
Innovation in family and non-family businesses: a resource perspective

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Abstract: This article expands our understanding regarding the differences in innovative behaviour between family and non-family firms. To detect real rather than sample differences between independent family and non-family manufacturing companies in Spain, we use a matched sample methodology with data from the European Manufacturing Survey – a European cross-national survey launched in 11 countries and focused on the manufacturing sector. A Mann-Whitney U non-parametric test revealed that six out of seven measures were statistically significant between the two matched groups of companies. We found differences between family and non-family firms with regard to the role of human, social and marketing capital for innovation. These findings are of interest because some of them run contrary to conventional thinking that family firms are less innovative than non-family firms.

Keywords: innovation; family firm; human capital; social capital; marketing capital.

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1 Introduction

Family firms are a significant economic force in the global economy. According to Welsch (1991), family firms, particularly in the case of Spain, are responsible for more than 70% of country's GNP or constitute 17% of the 100 largest companies, 23% of the 1,000 largest firms and 71% of companies with annual sales that exceed \$2 million (Gallo, 1995).

Apart from their numerical dominance, another marked difference between family and non-family firms is that in today's global and dynamic market family firms compete with unique resources, making them different (Chrisman et al., 2005). Family firms can differ in terms of goals (Lee and Rogoff, 1996), size and financial structure (Westhead and Cowling, 1998; Romano et al., 2000), international structures and strategies (Tsang, 2002; Zahra, 2003), corporate governance (Randøy and Goel, 2003) and entrepreneurial behaviour (Naldi et al., 2007).

Innovativeness is an important entrepreneurial capability that family-run firms can use to achieve competitive advantage. Although innovation has been considered in some lines of research into family businesses, it is not a key theme in the literature on the contribution and relevance of such businesses. It does not appear that there have been many attempts to determine whether family and non-family businesses differ in their processes of innovation (Tanewski et al., 2003). The innovation capabilities of family firms to account for their sustainability and dominance have been a largely overlooked factor (Hadjimanolis, 2000; McCann et al., 2001; Gudmundson et al., 2003).

Initial studies regarding innovation in family firms found that they were less innovative than non-family firms, in both attitudes and outcomes. For example, Morck et al. (2000) show that Canadian firms controlled by heirs were less active in research and development than benchmark firms of the same age and size in the same industries.

More recently, in a large sample of 2,000 Australian SMEs in the manufacturing and service sectors, Tanewski et al. (2003) find that family firms have less product and process innovation than non-family firms, but that they follow a more prospector strategy. In the case of family firm groups, Morck and Yeung (2003) argue that agency problems may lead to lower innovation, when these groups have dominant positions in their markets.

In conclusion, literature suggests that family firms tend to lack innovative capacity since they are more likely to maximise their profits by investing in political rent-seeking

behaviour rather than in innovation (Ellington et al., 1996). Their aversion to risk (Morris, 1998) and resisting change (Levinson, 1987) may lead to a failure to invest in new ventures (Gomez-Mejia et al., 2007; Cabrera-Suárez et al., 2001). That is the reason why the literature often criticises family firms for their lack of innovation (i.e., Cabrera-Suárez et al., 2001; Carney, 2005).

Therefore, to extend our understanding about how family firms compete in innovation while taking into account their lack of financial capital, we examine differences between family and non-family firms through two resources, related to innovation capacity, that have been referred to as particularly relevant in relation to the 'familiness' of firms: their human and social capital (Sirmon and Hitt, 2003). Furthermore, we extend the framework to a third resource: marketing capital. The reason is mainly because family firms have been argued to be strong in building relationships with customers that can positively affect their innovative behaviour (Miller and LeBreton-Miller, 2005).

Examination of each of these three resources leads to differentiation between family and non-family firms. In essence, we argue that family firms have a potential advantage in the resource pools that should positively affect their innovative behaviour (Habbershon and Williams, 1999), thus going against the conventional wisdom that family firms are less innovative than non-family firms. To achieve our objective, the article empirically compares similar family and non-family firms according some firm's characteristics.

The paper is structured as follows. First, the theoretical overview section defines the concepts innovation and family firm as well as the capital framework used to analyse the differential innovative behaviour between family and non-family firms. This overview allows us to formulate hypotheses in Section 2. Section 3 presents the data collection method, describes the total sample available and the statistical methods used to carry out the analysis. Section 4 presents the results of the comparative analysis, followed by the final section which discusses the results and offers conclusions.

1.1 Definition of family firm

Depending on the definition of family business employed the proportion of firms classified as family firms varies (Westhead, 1999). Therefore, academics have to be aware of which conditions impose on the definition in order to extend or reduce the percentage of family firms analysed. For instance, Chua et al. (1999) consider that a firm can be considered as a family firm when the business is owned and managed by a nuclear family. On the other hand, Litz (1995) restricts the definition to ownership, management and/or intra-organisational family-based relatedness. Consequently, most of the authors base their criteria in three conditions, ownership (the family has to hold more than 50% of the ownership of the firm), governance (a family is controlling the business) and management (significant proportion of the senior management is drawn from the same family).

We agree with Chua et al. (1999) who assert that it is unreasonable to use a family firm definition that excludes a large number of respondents who consider themselves family firms. Consequently, we consider family firm every firm that has the perception to be a family firm by itself (c.f. Westhead and Cowling, 1998).

2 Theoretical framework and hypotheses

2.1 *Family businesses and resources*

Unique family firm resources are due to the hard-to-duplicate capabilities or ‘familiness’ of such firms (Cabrera-Suárez et al., 2001, Habbershon and Williams, 1999). ‘Familiness’ is described as the unique bundle of resources created by the interaction of family and business (Habbershon and Williams, 1999). Up to a certain point, a firm can be defined as a family business when the firm exists because of the reciprocal economic and non-economic value created through the combination of the two systems.

Familiness can be a point of difference that contributes to competitive advantage (Craig and Moores, 2005) and permits family firms to have competitive advantages over nonfamily businesses (Habbershon and Williams, 1999). Familiness can create both advantages and disadvantages [Sirmon and Hitt, (2003), p.339]. One of the main advantages is the use within the company of one unique family language, which allows members to communicate more efficiently and to exchange more information (Tagiuri and Davis, 1996).

From a financial perspective, familiness focuses on long-term perspectives, because families want:

- 1 to secure the financial security of the founding generation
- 2 to ensure that family business interests will remain viable
- 3 to develop criteria for assessing business opportunities for themselves (Craig and Moores, 2005).

Therefore, on the positive side, family firms do not take risky financial decisions because they have a longer time perspective and are not as accountable for short-term prospects while, on the negative side, family firms have limited external financial sources because they avoid sharing equity with non-family members (Sirmon and Hitt, 2003). This is why family firms are often described as conservative and stable (i.e., Donckels and Fröhlich, 1991).

Literature suggests the detection of many consequences due to family firms’ conservative behaviour, for instance, introversion, lack of professionalism, nepotism rather than meritocracy in promotion practices, rigidity, family feuding, and absence of strategically planned succession (Poutziouris et al., 2004) that could hamper innovativeness. However, recent research suggest that due to family firms facing general capital and managerial capacity constraints (Carney, 2005) they are forced to compete against non-family firms with unique resources, such as human and social capital (Sirmon and Hitt, 2003), and marketing capital (Craig et al., 2008; Miller and LeBreton-Miller, 2005). In this paper we therefore focus on these resources to examine their impact on innovative behaviour relative to non-family firms.

2.1.1 *Human capital*

Human capital is defined as the knowledge and skills embodied in people (Hatch and Dyer, 2004). Human capital is an important family firm resource because it can give the firm a competitive advantage through skills, abilities or attitudes (Sirmon and Hitt, 2003),

since it is 'unique, inseparable and synergistic' and becomes a 'hard to duplicate' capability [Nordqvist, (2005), p.287]. However, most related literature suggests that family firms are constrained by their limited pool of human capital (i.e., Dyer, 2006), which often lacks qualified employees.

The main reason for the lack of qualified employees lies in the difficulty of attracting and retaining non-family qualified employees into the firm due to certain long-term barriers like exclusive succession, limited potential for professional growth, lack of perceived professionalism or limitations on wealth transfer (Covin, 1994a, 1994b; Horton, 1986).

Westhead (1997) suggests that in what concerns employees, higher formal education means more human capital. As a consequence, the more educated the employees are, the more human capital the firm possesses. Furthermore, employees with higher education are more likely to identify resource networks (for example, contacts with potential suppliers, buyers, etc.) that can become crucial for business development (Westhead, 1997).

The first step to bringing an idea towards commercial success is generating new ideas. Amabile (1998) and Bantel and Jackson (1989) argue that teamwork built by employees with a high level of education improves the effectiveness of the R&D projects shows higher innovative behaviour. Damanpour (1991), in the same vein, affirms that diversity of skills and experience allows for the creation of more differentiated units from which collaborative relationships can emerge and add significant value to innovation outcomes.

Therefore, in firms where R&D is a core asset, human capital is important because of their reliance on highly educated scientists and technicians with know-how in relevant areas (Pike et al., 2005). In this context, the experience, knowledge, judgement, abilities and skills of individuals associated with the firm are included (Barney, 1991). Innovation, in R&D environments is strongly associated with university degrees, diversity of backgrounds as well as knowledge (Souitaris, 2002).

On the other hand, family firms' human capital has positive attributes like commitment to the business (Horton, 1986), motivation (Ward, 1988), warm, friendly, and intimate relationships (Horton, 1986) and the potential for deep firm-specific tacit knowledge. However, because these positive attributes are all related to the family's human capital, they will not, therefore, attract non-family qualified employees, a needed base for the creation of new ideas.

Hence, given this previous discussion about what important is the qualified people to generate new ideas for innovation and the low power of attraction of qualified employees by family firms due to its nature, we hypothesise that:

H1 Family firms devote a lower proportion of human capital to support innovation.

In order to assess this hypothesis, and using some of the most common measures detected in the literature by Adams et al. (2006) to determine the use of resources devoted to generate new ideas two subhypotheses have been posed. They are:

H1a Family firms have a lower percentage of qualified employees.

H1b Family firms have a lower percentage of employees devoted to R&D tasks.

2.1.2 *Social capital*

Social capital is a term that comes from the sociology literature (Putnam, 1993) and is defined as the resources that exist in relationships among people (Hoffman et al., 2006). Keeping a high social capital is important to gain access to other forms of capital (e.g., intellectual, human, financial capital) that are needed for a firm to survive (Sirmon and Hitt, 2003; Steier, 2001). Social capital provides information, technological knowledge, access to markets, complementary resources (Hitt et al, 2002).

Social capital involves both relationships between organisational members (internal social capital) and external parties (external social capital) (Adler and Kwon, 2002). Inside the organisation, social capital can reduce transaction costs, facilitate information flows, knowledge creation and accumulation (Burt, 2000; Lin, 2001; Nahapiet and Ghoshal, 1998), and improve creativity (Perry-Smith and Shalley, 2003). External to the organisation, social capital increases alliance success (Ireland et al., 2002; Koka and Prescott, 2002). In this article we focus on external family firm social capital.

Families may have some advantages in developing social capital between the family and firm stakeholders, especially with customers who can sustain the business in times of trouble (Gomez-Mejia et al., 2001; Tsui-Auch, 2004), given that they typically have the ability to cultivate and nurture long-standing relationships across generations, and firm stakeholders may be more likely to develop personal attachments to a family that owns and operates a business, rather than to an amorphous, impersonal firm (Dyer, 2006).

In the same line, Carney (2005) agrees that family firms enjoy long-term relationships with external stakeholders and through them develop and accumulate social capital. In consequence, social capital is one of the factors contributing to high firm performance because the family develops relationships outside the family with employees, customers, suppliers, and other stakeholders that generate goodwill (Dyer, 2006).

Cooperation, from firms' point of view, often is a means of complementing the lacking internal resources being knowledge, technology or people. Firms find solutions in their closest environment provided by competitors, suppliers, customers, research centres and/or universities in order to share risks and costs, to improve their competitive position, to achieve new markets, among others. Thus, cooperation is, due to the pressure of fast environmental change, one way how the companies tend to seek complementary sources of information in order to achieve higher degrees of innovativeness (Bayona-Sáez et al., 2002).

Consequently, due to their high social capital family firms cooperate more, formally and informally, with other firms that can support their innovative behaviour. These arguments lead us to the following hypothesis:

H2 Family firms have more linkages with other firms than non-family firms to support innovation.

In order to assess the second hypothesis, we determine the degree of cooperation with other firms by means of three subhypotheses. This permits us to detect possible differences according the area of the firm. Hence, the three subhypotheses are:

H2a Family firms cooperate more with other firms than non-family firms in production.

H2b Family firms cooperate more with other firms than non-family firms in purchasing.

H2c Family firms cooperate more with other firms than non-family firms in services/sales/distribution.

2.1.3 Marketing capital

Without commercialisation the innovation process does not have sense, since the innovation process is not finished until the idea is commercially launched. Therefore, we expect a firm's marketing capital to be related to making the innovative process or product a commercial success.

While the human capital is important for the initial and developing stages of the innovation process, in the stage of launching and implementation other capabilities gain importance such as market investigation, market testing and promotion among many others (Calantone and Di Benedetto, 1988).

Family firms with high social capital have access to different resources such as information, technology, knowledge, financial capital, distribution networks, and relationships with critical constituencies (e.g., government contacts in a foreign market) (Arregle et al., 2007). These resources also permit them to communicate closer to the costumers, and build marketing capital with possible direct effects on the firm's innovativeness or more indirect effects, such as facilitating the development of innovation (Rothaermel, 2001).

Westhead (1997), in his study about the strategic factor differences between family and non-family firms, points out that family firms offer a wider range of product/services to provide a competitive advantage in comparison to non-family firms. These new products are typically a result of incremental or radical innovations due to have been developed or created under costumers' request. Because family firms are close to the costumer they can faster detect market niches avoiding the competition pressure of large firms (Hadjimanolis, 2000).

Moreover, because many small firms are family firms these have the advantage of small firms, mainly in flexibility. Flexibility gets additional importance through the argument that the demand structure of society has changed away from 'mass production' goods to high quality 'individualised' products [Hadjimanolis, (2000), p.266].

According to Adams et al. (2006), the successful introduction of new products and services into the market is important for the survival and the future development of the companies. The usual way to measure the degree of commercialisation of a company is the number of products launched to the market within a certain period (e.g., Yoon and Lilien, 1985). Hence, these previous arguments lead the authors to raise the last hypothesis:

H3 Family firms launch a higher proportion of new products into the market.

In order to assess the last hypothesis, we use in the first subhypothesis the most usual ratio to measure the proportion of new products launched into the market and furthermore we add a second subhypotheses to know if the new products for the firm are for the market as well. Therefore, the two subhypotheses are:

H3a Family firms launch a higher proportion of new product for the firm into the market in the last three years.

H3b Family firms launch a higher proportion of new product both for the firm and the market in the last three years.

3 Methodology

3.1 Sample

In order to test the hypotheses, we used empirical data from the Spanish subsample of the international questionnaire European Manufacturing Survey (EMS). The survey collects detailed information on eight main areas of interest: strategy, modernisation of production, production techniques, organisation of production, qualifications and education of the personnel, outsourcing and globalisation of production, cooperation, performance indicators, as well as other descriptive data. Although the survey was initially conducted only in Germany (1993), after more than a decade it has gained an international dimension and a consortium of more than ten European countries progressively joined the initial German effort.

The main differentiating aspects of this survey in comparison to others conducted at the national or international level (e.g., the community innovation survey) is its holistic approach to innovation, complexity and flexibility in application.

EMS is not intended to be a 'new' or 'better' monitoring system; instead, it proposes a complex methodology as a first step towards a common way for collecting information on technological and organisational concepts among others. In 2006, EMS was carried out in 12 countries resulting in approximately 3,500 responses.

The Spanish subsample consists of manufacturing establishments which have at least 20 employees. The Spanish National Statistic Institute facilitated the distribution of all manufacturing establishments with these characteristics. Approximately, 10% of the population received the EMS questionnaire, corresponding to 4,450 surveys.

Our final dataset consists of 151 entries. With the 4,450 questionnaires sent out this represents a response rate of approximately 3.5%. In our view, such a low response rate is due to two reasons: it is the survey's first run, and to the non-obligatory character of participation compared to other mandatory surveys. At any rate, the results obtained have a confidence level of 83%, taking into account a margin of error of 5% ($p = q = 0.5$).

Tables 1 and 2 below report the distribution and some basic descriptive statistics of the responding companies. Analysing the sectors with nine or more respondent firms, we observe that family firms are the majority in furniture (100%), metal products (72%), food products and beverages (71%), basic metal (70%), and machinery and equipment (61%). Thus, family firms appear to be more prevalent in less technologically sophisticated markets, in accordance with the attitudes and values found in Donckels and Fröchlich (1991).

The descriptive statistics gathered in Table 2 reflect that family businesses tend to be smaller in both sales and number of employees. The magnitude of mean values is 1:5 family versus non-family firms for sales, and 1:3 for employment. These results are in accordance with other studies, such as Klein (2000), Wall (1998) and Lee (2006).

Table 1 Number and percent of family and non-family firms by economic activity

	<i>NACE</i>	<i>Non-family firms</i>	<i>Family firms</i>	<i>% family firms in the sector</i>	<i>Total</i>
Food products and beverages	15	4	10	71.4%	14
Textiles	17	0	4	100.0%	4
Wearing apparel and fur	18	0	1	100.0%	1
Wood and cork (not furniture)	20	3	4	57.1%	7
Paper and paper products	21	1	6	85.7%	7
Publishing, printing and recorded media	22	2	5	71.4%	7
Chemicals and chemical products	24	8	9	52.9%	17
Rubber and plastic products	25	4	3	42.9%	7
Non-metallic mineral products	26	1	3	75.0%	4
Basic metal	27	3	7	70.0%	10
Metal products, except machinery and equipment	28	7	18	72.0%	25
Machinery and equipment	29	7	11	61.1%	18
Electrical machinery and apparatus	31	2	1	33.3%	3
Medical, precision and optical instruments	33	1	3	75.0%	4
Motor vehicles, trailers and semi-trailers	34	9	2	18.2%	11
Other transport equipment	35	0	3	100.0%	3
Furniture; other manufacturing	36	0	9	100.0%	9
<i>Total</i>		<i>52</i>	<i>99</i>	<i>65.6%</i>	<i>151</i>

Table 2 Summary of basic descriptive statistics

	<i>Family firms</i>			<i>Non-family firms</i>			<i>Sig*</i>
	<i>Mean</i>	<i>Median</i>	<i>St. dev.</i>	<i>Mean</i>	<i>Median</i>	<i>St. dev.</i>	
Sales 2005 (mill. €)	17.21	11.30	20.43	88.91	31.50	228.98	0.000
Sales 2003 (mill. €)	15.55	9.30	18.40	77.34	27.00	205.75	0.003
Employees 2005	109.45	80.00	118.57	368.29	145.00	946.29	0.001
Employees 2003	104.33	70.00	115.99	365.44	175.00	935.56	0.876
Year of foundation	1965.61	1972.00	23.04	1957.89	1967.00	36.25	0.036
Export share of sales (2005)	29.46	15.00	29.80	40.26	40.00	29.73	

Note: *Two-tailed t-test

3.2 Measures

In this subsection, the methods used to validate the variables and measures detected in the literature and to match family and non-family firms are presented. First, to validate the convergent validity of the measures detected in the literature, the items of each stream only load on a single factor, and the discriminant validity, there are not items that load on more than one stream, a principal component analysis (PCA) was performed.

Besides the measure human capital, social capital and marketing capital, company size was included in the analysis as control variable due to the unit of analysis is the company. Company size, as seen before, is related to size and ‘family’ and so it is appropriate to control its potential effect. The natural logarithms of the total number of employees and turnover (sales) are used as indicators of company size; the use of natural logarithms allows these variables to be normalised.

When the measures were validated, we proceeded with the selection of the two similar groups of family and non-family firms by means of a matching method. Matching methods have been widely used in the evaluation of policy interventions, especially those concerning the labour market and more recently in the evaluation of innovation policy at a micro level (e.g., Czarnitzki and Licht, 2006). There are different matching methods available, but the most used is the nearest neighbour matching method. The treatment variable is family firm, while the variable used to match the nearest neighbour is the economic activity accordingly to the NACE code reported by both typologies of firms. After the sector selection, we use other variables to estimate the nearest neighbour (Table 3).

Table 3 Description of the variables

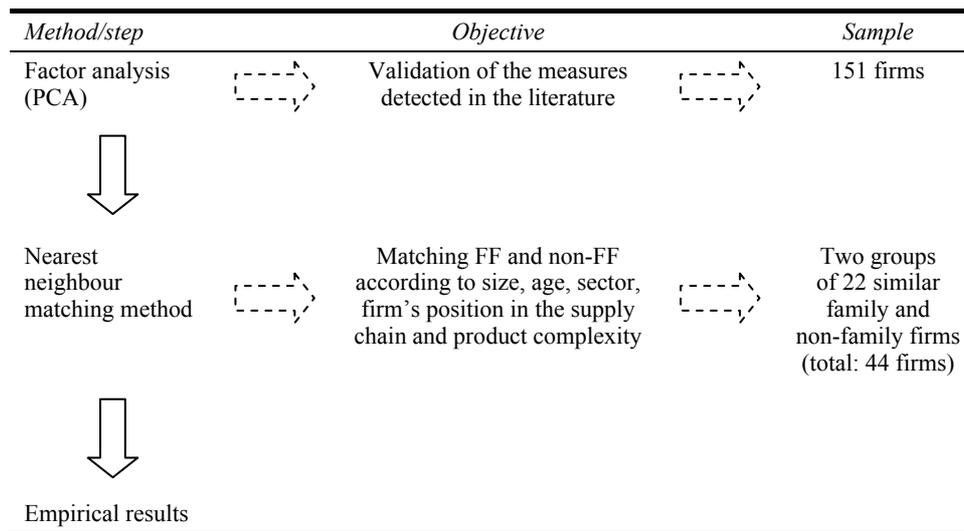
Treatment variable	
Family firm	1 indicates that the firm is a family firm 0 otherwise
Variables used to match the nearest neighbour	
Economic activity	NACE codes
Variables used to estimate the nearest neighbour	
Size (log)	Log of employees in the year 2005
Age (log)	Log of year of foundation
Supplier of components	1 indicates that the firm is a supplier of components 0 otherwise
Producer of finished products	1 indicates that the firm is a producer of finished products 0 otherwise
Product complexity	1 indicates one piece products 2 indicates multi-part products with a simple structure 3 indicates multi-part products with a complex structure or complex systems

These are size and age, that are common control variables to distinguish upon differential impacts of firms, but furthermore, we considered that we could find even more similar firms if we had variables describing more precisely the position of the firm within a sector (identified by a NACE code), describing better is technological and production activity. For this purpose, we included two additional matching criteria:

- 1 the firm’s position in the supply chain (supplier of components or producer of finished goods)
- 2 the product complexity, varying from one piece products to multi-part products with a complex structure or complex systems.

With the variables described in Table 3, we used the SPSS nearest neighbour matching procedure. Since the statistical matching was quite demanding, we only obtained 22 matching pairs of family and non-family firms, meaning a total number of 44 firms. The different methodological steps described in this subsection, carried out before getting empirical evidences, are represented in Figure 1.

Figure 1 Chronological methodology performed



4 Results

4.1 Measurement analysis

An exploratory factor analysis was conducted to identify the dimensions derived from the data of the study. The matrix of correlations was submitted to two tests: Barlett’s sphericity test and the Kaiser-Meyer-Olkin (KMO) index. The Barlett statistic, with a value $\chi^2 = 254.706$ (significance level of 0.000), confirmed the existence of linear dependence between the variables, and thus continuing with the procedure.

The KMO (0.503) also confirmed that factor analysis was likely to generate satisfactory results (Visauta, 1998). The analysis extracted four factors. The Kaiser criterion was used to retain only those factors that presented eigenvalues of one or greater. These four factors retained 80.479% of the initial variance, which represented a good proportion in view of the fact that each of the new components provided independent (and therefore unrepeated) information.

Table 4 shows the result obtained due to the PCA performed on the measures. A varimax rotation was applied to better interpret the components. There is a convergent validity because the items of each stream load on a single factor and of discriminant validity because no items load on more than one factor.

The two measures related to human capital load strongly on the same construct. This seems to indicate that companies with qualified employees devote a high number of them to deal R&D tasks. The same occurs with the social capital construct, the three measures have a high load with similar values. The highest load measures are in marketing construct. One reason could be that most of the new firm's products launched into the market are new for the market as well. Finally, the strong load of the control variables (log) employees and (log) turnover within the construct company size demonstrate the lack of effect on the rest of variables.

The reliability of the resulting four constructs was assessed using Cronbach's alpha. Table 4 shows the values of Cronbach's alpha for each construct. Due to all the components exceed the recommended minimum value of 0.6 noted by Malhotra (2004) means that all the items are strongly measuring its own constructs.

Table 4 Rotated component matrix

	<i>Component</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Human capital ($\alpha = 0.641$)				
Qualified employees	.044	.141	.010	.917
Proportion of employees devoted to R&D tasks	.005	.092	.019	.922
Social capital ($\alpha = 0.716$)				
Cooperation with other firms in production	.810	.017	-.042	.067
Cooperation with other firms in purchasing	.748	.009	-.003	.085
Cooperation with other firms in services/sales/distribution	.819	-.029	.177	.019
Marketing capital ($\alpha = 0.799$)				
Proportion of new products into the market	.078	-.040	.923	-.047
Proportion of new market products into the market	.024	-.093	.928	.038
Company size ($\alpha = 0.904$)				
Employees (log)	.014	.957	-.076	.012
Turnover (log)	-.014	.963	-.060	.033

Notes: Extraction method: PCA and rotation method: varimax with Kaiser normalisation
 α rotation converged in five iterations

4.2 *Hypothesis testing*

The next subsection presents the results obtained when comparing the two similar subsamples of 22 family and 22 non-family firms according the measures framework presented in Section 2.

The constructs analysed are human, social and marketing capital. The Mann-Whitney U non-parametric test is used for assessing whether the two subsamples observations come from the same distribution, since this test is robust enough for the small size of the two matched pair's subsamples.

Table 5, shown below, presents the results of the comparison. A first overall idea of the results indicates that in all the measures family firms on average outperform non-family firms. Moreover, six out of seven measures are statistically significance. Therefore, these findings are quite surprising because they are not in accordance with most of the extant literature that typically assumes or shows that family firms are less innovative than non-family firms.

Table 5 Wilcoxon-Mann-Whitney test

	<i>Non-family firm</i>		<i>Family firm</i>		<i>Signif.</i>
	<i>Mean</i>	<i>St. devs.</i>	<i>Mean</i>	<i>St. devs.</i>	
Human capital					
Qualified employees	13.682	8.167	20.000	8.860	0.015*
Proportion of employees devoted to R&D tasks	2.211	2.417	4.900	4.866	0.056**
Social capital					
Cooperation with other firms in production	0.250	0.444	0.591	0.503	0.028*
Cooperation with other firms in purchasing	0.250	0.444	0.545	0.510	0.054**
Cooperation with other firms in services/sales/distribution	0.350	0.489	0.682	0.477	0.034*
Marketing capital					
Proportion of new products into the market	15.571	16.259	20.706	27.865	0.908
Proportion of new market products into the market	4.722	6.910	13.706	23.576	0.080**

Notes: *Indicates that the Mann-Whitney test is significant ($p < 0.05$)

**Indicates that the Mann-Whitney test is significant ($p < 0.10$)

In the case of Hypothesis 1 with regard to human capital, our findings show that family firms have both a higher percentage of qualified employees and a higher percentage of employees devoted to R&D tasks. In both measures, the means are almost the double in family firms compared to non-family firms. However, the major statistically significance difference is the percentage of qualified employees ($p < 0.05$). These results would suggest that family firms focus more on qualified employees who can meet the specific requirements of costumers than spending a high budget in basic research. This

means that Hypothesis 1 is rejected. Family firms tend to devote more human capital to innovation.

Hypothesis 2 is about social capital and innovation. Regarding, cooperation with other firms although on average family firms outperform non-family firms, there are differences depending on the area of the firm. The highest differences between family and non-family firms are in production and the lowest in purchasing. One possible interpretation of these findings could be that family firms focus more on and have a closer contact with customers than suppliers. In line with Miller and LeBreton-Miller (2005), these findings lead us to argue that the relationship with customers is one of the strengths of the family firms in comparison with non-family firms. Thus, Hypothesis 2 is accepted. Family firms have more linkages to other firms which can support innovation that non-family firms have.

Finally, Hypothesis 3 deals with marketing capital and innovation. Here, we found one statistically significant difference in the percentage of new products of the firm that are new for the market as well. These results would argue that family firms might launch more radical innovations than incremental innovations. One overall reason could be that family firms, with high technical employees and high level of cooperation, produce new products or launch new services according the request of the costumers. It could be defined as a pull strategy or customisation instead of a push strategy. Therefore, Hypothesis 3 is partially rejected.

5 Discussion and conclusions

The aim of this study was to expand our understanding about the differences in innovative behaviour between family and non-family firms. On the one hand, according the literature, family firms have some hard-to-duplicate capabilities or 'familiness' while on the other hand family firms suffer a lack of financial capital due to family ownership and control. Therefore, family firms must compete within today's global and dynamic market with other strategic resources than financial resources in order to support their innovative capacity.

One of the main entrepreneurial capabilities that could be used by family firms to achieve a competitive advantage is innovation. Although innovation has been considered in some streams of family business research, there are not many empirical studies of innovation in family businesses. Past studies of the innovation behaviour of family firms have reported contradictory findings. Most scholars view family firms as conservative and stable due to their tradition and aversion to risk. This is the reason why a critique towards family firms for their lack of innovation is a theme in the literature. However, there is also a stream of research that uncovers that family firms can be entrepreneurial (Naldi et al., 2007). Therefore, we examined the innovative behaviour in family and non-family firms by comparing three strategic resources where family influence, or familiness, may be strong: human, social and marketing capital.

The main conclusion of the study can be summarised as follows. The results obtained in the comparison investigation of two similar groups of firms revealed that, contrary to conventional thinking; family firms are more innovative than non-family firms. First, on average, family firms outperform non-family firms in the dimensions we used in the study to analyse human, social and marketing capital. Second, six out of seven variables mark a statistically significant difference between family and non-family firms.

Interestingly, our study allows us to reject the idea that family firms cannot attract and keep qualified employees stated by Covin (1994a, 1994b) or Horton (1986). One reason can be the need to have a wide base of knowledge provided by the qualified employees to accomplish the specific requirements of the costumers and to create new products and services.

In keeping with previous research (e.g., Carney, 2005), our study confirms the notion that one of the strengths of family firms are their relations with different stakeholder, that is, their social capital. We demonstrate that the relationships between family and stakeholders can provide a input to innovation.

Moreover, a long-term relationship not only ties family and stakeholder but confirms the high intensity of these linkages with a higher degree of 'customisation' in their products/services. In line with Rothaermel (2001), we argue that the close relationship with costumers facilitates the development of innovation.

This study confirms that family firms use some strategic and intangible resources to compete. In summary, resources do matter to family firms [Eddleston et al., (2008), p.45]. Although these finding might have been expected with regard to social and marketing capital since family firms often base their competitive advantage with a strong connection to other actors (Miller and LeBreton-Miller, 2005), a surprising result is that family firms also have a stronger humans capital resource base. One possible reason can be that the close relationships between the family firm and stakeholders, and the need to accomplish their demands, ensure the appropriate supply of qualified human resources that can support new products and services launched into the market. In general, our study gives a novel contribution to the growing literature on entrepreneurship and innovation in family businesses.

We acknowledge that the use of only two items to analyse human and marketing capital is a limitation of the study. The study's use of Spanish data is another limitation. It is desirable to expand on the present findings by including more variables and by using data from other countries. Having established the general tendency of the theoretical resource constructs in relation to innovation, it would be interesting to conduct a field study that focuses more specifically on each kind of capital using a wider variety of variables for analysis and a higher sample of firms to confirm the evidences found in this work. Therefore, given that innovation behaviour is a complex topic to measure that has important implications for family firms' survival, there is a need to better understand these dimensions and determine their effects on firm's performance.

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