

INFLUENCING FACTORS OF INNOVATION PERFORMANCE IN FAMILY FIRMS

BASED ON AN EMPIRICAL RESEARCH

Investigation of innovation performance of family firms is rather new area in family business research. Studies focusing on the relationship between the overall performance of family businesses and their innovation activities conclude that family firms seem to innovate less, despite their ability to innovate more than other type of companies. De Massis et al. (2015) investigated how family firm managers can resolve this paradox and unlock the innovation potential of the organisations in which they work.

Based on the results of international studies comparing innovation performance of family versus non-family firms, the authors' research focused on the investigation of the differences/similarities of innovation performance of family firms, authors' of all small and medium sized companies located in Hungary. The novelty of the article is the analysis of the influence of various management decision-making tools on the innovation performance of SMEs, in particular family firms. The results of the empirical research confirm that management decision tools have positive impact on innovation performance of SMEs and family firms introduce more innovations than other type of companies¹.

Keywords: family firms, innovation, innovation performance, decision making tools

Most influential articles of family business research – measured by citation counts – rarely deal with analysis of aspects of innovation. Some works contribute by providing the theoretical bases for future inquiry, while other articles provide empirical evidence of relationships that affect the way theory is applied by identifying contingencies that were previously unanticipated or not incorporated into theory. The first group of articles discusses general family business articles including literature reviews and studies that focus on definitional issues and other topics. The second group of articles is based on agency theory, whereas the third group of articles focuses on the resource-based view of the firm (Chrisman et al., 2010).

Understanding of the succession process in family firms is crucial and a significant amount of family firm research focuses on it (Debicki et al., 2009; Noszkay, 2017). In this context, Cabrera-Suárez et al. (2001) used the resource and knowledge-based views in order to develop an integrative model of knowledge transfer and successor development in family firms. Also, Makó et al. (2016) explain that if the distinctive tacit assets that reside in family firms (e.g. commitment, trust, reputation, know-how) can be transferred across generations, the likelihood of continued survival and growth can be enhanced. Habbershon et al. (2003) presented a unified systems perspective of family firm performance. In this perspective they highlighted that understanding of noneconomic goals of family firms is critical because they could affect firm behaviours and performance including the motivation of firms pursuing long term investments and innovations or shying away from such activities.

Moreover, family firms have certain characteristics that can work against their innovation activities. Chrisman

et al. (2015) found that, they focus more on running a solid and sustainable business than introduction of disruptive innovations they might not fully control. Family firms might suffer from limited exposure to innovative ideas from other industries, because the owners and managers of family firms usually have not worked in other companies. Instead, they rely more on ideas originating from in-house which is based on the belief they know more than anyone else about what it takes to succeed. Despite these factors, many family-owned firms are among the most innovative in their industries (Llach – Nordqvist, 2010; Craig – Dibrell, 2006).

The paper starts with reviewing the definition of family firms, innovation and key concepts related to innovation research in family firms as well as the results of empirical analysis carried out in European countries in the past decades. Then, the methodological procedure is explained and the main results of the survey are presented. The paper concludes with the summary of findings and conclusions as well as limitations of the empirical investigation.

Literature review and definitions

What kind of companies are family firms?

Family firms are the backbone of most national economies, consisting of very diverse, heterogeneous groups of firms. The share of family firms within the total number of enterprises oscillates between 20 to 70 percent across the EU countries and about 70 percent in the Hungarian economy. According to estimates, these firms are responsible for more than half of the GDP and employment in Hungary (Noszkay, 2017).

The relevance of family firms motivated researchers to make classifications for better understanding of this complex system. This ambition resulted in a wide variety of

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understandings of family firms in the literature. Some research articles understand family business run by the nucleus family of founders, while some others also include the extended family, i.e. cousins and uncles as second and multiple generations of heirs or successors (Gersick et al., 1997; Habbershon – Williams, 1999).

Handler (1989) made one of the first classifications of definitions of family firms by using the following four factors: i) ownership-management, ii) definitions building on subsystems, iii) definitions highlighting generation succession, and iv) concepts based on multiple criteria. Notwithstanding, researchers seem to agree that ownership, rather than governance or management, is the key differentiating factor between family and nonfamily firms (Klein, 2000).

Chrisman et al. (2005) reviewed important trends in the strategic management approach to studying family firms and concluded on the definition of family firms in the following way:

“...the theoretical issues with respect to defining the family firm are still open to debate; however, the components-of-involvement and the essence approaches appear to be converging” (Chrisman et al. 2005, p. 557).

We can see a general tendency in the literature that family firm definitions move toward multiple criteria, because these extended interpretations, including family firms owned and run by the founder, multi-generation family firms, firm owned by several families, family firm run by external managers, etc., provide more research opportunities and possibilities for comparisons. In line with this understanding, Poza (2007, p. 6.) provides with the following definition of family firms:

1. ownership control (15 percent or higher) by two or more members of a family or a partnership of families,
2. strategic influence by family members on the management of the firm, whether by being active in management, by continuing to shape the culture, by serving as advisors or board members, or by being active shareholders,
3. concern for family relationships, and
4. the dream (or possibility) of continuity across generations.

In addition to academic definitions, there is a European definition of family firms, which is based on a report produced by an expert panel led by KMU Forschung Austria (EC, 2009). On request of the European Commission, Mandl (2008) analysed 90 different definitions of family firms in 33 countries and could not identify a universal definition that could be used in wide range of areas, such as public administration, statistics or socio-economic research. Still, the expert panel came up with a definition of family firms, which has the following key elements: a family business: i) reserves most decision rights for natural person(s) who founded the enterprise, or such natural person(s) who have obtained ownership in the enterprise or spouse, parents, children or children's children of the persons already mentioned, ii) majority of decision-making rights are indirect or direct, iii) at least one representative of the family is formally involved in the governance of the firm and iv) stock-exchange-listed companies can be considered as fam-

ily businesses in the case when the person who founded the company or purchased it or his family, descendants have ownership over at least 25 % of shares represents right decision (EC, 2009).

In conclusion, we have our own definition of family firms that contains the following characteristics out of which at least two should be fulfilled:

- one or more family owns at least 50% of the properties of the firm,
- a group of family members exercises the control over the firm,
- at least one family member takes part in the management of the company and has a leadership role,
- at least two family members take part in the operation of the company as manager, consultant or employee.

Innovation and family firms

Innovation usually starts with an idea or invention, and it is a first attempt to carry it out in practice. In order to turn an invention into innovation, individuals and companies need to combine different types of knowledge, skills and resources. This process is highly complex and it has the following main aspects: i) the fundamental uncertainty inherent in all innovation projects, ii) the speed of the process, because innovators should move quickly before some other do other they can't reap the economic reward, and iii) the prevalence of resistance to new ways at all levels of society, which threatened to destroy all new initiatives and urge entrepreneurs to fight hard to succeed in their projects (Fagerberg, 2005).

Innovation and entrepreneurship are closely related terms, and innovation is often understood as heart of entrepreneurship. This is because entrepreneurs often use innovation to create change and exploit an opportunity. We can say that innovation is the introduction of something new or novel but it should not be something mould-breaking. The role of innovation and innovativeness in the entrepreneurial process was first highlighted in the seminal work of Schumpeter (1934) who described the concept of “new combination”. The definition of innovation is often associated with Schumpeter's (1934) work and with his approach to economic development. One of the most quoted paragraphs of his book describes the meaning of this concept and covers five cases of innovation: i) the introduction of a new or improved good or service, ii) the introduction of a new method of production, iii) the opening of a new market, iv) the conquest of a new source of supply or raw materials or half-manufactured good,; and v) the carrying out of the new organisation of any industry.

Innovation is difficult to define because it represents a continuum of activities from invention and paradigm shifts to incremental changes in products, processes and marketing. It should be stressed that even a series of small incremental innovations or little improvements could have an enormous impact on competitive advantage. In fact, the majority of commercially significant innovations are incremental rather than radical innovations. In addition, the frequency of innovation (i.e. occasional, frequent and

continuous) contributes to the impact of innovation on competitive advantage (Burns, 2013).

According to Burns (2013, p. 384.) the most frequent forms of innovation in corporate entrepreneurship are:

- product innovations – improvements in the design and/or functional qualities of a product or service,
- process innovation – revisions to how a product or service is produced so that it is better and cheaper, and
- marketing innovation – improvements in the marketing of an existing product or service, or even a better way of distributing or supporting an existing product or service.

Also, innovation could be seen as a process of reducing uncertainty, because learning more and proceeding lower uncertainty and risk associated with unknown. The idea behind the “innovation funnel” is that the further we go into the innovation project, the more it will cost and require more resources, but we will know much more. In fact, the innovation funnel is a roadmap that provides us with support to make decisions about resource commitment (Tidd – Bessant, 2013).

Conditions for successful innovation have been an important subject in the innovation management literature in the past decades. Success factors include cross-functional cooperation, commitment at the top and work floor, effective processes, customer-involvement, expertise, outstanding skills, adaptive capacity, networking, and company culture. Beck et al. (2010) focused in their research on human-related factors that are recognised as antecedents of innovation. Their results demonstrate that skills present in the company, involvement of the employees in the innovation process, and the clarity of direction of the top to the work floor matter the most in successful innovations.

Since Schumpeter's (1934) work, there has been a consensus in the literature that innovation is one of the main factors that has a positive effect on company growth. Casillas – Moreno (2010, p. 269.) goes further and state that “...strategy of innovation in new products and new processes have a positive and significant influence on the firm's growth rate.” Therefore, innovation enables companies to explore new business opportunities and improves the company's competitive edge.

Family business research revealed that innovation processes in family firms are different from the one in other companies, because of the co-existence and interaction of two systems, namely the family and the company. This specialty makes family firms different from other enterprises, which has several implications on their innovation approach and processes.

Studies focusing on the relationship between the overall performance of family firms and their innovation activities conclude that family firms seem to innovate less, despite their ability to innovate more than other type of companies. De Massis et al. (2015) investigated how family firm managers can resolve this paradox and unlock the innovation potential of the organisations in which they work. They came up with the model of Family-Driven Innovation, which is a fit between the characteristics of a given family firm and the components of its innovation strategy.

The Family-Driven Innovation framework builds on contingency theory that indicates that there is no best way to organize innovation activities, because those processes are contingent, with other word dependent, on the internal and external situation. De Massis et al. (2015, p. 9.) defines Family-Driven Innovation model as “...an internally consistent set of strategic innovation decisions that allow family firms to resolve their innovation paradox by ensuring a close fit between these decisions and the characteristics of the family firm.” According to this model, three contingency factors describe the characteristics of family firms and capture their heterogeneity. These factors are the where, how, and what of family firms which could lead to heterogeneous innovation decisions. Also, innovation highly depends on the fit between the contingencies of heterogeneity of innovation decisions and the contingencies of heterogeneity of family firms. If there is a misfit between innovation decisions and family firm characteristics, it is unlikely that the company could create a competitive advantage through innovation. Finally, it should be stressed that if innovation decisions match the characteristics of the family firm, then FDI is possible and can lead to the creation of competitive advantage through innovation (De Massis et al., 2015).

Li – Daspit (2016) devoted their paper to better understanding of the heterogeneity of family firm innovation, because family business studies provide inconsistent findings with regard to the relationship between family involvement and firm innovation. They developed a typology of family firm innovation strategies, positing that the risk orientation, innovation goal, and knowledge diversity of family firms vary depending on i) the degree of family involvement in governance, and ii) the type of socio-emotional wealth (SEW) objective or intentions. According to these characteristics, family firms could implement the following four innovation strategies: i) limited innovator, ii) intended innovator, iii) potential innovator, and iv) active innovator. This classification has practical application possibility for managers of family firms who develop more appropriate innovation strategies.

According to Steeger – Hoffmann (2015) underlying reasons for innovation related differences between family and non-family firms can be divided into three categories:

- resources and capabilities,
- agency issues, and
- innovation strategies.

These concepts were utilised in a comprehensive study investigating a cross sectional sample of 1200 German SMEs. The conclusions of the study demonstrate that self-assessed family firms are less innovative than non-family firms. They also found that the level of ownership and management seem to play an important role. In addition, other elements such as the R&D-intensity, internationality, and radicalness explain innovation output to a greater extent. This indicates that family firms are potentially not as different from non-family firms concerning innovation (Steeger – Hoffmann, 2015).

While researchers have very similar point of views regarding R&D expenditures of family and non-family firms, there are contradictory findings of the correlation between

innovation performance and the so-called “familiness”. One of the strongest features of the resource-based point of view of family business was written by Habbershon – Williams (1999). According to Habbershon – Williams the “familiness” is the unique combination of resources which come from the family, from the interaction of family and the business system, and it provides a long-term competitive advantage of family businesses. Chrisman et al. (2003) believes that the familiness is an interaction between competence and resources arising out of family ownership. Pearson et al. (2008) describes it as a phenomenon that generates a competitive advantage and a source of family wealth. The research found that familiness has a positive impact on business, the business viability, the short and long term performance, but it may have negative consequences in some cases. According to Klein (2008) and Milton (2008) if the family business is based on confidence, on the direct communication line, on the selfless devotion of family members and on the long-term interests (such as improving the organization's identity), the familiness becomes a positive characteristic. If the family business is driven by a short-term personal interests the familiness has rather negative impact through apathy, inflexibility, nepotism, because of it reduces the energy levels of the organization. Habbershon et al. (2003) also

warn that the familiness related with the family business resources and capabilities simultaneously can help and restrict the operation of the family business.

Chin et al. (2009) analysed the patenting activity of companies and came up with the conclusion that there is a negative correlation between family influence and innovation performance of the firms. Gudmundson et al. (2003) found that family firms outperform non-family business in launching successful products and services.

Hsu – Chang (2011) view that family firms have some advantage because of their long-term, strategic-orientation that favour innovation. Craig – Dibrell (2006) see higher innovation potential of family firms because of their more flexible decision machining mechanisms. Notwithstanding, several scholars concludes that relatively few large-scale empirical investigation was carried out in this field of business research; therefore it is important to pay more attention to the analysis of innovation orientation of businesses and their innovation performance (O’Boyle et al., 2012).

Several researches were carried out in European countries that used both qualitative and quantitative research methods in order to analyse the complex system of innovation in- and outputs as well as the characteristics of family firms. The following table summarises the vari-

Table 1 Overview of main conclusions of family business research carried out in Europe focusing on innovation performance

<i>Country</i>	<i>Author(s), year</i>	<i>Main conclusions</i>
Austria	Hauck – Prügl (2015)	Adaptability of the family and harmony between the family members positively influences the succession of the founder and provides opportunities for innovation, while family traditions and authority between generations has a negative impact on innovation.
	Weismeier – Sammer (2014)	Innovation orientation as familiness supports the generation of new business ideas, their exploitation and implementation - based qualitative assessment of a family business in tourism.
Belgium, Netherlands	Classen et al. (2012)	Wide research based innovation activities were revealed in case of non-family businesses.
	Beck et al. (2011)	Market oriented behaviour at multigenerational businesses is lower that set back their innovation performance.
United Kingdom	Laforet (2013)	Market conditions, the sector, business goals and long-term orientation has a positive impact on the innovation activity of family businesses.
Germany	Bergfeld – Weber (2011)	Ten successful family dynasty that supports radical innovation, represents a progressive culture for the maintenance of long-term survival
	Classen et al. (2014)	Family businesses outperform non-family businesses in the implementation of process innovation
	Hillebrand (2018)	The family management involvement impedes the level of innovation in family firms. The intention to cede family control to succeeding generations promotes the level of innovation in family firms.
	Kraiczky (2013)	Large proportion of family members in top managements negatively influences the risk taking of the CEO and the portfolio of new products.
	Steeger – Hoffmann (2016)	The authors use different categories: self-assessed family businesses (willing), group them into majority ownership and proprietor led (able), and minority ownership family business (unable) and compared them to their nonfamily counterparts. Based on the sample (1,200 German companies) the researchers find that self-assessed family businesses generate less revenue with new products than nonfamily

Italy	Casprini et al. (2017)	This case study offers some insights into the family firm's distinctive capabilities that allowed it to overcome the barriers to knowledge acquisition and transfer in executing an open innovation strategy. These distinctive capabilities, labelled imprinting and fraternization, are theoretically rooted in two distinctive family firm traits, namely, the existence of non-economic goals.
	Cassia et al. (2012)	Common family values, intentions for reinforcement of the goodwill of the family, open communication between family members and low agent costs support product development processes.
	Cucculelli et al. (2016)	Family management hinders the introduction of new products, but succession could strengthen new product orientation.
	De Massis et al. (2016)	Professional external project leaders outperform those family businesses where project leaders are family members.
	Lazzarotti (2013)	Absorptive capacity of companies is influenced both by family and non-family factors in micro scale businesses.
	Pittino et al. (2013)	Family businesses rely more on research collaboration than non-family businesses.
Spain	Sanchez-Famoso et al. (2014)	Social capital has a positive impact on innovation performance.
Sweden	Grundström et al. (2011)	There is no direct link between innovation orientation of businesses and the structure of management.

Source: authors' compilation

ous approaches applied by scholars in different European countries (Table 1).

Eddleston – Kellermanns (2007) found that family firm performance improved when owner-managers involved other family members in the business and the involvement in management by family members can increase innovative behaviour (Zahra, 2005). Chrisman et al. (2015) states that there is an ongoing discussion in family business research about the “capability-willingness paradox”. This paradox says that family firms have higher capability and lower willingness with regard to their innovation attitude.

Based on the literature review, we can present factors of familiness in the context of innovation capability and willingness paradox (Table 2).

Table 2 Factors of familiness in the context of innovation capability and willingness paradox

<i>Innovation capability</i>	<i>Innovation willingness</i>
<ul style="list-style-type: none"> • Long-term orientation • Strong family ties • Tacit knowledge of the founder originated from long leadership role • Family wealth and assets 	<ul style="list-style-type: none"> • Objectives and intentions of the owners • Economic and non-economic goals • Motivations • Organisational orientation • Socio-emotional capital

Source: authors' compilation based on Patel – Fiet (2011), Gómez-Mejia et al. (2007), Chrisman et al. (2015)

In conclusion, we can present the key findings of existing research on the topic of family firm's innovation process, which is different from the one of their non-family counterparts in terms of family involvement on innovation inputs, activities, and outputs:

1. *Innovation inputs*: family firms invest less resources in research and innovation activities (De Massis et al., 2015). Based on 108 primary studies, a meta-analysis shows that family firms generally invest less in innovation but achieve higher innovation outcomes (Duran et al., 2016). Even if family firms invest less in research and innovation, due to their longer-term orientation, the impact is higher. This could be because of concentration of wealth increases the sensitivity of owners to uncertainty and affects investment preferences of their firms. This attitude is different from those of other forms of organisations. Furthermore, the level of this investment correlates with the family invested. If it is low, the cautious behaviour of family firms is replaced by a more innovative attitude resulting in higher innovation investments (Gómez-Mejia et al., 2007).
2. *Innovation activities*: innovation activities are handled differently in family versus non-family firms. The reason behind could be the interaction of the two systems, namely the family and the enterprise, which affect the innovation behaviour of family firms (De Massis et al., 2016). Also, family firms organize their innovation processes differently and generally use a functional organisation with high levels of decisional autonomy given to project leaders. On the other hand, non-family firms mainly establish cross-functional teams to carry out these projects, with limited delegation of decisional authority that could have an impact on the speed of implementation of innovation projects.
3. *Innovation outputs*: family involvement affects innovation outputs, however findings of articles in the field are rather controversial. Some studies conclude that family involvement is negatively associated with

the quantity and quality of patents obtained, while others show that family involvement positively affects innovation outputs (Chin et al., 2009; Kellermanns et al., 2008). In addition, family involvement could mean high level of control over the firm. Several years of shared history between the family and the firm leads to socio-emotional endowments. This has strong implications not only on financial, but also non-financial goals, most importantly the continuation of family influence and the perseverance of long-established ties both within and outside the firm. The consequences might include several organisational aspects, such as the organisational culture, norms within the firm, the available routines and capabilities, as well as the network of the firm (Zellweger et al., 2012).

In the context of the theoretical background of our empirical research, we follow Schumpeter's (1934) classification of innovation and we define it as an offering in the format of new or novel product, service, process or an experience with a viable business model adopted by customers.

Management control system and family firm's innovation performance

The definition of management control systems (MCS) has evolved over the years. Early this activity was focus on the provision of more formal, financially quantifiable information to assist managerial decision making. Nowadays MCS embraces a much broader scope of information (external information related to markets, customers, competitors, nonfinancial information related to production processes, predictive information) and MCS is included several decision support mechanisms, formal or informal personal and organizational controls (Chenhall, 2003). "Management control systems provide information that is intended to be useful to managers in performing their jobs and to assist organizations in developing and maintaining viable patterns of behaviour" (Otley, 1999, p. 364.).

Conventionally, MCS are perceived as a passive tool providing information to assist managers. MCS is more active, it can give power to achieve the goals of the owner and manager. Contingency-based research perceives MCS as a passive tool designed to assist manager's decision making. Contingency-based research have focused on the following dimensions: budgeting, formality of communications and systems sophistication, budget slack, post completion audits, ABC/ ABM (Anderson – Young, 1999), non-financial performance measures, economic value analysis (Biddle et al., 1998), sophisticated capital budgeting cost consciousness, competitor focused accounting, strategic interactive controls and diagnostic controls, information which is related to issues concerning customers, product design, time, cost, resources and profitability (Davila, 2000).

In Simon's (1995) framework MCS have four levers: belief, boundary, interactive and diagnostic. The most MCS studies have focused on the interactive and diagnostic levers (Davila, 2000; Bisbe – Otley, 2004). Bisbe – Otley (2004) argued that compared to the belief and boundary levers, the interactive and diagnostic levers place more

attention on the relevance of the way controls are used. Accordingly, given that the current study aims to examine the effect of the MCS on the innovation performance of the firms, the study focuses on the interactive and diagnostic approaches to using controls.

The interactive approach uses the controls as an interaction and communication channel between managers at all hierarchical levels (Simons, 1995). These decision-making activities highlight the changing conditions of organizations. The interactive approach encourages the communication and can facilitate organizational learning and innovation. It can help the management to focus on critical performance variables which are linked to the implementation of organizational strategies (Dodge et al., 2017; Su et al., 2017).

Beside aspects of innovation performance, another interesting avenue of family business research is the analysis of the management control methods and the performance of the family firm. Implementation and application of management control systems and financial planning, cost accounting and economic or financial analysis methods also plays an important role in the performance of the SME firms as key success factors should take to planning, budgeting, analysing, measuring and evaluating useful information for decision making (Cosenz – Noto, 2015). The study by Duhan (2007) found that the information- and planning systems are useful management tools for achieving the strategic objectives of the firm and these technics generate creative innovation and balance between control and flexibility (Simons, 1995). The level of the involvement in management of family members and the consequent trust within the management team, the family firm long-term orientation may influence on the applied methods of management control. (Senftlechner – Hiebl, 2015), so the family nature of firms affects the use of management control systems.

Duréndez et al. (2007) analysed the relationship with the culture of organisation, management control systems and performance of Spanish family and non-family firms and confirmed that family businesses have higher hierarchical values and lower values of adhocracy than non-family businesses and the family businesses use a lesser extent of management control methods. The main reasons may be the following (Jorissen et al., 2005): overlap of the owner and manager relationship and centralised decision-making, the individual authority of the owner, and the strong interaction between the family and the company.

There are large number of studies which have a strong focus on the impact of the management control methods on the innovation performance. Dávila (2000) related positively the use of the management control methods with innovation. Bisbe – Otley (2004) found in Spain that the greater use of the management control methods has greater effect of innovation on the performance of small and medium enterprises. Several studies argue that the use of the management control methods has a positive impact on business performance (Adler et al., 2000; Laitinen, 2008; Duréndez et al., 2016).

Research design and sample information

Our empirical research focused on the investigation of influencing factors of innovation in family firms and

the differences/similarities of innovation performance of the surveyed companies, which included both family and non-family firms. In addition to shed light on the innovation performance of these two type of firms, we also investigated the use of management decision-making tools. This could be seen as a novel and relevant research aspect, because this issue was not explicitly analysed in the literature yet. Our underlying assumption is that if family firms use more extensively management decision tools, e.g. analytical technics such as value analysis, Balanced Scorecard technique, then they could increase the efficiency of their business processes, which might result in higher innovation performance than that of their counterparts.

In order to analyse this topic, we designed and carried out an on-line survey. The sample was compiled by using the Bisnode HBI database. First, we selected all those companies that have a headquarter in Hungary and their size is between 50 and 249 employees and the net income between 10 and 50 million euros and/or a balance sheet total between 10 and 43 million euros. We excluded from our survey those companies in which the state or any municipality has a majority share directly or indirectly. Also, we excluded companies from the financial sectors and the not-for-profit companies. This way we got a Hungarian medium-sized business sample that included 5,904 companies. We sent an email to 3,745 companies (the others didn't have an email address included in the Bisnode database) between 9 and 11 October 2016, and we closed the survey on 15 December 2016.

The rate of responses was rather low (5.21%) even if we sent reminders to companies, we selected into our sample. Still, we got 195 responses altogether that served the basis of our investigation. Taking into account the family control as a dichotomy factor, we classified 65% of our respondent companies as family firms and 35% as non-family firms (Table 3). 75% of the respondents became owner of the company in questions as founder, 17% purchased the company, and 3% purchased the company from family members, while 5% of the respondents inherited the ownership of the company.

Table 3 Company demography of respondents

<i>Descriptive statistics</i> (average)	<i>Family business</i> (N=127)	<i>Non-family business</i> (N=68)
Number of employees (person)	94	114
Age of company (year)	24,6	30
ROI ₂₀₁₅ (%)	8,75	12,03
ROE ₂₀₁₅ (%)	21,35	84,44
ROA ₂₀₁₅ (%)	9,71	13,41

Source: authors' compilation

Even if we tried to focus on medium-sized companies in the survey, 39% of the respondent companies has less than 25 employees, 8% between 26 and 50 employees, 20% between 51 and 100 employees, 32% between 101 and 250 employees. There were 127 family firms in our sample out of which 40% could be considered in the first-generation phase, meaning that the company is fully managed and controlled by the founder. Apart from them, 35% of the respondent companies went through a succession, 19% of the companies were managed by professionals coming from the same company and a mere 6% had professional leadership coming from outside the company in question. In order to make the analysis with the same number of companies in each category, we made a data compression and used the following categories in our investigation:

- companies managed by the founder (40%),
- companies with multi-generation management (35%), and
- family firms with professional management (25%).

Results

Innovation orientation versus ownership structure

First, we aimed to characterise the innovation orientation of the firms in the sample. These are managerial decisions that highly influence innovation performance and growth patterns of companies. For this purpose, we listed 12 items considering the results of the literature research (Miller, 1983; Lumpkin – Dess, 2001; Sandig et al., 2006; Casillas – Moreno, 2010). In order to use the internal orientation as a dependent variable in a later variance analysis, we applied factor analysis. We executed the analysis based on both the principal component analysis and the maximum likelihood method from the compression methods of factor analysis, and finally based on the variance proportion explained we left the solution valid according to the principal component analysis. The variance proportion confirmed the solution based on the Kaiser criterion concerning the number of factors since with the help of the three factors the variance proportion accepted in social sciences can be available that is 60%. Relating to the given factor analysis the cumulative variance of the three factors is greater than 69% which highly exceeds the expected minimum value.

In order to interpret the factors unambiguously rotating factors was necessary. Among different rotation procedures, the most clean-cut factors could be received by the Varimax rotation, a version of orthogonal rotation methods which is to maximise the variance explained by the factors, and tries to simplify the factor matrix in a way that it maximises the number of the variables of high factor weights per factor (Table 4).

Table 4 Rotated Component Matrix –
business orientation factor model

	Component			
	1	2	3	
A new product and/or service was developed in the last 5 years.	.805			
The company is a 'leader' in introducing new products / services, management techniques, operation technologies etc.	.764			
The company takes an 'initiating' role in the given sector; competitors just mainly react to that.	.741			Factor 1: innovation orientation and proactivity
Research, development and innovation activities are highlighted at the company.	.688			
Management strives to apply new individual processes and production methods.	.666			
Strategic decision making is based on considering more options.	.890			
All financial and non-financial, short and long-term factors are considered.	.868			Factor 2: strategic orientation
Management has the ability to implement change processes or new strategic directions.	.796			
Business management has a character of having high risk projects.			.863	Factor 3: willingness to take risks
The company operates with risks in order to maximise the advantages of utilizing opportunities.			.856	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation.
a. Rotation converged in 5 iterations.

Source: authors' compilation

We continued the analysis of the differences between the family and non-family firms with analysing the correlation between the identified innovation orientation factor and the owner background. Concerning innovation orientation and proactive attitude we couldn't prove significant difference between family and non-family firms based on the sample. By innovation orientation we mean introduction of new products and services, relevant research and development activities, while a company was considered proactive if it took some "initiating role" and their management were striving for application of new production methods and processes.

Our research results are in accordance with those Swedish ones of Grundström et al. (2011) saying that innovation orientation is independent of management structure.

Innovation orientation in relationship with the management structure

The connection of innovation orientation and proactivity identified among the factors of internal operation is also worth being analysed from the point of view of family business' management. F-statistics run after the variables' normality test and the homogeneity of variance resulted as follows in Table 5.

Table 5 ANOVA
(family management – innovation orientation)

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig
Innovation orientation and proactivity	Between Groups	,092	2	,046	,072	,930
	Within Groups	78,965	124	,637		
	Total	79,057	126			

Source: authors' compilation

The null hypothesis of F-test can't be rejected considering the significance levels, thus the category averages do not differ significantly from each other, so based on the family business' management type there is not a difference concerning innovation orientation and proactivity, strategic orientation and willingness to take risks. This result slightly contradicts to the concept stating that family firms lead by later generations, the innovation orientation and willingness to take risks would decrease (Kellermans et al., 2008). Based on our sample, we can say that family firms managed by descendants of the founder could equally innovation-oriented, proactive and risk taker than the founder. This is good news and reflects high motivation of the generation currently leading of the surveyed firms and potentially a successful succession process.

Management control methods in relationship with the ownership, and the innovations

Due to the jungle of concepts and various interpretations in the area of professionalism it is a crucial question to make a statement in case of an own interpretation. In our primary research, we mean professionalism by using principles and professional tools in decision-making (Kelly et al., 2000). We excluded firms with less than 25 employees from the analysis because they do not mostly show a character of having a formalised structure, so we analysed the answers of 113 respondents. We analysed organisational frames related to professional management as well as methods, strategic and operative decision support procedures. Companies in the shortlisted sample perform differently considering individual organisational issues, solutions, areas of professionalism. 60% of the firms have strategic and business plans in written format, and less than 60% of the firms operate accounting, controlling, internal audit and enterprise resource planning systems. As for formalised training system and corporate social responsibility institutionalisation is of even a lower level.

Concerning planning, strategic planning in the first place we stated in our research that what type of strategies relating to the business' sustainable operation are outlined at the firms in the sample with more than 25 employees. Out of 113 firms with 25+ employees only 68 answered this block of the survey. Among them there are 51 family firms and 17 non-family firms. The majority of the respondents have strategies in connection with location development and environment protection, innovation strategy and corporate social responsibility strategy appear in a substantially less proportion in strategic management.

The next segment in the concept of professionalism to be analysed is the application of strategic management instruments. Here we analysed the type and the number of the instruments applied. Family firms can be characterised by a higher strategic instrument intensity than the non-family ones; while the number of the strategic decision support tools applied by family firms is 3.15 on average, and 2.54 in case of non-family firms. Comparing the values with the results of an Austrian research in 2013 analysing this problem in a sample of 432 firms, we can get a clearer picture since in neighbouring Austria the number of the strategic tools applied by non-family firms is 5.37 on average, in case of firms under family influence 3.55 on average. This means that Hungarian firms are lagging behind the SMEs in neighbouring Austria in terms of frequency of use of strategic tools. In our survey, we took into consideration the international research antecedents (Hiebl et al., 2013; Cadez – Guilding, 2008) of the topic. The most popular strategic tools are strategic planning and competitor analysis, more than the half of the firms in question use them. Only one third of the firms use SWOT analysis, strategic pricing, customer profitability analysis and value analysis. Other methods such as target costing, strategic cost management, lifecycle costing, benchmarking, Balanced Scorecard, show lower application frequency in the sample.

The intensity of operative decision support tool application is only slightly exceeding the extension of the strategic tool application, whereas family firms exceed the non-family ones (3.39 and 2.56) in the intensity of method application. If we compare these figures with the results of the Austrian research of 2013 mentioned earlier (Hiebl et al., 2013) where the number of operative management accounting tools by non-family firms is 6.03 on average, in case of firms under family influence 4.78 on average. Therefore, we can come to a conclusion that Hungarian SMEs are far behind concerning the level of application of operative management accounting tools in daily operation of the surveyed companies. Among the operative management control methods, the traditional methods have a definite advantage like total cost calculation, liquidity planning, budgeting, plan-fact analysis, break-even analysis. However, the crosstab analysis worked out gives a very weak correlation between the character of the methods and the owner background (Cramer $V=0.121$). Forecasting helping the future-oriented management is typical for less than the third of the respondents, in equal ratio for family and non-family firms.

If we execute the analysis of the correlation between the ownership structure of the business and the number

of the decision support tools (including both strategic and operative) applied with the help of variance analysis, we can state that there is no significant difference between the category averages ($F=1.573$; sign: 0.212). Based on the means plot figure we can come to a conclusion that family firms in the sample have more extended methodology than the non-family ones. As for the number and the character of the applied tools (both strategic and operative decision support) respondents vary whether it is a family-owned business or not, although the difference of the tool intensity is not significant according to the F-test.

Table 6 shows the average number of management control methods applied in case of different family management categories.

Table 6 Means of management control methods in different family business management configurations

<i>Management control methods</i>	
First generation	4,7
Multigenerational	7,9
Professional	7,0

Source: authors' compilation

If we narrow down the analysis to the generation composition and we examine the effect of letting the descendants in concerning the application of professional tools, then the F-test ($F=4,395$; Sig.: 0,041) highlights the correlation between the dependent (total number of strategic and operative tools) and independent (the generation composition of the family business' management) variables. Based on this result, it can be stated that family firms lead by descendants exceed family firms with the 1st generation management concerning the number of decision support tools applied. Also, we could cautiously say that generation change can result in more professionalism.

In the survey we looked at a broad variety of innovation activities companies potentially could carry out. In addition to the most frequent types of innovations such as product, service, process and marketing innovation (Burns, 2013), we had a broader understanding of innovation and included in the survey, e.g. logistic, sales and media innovation. This interpretation of innovation is based on the Oslo Manual (OECD/Eurostat, 2005). The Figure 1 below sums up the appearance frequency of the 12 individual innovation types in our sample.

Figure 1 Frequency of the different innovation types in the family firms in the sample (N=108)



Source: authors' compilation

Concerning the results obtained we highlight that the most frequently reported innovation is related to workplace organisation (54%), followed by service innovations (50%) and product innovations (48%). Concerning succession, innovations taking place in management and organisation methods are definitely important (Kraus et al., 2012), some 33% i.e. one third of family firms reported an innovation of this type.

We also classified the respondent firms into categories of low, medium and highly innovative firms, based on the frequency of different types of innovation they carried out in the past three years. Unfortunately, close to half (44%) of the surveyed companies didn't provide answers on their innovation activity, still it is interesting to see that the majority (47%) of the remaining firms could be considered as "medium-innovation performers" introducing 4-7 types of innovations out of 12 potential ones. We classified 29% of the companies as "low-innovation performers" and only 24% of respondents introduced at least 8 types of innovation as listed in the Oslo manual. This results indicate that SMEs could do a lot more to increase their innovation activities and reflects well the overall low innovation performance of Hungarian firms in the European Innovation Scoreboard. In the latest report, Hungary is classified as a "moderate innovator" country where only 15.5% of SMEs innovate in-house, while the share of SMEs with product and process innovations is even lower (13.7%) (EIS, 2018).

Furthermore, to measure innovation performance we formulated the so-called *Innov_activity(2012-2015)* variable in the following way: we fixed the individual innovation output elements as separate variables in SPSS making them dummy. We combined the 12 variables mentioned expressing innovation performance in a new variable (*SZUM_INNOV*) and by standardising this variable we formulated the index *Innov_activity(2012-2015)*. During the correlation analysis we stated that the family firms' innovation activity shows medium positive correlation ($r=0.225$; 0.255 and 0.363) with all the two types of professionalism.

We used the Pearson's correlation coefficient and bivariate linear regression analysis in order to test the correlation between the application of management decision tools as independent variable and the innovation performance as dependent variable. We found medium correlation ($r=0.356$) between application of management decision tools and the innovation performance. Both the F-test ($F=15.522$, *Sign:* 0.000) and the t-test (*Sign:* 0.000) proved that variety applied management decision tools positively influences the innovation performance of investigated companies.

Relationship between innovation orientation and innovation performance

We analysed the correlation between innovation orientation of the surveyed companies and their innovation activity with Pearson's correlation coefficient and partial correlation coefficient. In the case of innovation activity, we controlled the size of company and age of company. As a result, we could observe a medium high correlation through the Pearson correlation coefficient ($r=0.417$, *Sign:* 0.000), whereas the partial correlation coefficient indicates weaker, still medium high correlation between the variables.

We can draw the following conclusions from the F- and t-test of our bivariate linear regression model where we defined innovation orientation as independent variable and innovation activity as dependent variable:

- the determinant correlation coefficient ($r^2=0.154$) indicates weak correlation between the dependent and independent variable,
- both the significance level of F-test (*Sign:* 0.000) and t-test proves the existence of correlation between investigated variables,
- including strategic orientation in addition to the innovation orientation variable into the regression model then the determinant coefficient increases ($r^2=0.312$) and improves the explanatory value of the model.

Finally, we can conclude based on the results of the t-test that both the innovation and strategic orientation positively influences the innovation activities of firms.

Summary and conclusions

In the literature review, we identified a research gap and designed an empirical investigation with the objective to enrich the knowledge concerning innovation performance of family firms. We set the following main goals:

- to compare family and non-family firms on a Hungarian sample based on their professionalisation and innovations performance,
- to analyse family firms of different management types concerning professionalisation and innovations performance, and
- to map the relationship between succession, professionalism and performance according to indicators based on authentic, reliable financial and accounting data.

We couldn't prove in our empirical investigation that there is a significant difference between family and non-family firms with regard to innovation orientation and proactive attitude, and willingness to take risks. However, we could say that family firms have a much stronger strategic, i.e. longer-term orientation than non-family firms. Also, family firms demonstrate a higher innovation performance than their non-family counterparts. Interestingly, they also have more written innovation strategies than non-family owned companies (44% vs. 35% respectively). The most frequently reported innovations were i) a new/novel work organisation or decision method (54%), ii) a new service introduced (50%), and iii) new product introduced on the market (48%).

Nevertheless, there are significant differences between the two groups of companies in the exploitation of strategic and operative management decisions methods. Our survey results proved that non-family firms employ more sophisticated system of this kind of tools.

Concerning innovation performance, the research justified with statistical tools that there is a correlation between the level of applying professional organisational solutions (i.e. strategic planning, controlling, internal audit, managerial accounting, enterprise resource planning,

managerial training system, external consulting organisation) and innovation performance. A moderately strong positive correlation could be found between the corporate governance practice of the family firms in the sample and the number of the decision support tools applied, so emphasising professionalism is not in vain among family firms. Certainly, analysis of cause and effect relations as a further research question could be a base for a future investigation. However, certain manifests of professionalism correlate with performance based on F statistics as follows:

- firms creating site development strategy exceeded those not having a site development strategy in the area of growth indicators namely asset expansion, profitability indicators such as ROA and ROI, and innovation performance,
- the innovation performance of those having innovation strategy exceeded those not having an innovation strategy,
- the innovation performance of those having a business plan for 1-3 years exceeded the innovation activity of those not having a plan, and they performed better in growth pace based on the averages of asset increase,
- those creating a social responsibility strategy performed better in innovation performance,
- from the applied decision support methods, kaizen costing (concerning income increase and innovation performance) and activity-based costing (concerning asset increase) have an effect on performance.

Among the limitations of our research could be mentioned that the results of the online questionnaires are not based on a representative sample, so the findings available for the whole sample could be analysed further on a larger representative sample of family firms. Therefore, we can see the above discussed findings, statements as valid only for the firms in the sample. Actors of several sectors and national economy branches took part in both quantitative data collection, so it would be worth analysing the sector characters in the future. A single data collection may show distortions; hence it would be worth doing some longitudinal and panel data analyses among family firms. In our research the analysis of innovation performance was focused exclusively on the output side, because there was no data collected concerning research and development expenditures and personnel. In the future it would be worth expanding the analysis towards these fields too, in order to get a more comprehensive picture.

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