.

For researchers our study clearly demonstrates the need to move the innovation debate away from a focus on R&D activities, and in addition investigate other processes associated with innovation performance, specifically organizational flexibility. Distinguishing between product and process innovation and the distinct processes related to these specific innovation outcomes, may help overcome and explain the inconsistencies of previous studies, thereby moving the field further forward.

Limitations and suggestions for further research

Although our work provides important new insights it also contains some limitations, thereby creating interesting avenues for future research.

A first limitation concerns the measurement of some of the variables used in our quantitative analyses. Although our measurement of organizational flexibility allows us to distinguish between different aspects of organizational flexibility, we are limited by the fact that each of those aspects is a binary variable. Hence, these measures only mirror whether some minimal degree of organizational flexibility is present in the organization, but provide no information regarding the precise degree of flexibility. Moreover, our operationalization of family ownership is rather limited. Hence, future research could benefit from collecting and integrating more detailed measures of organizational flexibility, as well as more detailed information about families' influence in their firm. Similarly, introducing other and more detailed innovation performance indicators could add additional value. For example, future research could take process innovations' radical or incremental nature into account, as well as other innovation outputs such as marketing innovation.

We further acknowledge that our study does not fully incorporate all cost implications of R&D and organizational flexibility, and can therefore not provide any conclusions on their ultimate financial effects. It would be interesting to study this further, while at the same time distinguishing between different types of organizational flexibility, as it could help family firm managers prioritize certain organizational changes.

Finally, in the qualitative part of our work we argue that nonfamily managers' psychological ownership in family firms leads to conflicts with the family-owners' desire to maintain control. This represents a verifiable proposition that future research can use as a starting point for more extensive empirical validation. Furthermore, given the considerable potential benefits of a strong and widespread sense of psychological ownership on family firms' performance, future research should investigate how the family's and non-family's psychological ownership can be reconciled. More specifically, family firms could benefit from solutions that allow them to reap psychological ownership's motivational benefits while keeping its drawbacks at bay.

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