



# **Innovation in Saudi Family SMEs: The Role of Social Capital and Family Involvement**

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**Abstract.** This study examines the influence of family business resources, represented by family involvement in management and social capital, on innovation outputs represented by incremental and radical innovation of products/services and processes. The results from a data set of 259 family firms in Saudi Arabia show that family firms that have a higher degree of family involvement and social capital are more likely to engage in incremental rather than radical innovation. Implications for research and practice are discussed in light of a context emphasizing the value of relationships and family reputation.

**Keywords:** innovation, family business, social capital, family involvement, Saudi Arabia

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## **1. Introduction**

Innovative businesses are key drivers of economic growth (Freeman 2002; Röd 2016). Innovation is considered an important source of competitive advantage (Utterback and Abernathy 1975) and is therefore closely linked to the high performance of firms (Brown and Eisenhardt 1995). Innovation is the process through which new products, services, processes, or business models are introduced (Drucker 1985). In essence, innovation describes the introduction of new things or approaches. Innovation has long been neglected in investigations into family business; however, a recent and growing body of research has focused on the study of innovation in family firms (De Massis et al. 2015a; 2016; Chrisman et al. 2015; Duran et al. 2016; Berent-Braun et al., 2018). Despite this attention in the literature, further research is required to provide better understanding of innovation in these types of organizations (Urbinati et al. 2017).

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Previous empirical studies on family business innovation have been dominated by comparisons of innovation between family and nonfamily businesses, creating a strong theoretical base for understanding differences between the two in terms of their approach to innovation (Chrisman et al. 2015; De Massis et al. 2013). Variables that distinguish between family and nonfamily innovation include the degree of family involvement in ownership (De Massis et al. 2015a) and in management (Nieto et al. 2015). This leads to the notion that family involvement can affect the innovation inputs, activities, and innovation outputs in family firms (De Massis et al. 2013). Recent research also asserts that the governance characteristics of family business influence their management and occurrence of innovation (Urbinati et al. 2017). It has also been asserted that there is an important difference between family and nonfamily firms in terms of the deployment of resources to facilitate innovation (Sirmon and Hitt 2003; Habbershon and Williams 1999; Bennesen and Foss 2015; De Massis et al. 2015b). The unique resources of family firms, such as their human and social capital, have been shown to give them a competitive advantage over nonfamily firms, thus making them more innovative (Llach and Nordqvist 2010). Furthermore, the particular resources of family businesses make them more efficient in converting innovation into performance (Dieguez-Soto et al. 2016).

Researchers have demonstrated that family firm innovation is a paradox: although they innovate less than their counterparts, the unique resources and long-term orientation of family firms imply their capacity to innovate (Bennesen and Foss 2015; De Massis et al. 2015a). Scholars differentiate between two forms of innovation – innovation inputs and innovation outputs (Adams et al. 2006). Using the agency theory and behavioral agency model BAM, researchers have found that family businesses are often less innovative, due to low levels of investment in innovation inputs, such as research and development (R&D) (Chrisman and Patel 2012; Block 2012). However, although family involvement has been shown to have a negative influence on innovation input, it has a positive impact on innovation output (Matzler et al. 2015). This may be because family businesses are able to convert a greater proportion of their innovation inputs into innovation outputs (Duran et al. 2016), by means of their unique resources such as the endowment of tacit knowledge and strong relations with stakeholders (Dieguez-Soto et al. 2016; Llach and Nordqvist 2010). This view helps in resolving the paradox of family business innovation. Nevertheless, the question remains regarding the influence of family control and the resources of these businesses on the type of innovation output that they achieve. This study investigates the influence of the involvement of family in the management and social capital of family firms on incremental versus radical innovation in products and processes within a new data set of 259 family firms in Saudi Arabia.

This research makes several contributions to the field. Previous research shows that while family firms invest less in innovation inputs, they remain capable of transforming innovation inputs into innovation outputs (Duran et al.

2016) due to their governance and unique resources (Chrisman et al. 2015; Urbinati et al. 2017). We extend this view through an investigation of the types of innovation output produced by family firms based on the involvement of their members in the management and social capital of the business. This also helps in creating a fit between family firms' resources and their innovation strategies, expanding our knowledge and constructing a structured body of research on innovations in this context (De Massis et al. 2015b). Second, the two broad categories of innovation are product and process (Utterback and Abernathy 1975). However, process innovation has received little attention in the literature on innovations in family firms, with the majority of extant studies having focused on product innovation (Filser et al. 2016). In this study, we therefore extend the family innovation literature through the investigation of innovation in products and services, as well as in processes in family firms. Thirdly, heterogeneity enables a better understanding of the impact that the characteristics of family firm have on innovation (De Massis et al. 2013). We acknowledge the heterogeneity of family firms by examining the impact of the degree to which family members are involved in the management and social capital affects the innovation output of a sample of family firms. Fourth, this study adds to the growing body of literature on family firm innovation by complementing previous empirical results regarding the type of innovation output (incremental vs. radical) adopted by family firms—that is, studies comparing family to nonfamily firms (Nieto et al. 2015) or those which are qualitative in nature (De Massis et al. 2015a). Finally, the majority of previous studies on family firm innovation have been conducted in the United States and Western Europe, suggesting the need for research of a broader context to advance our understanding of innovation in family firms in the global context (Filser et al. 2016; De Massis et al. 2013). The present study addresses this gap in the literature through the investigation of family business innovation in Saudi Arabia. This area of study is especially important, because family firms remain key drivers of innovation and entrepreneurship in developing economies (Heck et al. 2008).

The paper is structured as follows. The next section provides an overview of the business environment in Saudi Arabia, which serves to contextualize the research. This is followed by an outline of theoretical insights; the derivation of hypotheses; methods; results; discussion; and finally, the conclusion of this study, including a discussion of limitations and future research.

## **2. Context**

Saudi Arabia is one of the largest economies in the Middle East and North Africa (MENA) region, as well as being one of the 20 largest economies in the world (Saudi Arabia General Investment Authority, 2018). Saudi Arabia is an oil rich country possessing 16% of all proven oil reserves in the world, estimated at 266

billion barrels (EIA, 2017). It is the world's largest oil producer, producing about 10 million barrels per day (Jawadi and Ftiti, 2019). The oil sector generated \$263 billion in 2018, representing 33.6% of Saudi Arabia's GDP (General Authority of Statistics, 2018). Oil production has served as a source of capital for the government to fund developmental projects and support economic growth. However, the dependency on oil as the main source of income made the Saudi economy volatile to fluctuations in oil prices leading the government to implement a plan to diversify the economy from being oil-based.

In Saudi Arabia, 63% of registered companies are family businesses and are responsible for generating 810 Billion Saudi Riyals (216 Billion U.S. dollars), or approximately 32% of the country's GDP (Ministry of Commerce and Investment, 2018). Since innovation and entrepreneurship are one of the main drivers in the development and diversification of the Saudi economy from reliance on oil (Miniaoui and Schiliro 2016), the sustainability and growth of these type of organizations is pivotal for the future of the country. This is especially true given the recent implementation of an economic reform plan to diversify the Saudi national economy by 2030, which has emphasized the development of the private sector and the support for entrepreneurship. One of the objectives of the plan is the establishment of a huge fund to invest in venture capitals and support SMEs.

Saudi Arabia is characterized as a collectivist society, in which families are highly regarded and self-interest is secondary to the interest of the family as a whole. Indeed, Saudi Arabian society is dominated, both economically and culturally, by the importance of family values and ties (Davis et al. 2000). The Islamic values and tribal culture of Saudi Arabia stress the importance of generating *halal* (lawful) income and contributing to the *falah* (well-being) of the nation (Kayed and Hassan 2010). These values also emphasize the value of familial relationships and reputation. This stance also applies to family businesses, which usually carry the family name. Given these considerations, social and business lives in Saudi Arabia revolve around the family. As such, this research will shed light on family SMEs entrepreneurship in Saudi Arabia, thereby providing a better understanding of family firms in general and innovation in particular.

The entrepreneurial environment in Saudi Arabia is shaped by access to a strong economy, expanding markets with many opportunities, no income taxes, and huge and continuous governmental investments in the economy (Porter 2012). Saudi Arabia is ranked at 55 out of 127 countries in the Global Innovation Index 2017, with innovation output ranked at 66. Although this ranking is relatively low, research has demonstrated that there is strong provision and maintenance of key innovation factors, including R&D investment, human capital, and government support (Iqbal 2011). In a study of 203 Saudi firms operating in Riyadh, Albesher (2014) found that strong relationships with external stakeholders for innovation activities enable Saudi firms to acquire and

accumulate new knowledge, which enhances their innovation performance. The majority of the surveyed Saudi firms were shown to be engaged in incremental rather than radical innovation activities, with Saudi SMEs paying less attention to R&D than their counterparts in more developed economies in the world.

### **3. Literature Review and Hypotheses**

Research has generally affirmed that the growth and survival of businesses is reliant on their ability to innovate. Innovation can include such activities as developing an entirely new product, service, or process; improving an existing product, service, or process; or introducing an existing product, service, or process into a new market (Drucker 1985; Koellinger 2008). However, definitions of innovation are subjective, based upon the observer and context of the research (Robson et al. 2012; Koellinger 2008).

It has been argued that innovation in family firms is somewhat paradoxical (De Massis et al. 2015b; Bennesen and Foss 2015; Berent-Braun et al., 2018). Some researchers claim that family firms are often more conservative and traditional than their counterparts, demonstrating this in terms of their lower investment in R&D (Chen and Hsu 2009; Chrisman and Patel 2012; Block 2012; Munari et al. 2010; Muñoz-Bullón and Sanchez-Bueno 2011; Gomez-Mejia et al. 2014) and the fact that they file fewer patents (Czarnitzki and Kraft 2009; Chin et al. 2009). However, these conclusions are based on investigations into large, publicly held firms rather than privately held SMEs. Furthermore, lower investment in R&D does not necessarily imply that family firms are less innovative (Bennesen and Foss 2015). At the same time, other studies have found that family firms can be more innovative than nonfamily businesses (Craig and Dibrell 2006; Naldi et al. 2007; Cassia et al. 2012; Llach and Nordqvist 2010; Gudmundson et al. 2003; Wagner 2010). These researchers compared innovation in family and nonfamily firms; however, some studies examining innovation within family firms have found that, rather than being particularly conservative, many family firms place importance on innovation, even in traditional industries (Craig and Moores 2006; McCann et al. 2001).

The paradox that characterizes family-firm innovation literature creates a robust theoretical base for differences in innovation between family and nonfamily firms (Chrisman et al. 2015; De Massis et al. 2013). This contradiction emphasizes the heterogeneity of family firms and underlines the need for further investigation of the particular characteristics within family firms that promote or hinder innovation (De Massis et al. 2015a). Based on a systematic review of family-firm innovation literature, De Massis et al. (2013) proposed a framework that identifies three phases of innovation in family firms: innovation inputs, innovation activities, and innovation outputs. Family involvement has been shown to affect all three of these phases of innovation. Duran et al.'s (2016) meta-

analysis of 108 studies from 42 countries revealed that while family controlled businesses invest less in innovation inputs, they have a high conversion rate of innovation inputs into outputs. This capacity to transfer innovation inputs into outputs has been partially attributed to the unique resources available to family businesses (Llach and Nordqvist 2010). The present study investigates the impact of family business resources, represented by family involvement in management and family firms' social capital on two traditional types of innovation outputs in family firms: incremental and radical innovation. Incremental innovation is associated with the application of improvements to current products, services, or processes, whereas radical innovation describes revolutionary changes to products, services, or processes (Dewar and Dutton 1986). Both types of innovation involve a certain degree of risk, though as the name implies, radical innovation is associated with a higher risk (Nieto et al. 2015).

Pervious research on family business innovation input has utilized agency theory (Block 2012) or behavioral agency model (BAM) (Chrisman and Patel 2012). Although these theoretical perspectives provide explanations on the low investment of family business in innovation input, they fail to explain the prevalence of innovative family firms (Duran et al. 2016). Given that the aim of this study is to investigate the innovation outputs in family firms, utilizing the resource-based view (RBV) is an effective way with which to understand innovation outputs, given that family involvement and social capital are resources that provide competitive advantage. The RBV states that for the resources and capabilities of a company to generate competitive advantage, they must be valuable, rare, imperfectly imitable and appropriately managed by the organization (Barney et al. 2001; Penrose 1959). The resources of a firm include both tangible and intangible assets, with the ability to deploy resources through organizational processes being described in terms of capabilities (Amit and Schoemaker 1993; Penrose 1959). Capabilities are distinctive competencies that have to be built rather than bought (Teece et al. 1997). Sustainable competitive advantage is then achieved by accumulating, combining, and exploiting those resources and capabilities within the company (Grant, 1991). It has been argued that while the distinctive nature of resource management in family firms can often be beneficial, it can also be harmful, such as when members of the company redirect resources to serve the family (Sirmon and Hitt 2003).

In family-business research, Habbershon and Williams (1999) based their concept of familiness on the RBV, defining familiness as "the bundle of resources that are distinctive to a firm as a result of family involvement" (p. 1). Habbershon et al. (2003) later proposed a unified system that uses familiness to explain performance in family firms. They suggested that the resources and capabilities of these kinds of companies combine with family members and the business interactions to influence overall company performance. This approach provides a strategic management focus on the performance of family firms, helping to identify the resources and capabilities that make them unique organizations.

Sirmon and Hitt (2003) utilized this concept of familiness to develop a resource-management process model based on five unique resources that give family firms a potential advantage over nonfamily firms: human capital, social capital, patient capital, survivability capital, and the governance structure attribute. All sources of capital can be valuable for organizations to achieve a competitive advantage (Barney 1991). However, social capital is particularly significant for family businesses as they are essentially social entities (Habbershon et al. 2003; Arregle et al. 2007). This is even more important in the Saudi context where social networks are an essential part of doing business (Berger et al. 2015).

To foster the development of a strategic management theory of family firms, the most distinctive feature of these kinds of businesses are family involvement, including the ownership, management, control, and essence of the company, which is used to denote resources, intentions, and behavior (Chrisman et al. 2005; Sharma and Chua 2013). In an attempt to construct a theory of family firms by advancing our understanding of the concept of familiness, researchers have argued that this construct is multidimensional and therefore transcends family involvement and essence. As such, Pearson et al. (2008) expanded this concept, proposing that examinations of familiness should include social capital as a unique resource that arises from the intersection of a family and its business. This enabled a social capital model of familiness to be proposed, which uses family involvement as a distinctive condition for the development of social capital. The current study adopts a strategic management view in order to examine the impact of family involvement and social capital in the innovation outputs of Saudi family firms.

### 3.1. Social Capital

Social capital is a valuable intangible resource that is difficult to replicate (Dess and Shaw 2001), but which has been recognized as a valuable asset in family firms (Sirmon and Hitt 2003). It is defined as the goodwill and resources embedded in relationships (Tsai and Ghoshal 1998; Burt 1992). The contribution of social capital to the competitive advantage of and value creation in organizations in general (Nahapiet and Ghoshal 1998) and in family firms specifically (Pearson et al. 2008; Salvato and Melin 2008; Zahra 2010; Arregle et al. 2007) is well recognized.

Lin (2008) organizes social relations into three conceptual layers: binding, bonding, and belongingness. Binding social ties are those ties which are intimate and reciprocal (e.g. kin), bonding social ties are those that share a particular interest (e.g. social network), while sense of belongingness is concerned with shared identity (e.g. religion). Kinship ties, which are a unique feature of family businesses, "can encourage employees to trust one another, and share sensitive information and innovative ideas" (Eddleston et al. 2012, p. 354). The strong ties

between family members influence the activities of their family businesses, such as the way in which entrepreneurial opportunities are recognised (Jack 2005) and the accumulation of the various resources needed for entrepreneurial activities (Khayesi et al. 2014).

However, the social ties of family businesses extend beyond family members to non-family employees, customers, suppliers, other companies and society in general (bonding ties). As such, family firms should "develop trust-based relationships with partners and suppliers in order to obtain insights for developing better products and to gain product acceptance" (Cennamo et al. 2012, p. 1161). Many family firms are active in philanthropic roles and in exercising their social responsibility (Deniz and Suarez 2005; Van Gils et al. 2014; Berrone et al. 2010; Cruz et al. 2014), as "family firms exhibit an innate incentive to satisfy the demands of multiple stakeholders" (Zellweger and Nason, 2008 p. 212). This social role is also extremely prevalent in the Gulf region (Davis et al. 2000).

Social capital is a distinctive feature of family firms, affecting the innovation of their products and services (Sirmon and Hitt 2003), as well as their performance (Sorenson et al. 2009). There are two recognized and inextricably linked forms of social capital in family firms: that of the family and the social capital of the business itself (Arregle et al. 2007). While distinct, the family's social capital often influences the social capital of the firm to a large degree (Anderson et al. 2005). Innovation in family firms is fueled by both family social capital (Chang et al. 2009) and firm social capital (Zahra 2010).

Social capital is a key driver of value creation across generations (Salvato and Melin 2008). Strong social capital enables the leaders of family firms to be better informed about the best practices in their fields (Zahra 2010; Uzzi 1997; Kallmuenzer and Scholl-Grissemann 2017). Social capital provides even more information privileges to entrepreneurs in emerging markets (Carney 2005). For example, Khayesi et al. (2014) found that social ties in Ugandan family firms typically correlate with higher levels of resource accumulation. In the Saudi context, social capital also plays an important part in the business life. It follows that extended relationships raise the awareness of family firms regarding surrounding challenges and opportunities, therefore making them more informed of best practices, which fosters innovation. Having strong relationships with customers can help family firms to incrementally improve their products and processes in order to better satisfy their needs (Nieto et al. 2015), whereas building relationships with other organizations can enhance the knowledge required to engage in radical product and process innovation (Zahra 2010). As such, family firms with strong social capital are expected to adopt both incremental and radical innovation in terms of their products and processes.

**H1a:** There is a positive relationship between social capital and incremental innovation in family firms.



**H1b:** There is a positive relationship between social capital and radical innovation in family firms.

### 3.2. Family Involvement

Family involvement is generally expected to influence the behavior of family businesses (Chrisman et al. 2012), as well as to contribute to their overall performance (Eddleston and Kellermanns 2007). Family involvement in management typically enhances the positive impact of innovativeness on growth (Casillas and Moreno 2010), as well as the ability to identify opportunities for innovation (Kallmuenzer and Scholl-Grissemann 2017), and the exploitation of innovation outputs (Dieguez-Soto et al. 2016). Furthermore, as the number of family members from different generations involved in the business increases, so does innovation (Zahra 2005). Nevertheless, family firms typically avoid radical innovation outputs (Schäfer et al. 2017).

Family members involved in managing the business are characterized by long tenure (Zahra 2005). This long-term orientation (LTO) is a defining feature of family firms (Miller and Le Breton-Miller 2005; Miller et al. 2008; Cassia et al. 2012) and can be expected to increase product innovation, new market persuasion, and R&D (Miller and Le Breton-Miller 2005). Indeed, “family firms with a long-term perspective will display more innovativeness, proactiveness and autonomy” (Lumpkin et al. 2010, p. 251). The LTO in family firms correlates with innovativeness (Zahra et al. 2004; Lumpkin et al. 2010) and opportunity persuasion (Zellweger 2007). Family involvement in management and lengthy family tenures provide firms with the motivation and knowledge to improve their products and services, and helps them to modify their processes more effectively. This is particularly true in the Saudi context, given the dominance of expat workforce in the private sector (comprising 90% of total private sector workforce), especially in smaller businesses, as cultural and social factors have resulted in the majority of Saudi citizens to prefer employment in the public sector. As such, the involvement of family members in managing a business is pivotal to firm growth and competitiveness through innovation activities, since nonfamily members in Saudi Arabia are commonly unsustainable expats. Given the push from the Saudi government to diversify the oil-based economy through the promotion of entrepreneurship among Saudis, the involvement of family members in the Saudi context is expected to be beneficial to entrepreneurship since they are often the most capable of recognizing opportunities, implementing strategies, and leveraging governmental support. However, the long tenure of a family CEO correlates with reluctance to undertake risky entrepreneurial decisions (Zahra 2005), such as involvement in radical innovation.

Engaging into radical innovation requires a considerable amount of risk, which may potentially threaten the financial and non-financial returns of

companies, such as the desire to hand the business to the next generation and to preserve their socioemotional endowment (Schulze et al. 2002; Naldi et al. 2007; Gomez-Mejia et al. 2011). As such, family firms tend to be risk averse in terms of uncertain innovation projects (Dieguez-Soto et al. 2016). Indeed, family firms that have family members involved in management have been found to avoid introducing risky products (Cucculelli et al. 2016). Family ownership also decreases radical innovation outputs measured by number of patents (Decker and Gunther 2017). Therefore, we expect that the degree of family involvement in management will enhance incremental innovation while hindering radical innovation.

**H2a:** There is a positive relationship between the degree of family involvement in management and incremental innovation in family firms.

**H2b:** There is a negative relationship between the degree of family involvement in management and radical innovation in family firms.

#### **4. Method**

There is no official list of family businesses in Saudi Arabia. Therefore, the list of firms operating in the Riyadh area was obtained from the Riyadh Chamber of Commerce and Industry (RCCI). This list was utilized to collect the primary data for this study. Riyadh is the capital city of Saudi Arabia accounting for around 27% of total enterprises in the country. Sample quotas from six industries were applied to obtain the sample framework of this study. The six broad industry categories are: (1) manufacturing, (2) building and construction, (3) wholesale, retail, hotels and restaurants, (4) transport, storage and communication, (5) import/export, and (6) business services. The RCCI provided basic information, in terms of business names, addresses, and activities. Data profiling 2,646 firms were obtained through a stratified random sample: 2,146 firms were sent an electronic questionnaire and a further 500 received a paper questionnaire using a drop and collect method. This mixed sampling method was employed due to the low response rate of the electronic questionnaire. With regards to the online questionnaire, a substantial number of emails turned out to be incorrect or not in use. Out of the 2,146 sent emails, 1,076 emails bounced back (approximately 50%). This was likely due to an inaccurate data list obtained from RCCI or technical problems related to the recipients' server. Therefore, the drop and collection method was used to ensure that the firm is family run and the owner/CEO is willing to participate in the research. Before the distribution of the paper questionnaire, firms were contacted to confirm their industrial activity, business age, family business status, the number of full-time employees, and their participation willingness. A group of 7 volunteers was recruited for the task of distributing and collecting the completed questionnaires. The volunteers all

received a 2-hour training session, during which an explanation was provided of the objectives of the survey and each of the questions. After examination of the responses from both electronic and paper questionnaires, companies were identified as family firms when fulfilling the criteria of having at least two family members actively involved in managing the business, as well as based on the CEO's perception of whether or not the company was a family business (Miller et al. 2008; Westhead and Cowling 1998).

The questionnaire was developed in English, translated to Arabic, and then back translated to English by two bilingual researchers fluent in English and Arabic. This validated the translation and guaranteed the similarity of the two original language versions (Harkness and Schoua-Glusberg 1998). In addition, the questionnaire was reviewed by specialized academics and family business owners. The survey was then piloted on eight family businesses; certain questions were subsequently revised and the overall length was reduced. The finalized questionnaire was distributed to the key respondent in each business. After receipt of the physical or electronic questionnaire, two follow up emails and visits were carried out. A total of 385 questionnaires were returned. Questionnaires that were incomplete, from firms that had less than 3 or more than 250 full-time employees and thus failing to meet the definition criteria for family SMEs, or from non-family firms were eliminated, yielding a final sample of 259. The 385 returned questionnaires represented a response rate of 14.55 percent, compared to the 10 percent response rate achieved in comparable studies, such as Fahed-Sreih and Djoundourian's (2006) study of Lebanese family businesses.

Differences between early and late respondents were assessed with a combination of chi-square and Mann Whitney U tests, in order to investigate non-response bias as suggested by Armstrong and Overton (1977). The following criteria were tested: entrepreneur gender, entrepreneur age, business age, and number of full time employees. Early and late responses were categorized based on the timing of the response, so that late respondents were those who completed the questionnaires after receiving a reminder. There was no evidence at the 0.05 level, or better, of response bias against the aforementioned business and entrepreneur characteristics. As such, there is no concern regarding sample bias and the sample can therefore be assumed to be broadly generalizable to those in the sampling frame. Furthermore, assessment of the differences between the online and drop and collect methods found no significant differences between respondents from these two methods, in terms of either entrepreneur or firm characteristics.

The common method effect is usually a concern when the same respondent provides both dependent and independent variables, as is the case in this study. Therefore, the Harman one-factor test was performed to test for common method bias, as recommended by Podsakoff and Organ (1986). All of the variables used in the study were included in the principal component analysis with eigenvalues greater than 1.0. This analysis shows 7 components, accounting for 67.97 percent

of the variance. The first factor explains only 14.98 percent of the variance, suggesting that common method bias is not a concern in this study.

#### 4.1. Measures

*Dependent Variables* – Four dichotomous variables were created to measure incremental and radical innovation strategy in products/services and in processes. In order to measure incremental innovation, respondents who had introduced new or significantly improved products/services to their firm but not the industry in the past three years were coded as ‘1’, otherwise they were coded ‘0’ (Incremental Product). Respondents who had introduced new or significantly improved processes to their firm but not the industry in the past three years were coded as ‘1’ and those who had not were coded as ‘0’ (Incremental Process). To measure radical innovation, those who had introduced new or significantly improved products/ services not only to the firm but also to their industry in the past three years were coded as ‘1’, otherwise they were coded ‘0’ (Radical Product). Those who had implemented new or significantly improved processes not only to the firm but also to their industry in the past three years were coded as ‘1’, otherwise they were coded ‘0’ (Radical Process). In other words, incremental innovation refers to innovation that is new to the firm but not the industry, and radical innovation relates to innovation that is not only new to the firm but also the industry where the firm operates. This method has been widely used before and thus draws upon the established precedence (Freel and Robson, 2004).

*Independent Variables* – The degree of family involvement in management was measured by the natural log of the number of family members actively working in the business (Family Involvement). Social capital was measured using a five-item scale adopted from Zahra (2010). Respondents were asked to indicate the extent to which each of the five statements<sup>2</sup> was true or untrue on a five-point Likert scale (from 1 = ‘very untrue’ to 5 = ‘very true’). The Cronbach alpha (= 0.78) suggests a sound level of internal reliability.

*Control Variables* – The control variables selected for this study were the firm and entrepreneur’s demographics, in addition to the external environmental context. These were chosen due to their potential to influence the relationships of

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2. Respondents were given the following text: “How do other companies view your company? Please indicate the extent to which each of the following statements is true or untrue by circling a number. If an item does not apply to your company, please circle not applicable (NA).” This was then followed by five statements: (a) “my company has a good reputation in its industry”, (b) “my company is well connected to other companies in its industry”, (c) “my company is well connected to other companies in other industries”, (d) “my company has a good reputation for supporting industry causes”, and (e) “my company has a good reputation for fair dealings.” For each of the five statements the respondents were given the following options: ‘1’ very untrue, ‘2’ untrue, ‘3’ neutral, ‘4’ true, ‘5’ very true, and Not Applicable.

the key variables under examination. The control variables were: firm size, firm age, entrepreneur education, entrepreneurial experience, and industry. The inclusion of firm size was intended to factor in the greater available resources at larger companies, which enable greater engagement in entrepreneurial activities (Kellermanns and Eddleston 2006, Zahra et al. 2004). Firm size was measured in terms of the number of full-time employees recorded in the natural log (Firm Size). Firm age was also controlled, due to the potentially higher level of growth in younger firms (Eddleston et al. 2012). Firm age was measured by the number of years since the first order/customer recorded by the firm (Firm Age). As with business size, a natural logarithm was taken of business age. The following industry dummy variables were computed: Manufacturing, Construction, Wholesale/Retail, Transportation, Import/Export, and Business Services. The excluded comparison industry in the regression model was Business Services. A substantial amount of research has suggested the potential for prior entrepreneurial experience to influence entrepreneurial behaviours. Differences have been identified between novice and habitual entrepreneurs regarding a range of entrepreneurial decisions and outcomes (Westhead et al. 2005). A dummy variable was included to indicate whether or not a given respondent had previous entrepreneurial experience (Habitual), with those who had owned a business in the past being coded as ‘1’ and those who had not being coded as ‘0’. The education of the entrepreneurs was used to create two dummy variables: entrepreneurs for whom their highest level of education was an MSc were coded as ‘1’ and otherwise ‘0’ (Education Masters). Entrepreneurs for whom their highest level of educational achievement was a university degree were coded as ‘1’ and those who had lower levels of educational achievement were coded as ‘0’ (Education Undergrad). Summary statistics of the continuous and categorical variables are shown in Tables 1 and 2, respectively.

**Table 1:** Descriptive statistics for continuous variables

	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Minimum</b>	<b>Maximum</b>
Firm Size	259	43.6	50.7	3	250
Firm Age	259	10.8	7.9	1	46
Family Involvement	259	3.5	1.2	2	10

**Table 2:** Descriptive statistics for categorical variables

	Frequency (N=259)	Percent
<b>University Degree</b>		
Yes	156	60.2
No	103	39.8
<b>Master's Degree</b>		
Yes	44	17.0
No	215	83.0
<b>Habitual Entrepreneurs</b>		
Yes	81	31.3
No	178	68.7
<b>Sector</b>		
Import /Export	16	6.2
Manufacturing	15	5.8
Building and Construction	47	18.1
Wholesale, Retail, Hotels and Restaurants	132	51.0
Transportation, Storage and Communication	11	4.2
Service	38	14.7

## 4.2 Data Analysis

A correlation matrix was computed and is shown with the summary statistics in Table 3. The correlation coefficients and variance inflation factor VIF scores<sup>3</sup> indicate that there is no evidence to suggest that the regression results reported in the next section are distorted by multicollinearity. Given that the dependent variables are binary, logit models were used (Long 1997).

Business age ranged between 2-46 years, with a mean of 11 years old. The average number of full time employees, denoting firm size, was 41.8 employees. The minimum number of family members involved in managing the businesses in the sample was 2 and the maximum was 10, with an average of 3.5.

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3. The largest VIF score is 2.29.

**Table 3:** Descriptive Statistics and Correlation Matrix (n=259)

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Incremental Product	.85	.36	1																	
2. Incremental Process	.80	.40	.59 <sup>a</sup>	1																
3. Radical Product	.53	.50	.30 <sup>a</sup>	.20 <sup>a</sup>	1															
4. Radical Process	.46	.50	.04	.26 <sup>a</sup>	.62 <sup>a</sup>	1														
5. Social Capital	4.33	.58	.31 <sup>a</sup>	.28 <sup>a</sup>	.06	-.02	1													
6. Family involvement	1.21	.32	.16 <sup>a</sup>	.18 <sup>a</sup>	.04	-.04	.13 <sup>b</sup>	1												
7. Firm Size	3.24	1.02	.09	.18 <sup>a</sup>	.18 <sup>a</sup>	.21 <sup>a</sup>	.14 <sup>b</sup>	.33 <sup>a</sup>	1											
8. Firm Age	2.16	.68	-.03	-.01	.01	.06	.09	.17 <sup>a</sup>	.32 <sup>a</sup>	1										
9. Education Undergrad	.60	.49	-.09	-.15 <sup>b</sup>	.20 <sup>a</sup>	.15 <sup>b</sup>	-.29 <sup>a</sup>	-.07	.08	.00	1									
10. Education Master	1.17	.38	-.01	-.11	.15 <sup>b</sup>	.09	-.16 <sup>b</sup>	-.09	.01	.04	.37 <sup>a</sup>	1								
11. Habitual	.32	.47	-.03	-.04	.21 <sup>a</sup>	.24 <sup>a</sup>	-.21 <sup>a</sup>	-.09	.13 <sup>b</sup>	.18 <sup>a</sup>	.41 <sup>a</sup>	.27 <sup>a</sup>	1							
12. Import/Export	.06	.24	.07	.09	-.04	-.17 <sup>a</sup>	.02	.07	-.04	-.00	.01	-.07	-.10	1						
13. Manufacturing	.06	.23	-.12 <sup>b</sup>	-.08	.04	.07	-.07	.10	.17 <sup>a</sup>	.28 <sup>a</sup>	.10	.02	.12	-.06	1					
14. Construction	.18	.39	-.13 <sup>b</sup>	.06	-.03	.12	-.10	.13 <sup>b</sup>	.18 <sup>a</sup>	-.05	.14 <sup>b</sup>	.03	.03	-.12	-.12	1				
15. Wholesale/Retail	.51	.50	.05	-.07	-.11	-.13 <sup>b</sup>	.05	-.11	-.15 <sup>b</sup>	-.10	-.20 <sup>a</sup>	-.09	-.04	-.26 <sup>a</sup>	-.25 <sup>a</sup>	-.48 <sup>a</sup>	1			
16. Transportation	.04	.20	.04	.06	-.11	-.11	.00	-.03	-.05	-.02	-.10	.06	-.10	-.05	-.05	-.10	-.22 <sup>a</sup>	1		
17. Service	.15	.36	.09	-.01	.25 <sup>a</sup>	.19 <sup>a</sup>	.08	-.08	-.04	.02	.11	.10	.07	-.11	-.10	-.20 <sup>a</sup>	-.42 <sup>a</sup>	-.09	1	

a Significant at the 0.01 level; b Significant at the 0.05 level; c Significant at the 0.10 level.

## 5. Results

Logistic regression models were run for each of the four measures of innovation: incremental product innovation, incremental process innovation, radical product innovation, and radical process innovation (Table 4 and 5). For each of the four dependent variables, models were run with only the control variables included. The two independent variables were then added to the control variables and the full models were run again for each of the four measures of innovation. All eight models were found to be statistically significant at  $p < 0.001$ . The percentage of observations that was correctly classified ranged from 65.6 percent in Model 5 to 85.3 percent in Model 2. The Nagelkerke  $R^2$  ranged from 0.11 in model 1 to 0.25 in Model 2.

The number of employees (Firm Size), age (Firm Age), and five sector dummies were included as firm control variables, with business services as the excluded comparison sector category. Education and prior business ownership experience were included as key respondent control variables. The education of the key decision maker was included as two dummy variables (Education undergraduate and Education masters). A dummy variable was also used to capture prior business ownership experience (habitual).

Incremental product innovation is the dependent variable in Model 2. Social capital and family involvement were statistically significant at  $p < 0.01$  and  $p < 0.05$  respectively. The dependent variable in Model 4 is incremental process innovation. Social capital and family involvement were found to be statistically significant at  $p < 0.01$  and  $p < 0.10$  respectively. This indicates that family firms with high levels of social capital and a high degree of family involvement in management were more likely to engage in incremental innovation. Therefore, the logistic regression results support hypotheses H1a and H2a.

Radical product innovation is the dependent variable in Model 6. Social capital and family involvement were not statistically significant. Radical process innovation is the dependent variable in Model 8. Again, social capital and family involvement were not statistically significant. There is therefore no evidence to support hypotheses H1b and H2b.



**Table 4:** Logistic Regression Models of Incremental Innovation (n=259)

	Incremental Product		Incremental Process	
	Model 1	Model 2	Model 3	Model 4
<i>Control Variables</i>				
Firm Size	<b>.46 (.19)<sup>b</sup></b>	.19 (.20)	<b>.56 (.18)<sup>a</sup></b>	<b>.38 (.19)<sup>b</sup></b>
Firm Age	-.19 (.27)	-.44 (.29)	-.24 (.26)	<b>-.45 (.27)<sup>c</sup></b>
Education Undergrad	-.48 (.44)	-.18 (.47)	<b>-.98 (.41)<sup>b</sup></b>	<b>-.79 (.43)<sup>c</sup></b>
Education Master	.23 (.51)	.43 (.54)	-.38 (.43)	-.25 (.45)
Habitual	.10 (.43)	.39 (.44)	.31 (.39)	.55 (.40)
Import /Export	.26 (1.21)	.34 (1.24)	1.37 (1.13)	1.55 (1.16)
Manufacturing	<b>-1.99 (.87)<sup>b</sup></b>	<b>-1.70 (.90)<sup>c</sup></b>	-.92 (.74)	-.59 (.77)
Construction	<b>-1.62 (.71)<sup>b</sup></b>	<b>-1.33 (.75)<sup>c</sup></b>	.26 (.60)	.67 (.64)
Wholesale/Retail	-.71 (.66)	-.47 (.69)	-.32 (.47)	-.15 (.49)
Transportation	-.29 (1.24)	.18 (1.30)	.95 (1.19)	1.52 (1.29)
<i>Independent Variables</i>				
Social Capital	-----	<b>1.33 (.34)<sup>a</sup></b>	-----	<b>1.10 (.30)<sup>a</sup></b>
Family Involvement	-----	<b>1.42 (.64)<sup>b</sup></b>	-----	<b>1.12 (.60)<sup>c</sup></b>
Constant	<b>1.79 (.96)<sup>c</sup></b>	<b>-4.63 (1.73)<sup>a</sup></b>	.88 (.81)	<b>-4.48 (1.56)<sup>b</sup></b>
-2 Log likelihood	<b>205.47<sup>a</sup></b>	<b>182.68<sup>a</sup></b>	<b>234.44<sup>a</sup></b>	<b>216.95<sup>a</sup></b>
Cox and Snell	.07	.14	.09	.15
Nagelkerke $R^2$	.11	.25	.15	.24
Percentage Correctly Classified	84.9	85.3	79.9	79.2

<sup>a</sup> Significant at the 0.01 level; <sup>b</sup> Significant at the 0.05 level; <sup>c</sup> Significant at the 0.10 level. Standard errors between parentheses.

**Table 5:** Logistic Regression Models of Radical Innovation (n=259)

	Radical Product		Radical Process	
	Model 5	Model 6	Model 7	Model 8
<i>Control Variables</i>				
Firm Size	.50 (.15)	<b>.44 (.16)<sup>a</sup></b>	<b>.41 (.15)<sup>a</sup></b>	<b>.47 (.16)<sup>a</sup></b>
Firm Age	-.36 (.23)	<b>-.41 (.23)<sup>c</sup></b>	-.18 (.22)	-.17 (.22)
Education Undergrad	.34 (.32)	.45 (.33)	.06 (.33)	.05 (.34)
Education Master	.48 (.42)	.53 (.42)	.02 (.40)	-.01 (.40)
Habitual	<b>.71 (.34)<sup>b</sup></b>	<b>.82 (.35)<sup>b</sup></b>	<b>.88 (.33)<sup>a</sup></b>	<b>.85 (.34)<sup>b</sup></b>
Import /Export	<b>-1.64 (.68)<sup>b</sup></b>	<b>-1.62 (.69)<sup>b</sup></b>	<b>-2.61 (.85)<sup>a</sup></b>	<b>-2.52 (.85)<sup>a</sup></b>
Manufacturing	<b>-1.47 (.74)<sup>c</sup></b>	<b>-1.37 (.74)<sup>c</sup></b>	-.74 (.68)	-.66 (.69)
Construction	<b>-1.98 (.55)<sup>a</sup></b>	<b>-1.92 (.56)<sup>a</sup></b>	-.73 (.49)	-.65 (.50)
Wholesale/Retail	<b>-1.64 (.48)<sup>a</sup></b>	<b>-1.60 (.48)<sup>a</sup></b>	<b>-1.26 (.42)<sup>a</sup></b>	<b>-1.25 (.42)<sup>a</sup></b>
Transportation	<b>-2.41 (.84)<sup>a</sup></b>	<b>-2.36 (.84)<sup>a</sup></b>	<b>-2.13 (.88)<sup>b</sup></b>	<b>-2.11 (.88)<sup>b</sup></b>
<i>Independent Variables</i>				
Social Capital	-----	.40 (.27)	-----	.04 (.26)
Family Involvement	-----	.20 (.46)	-----	-.62 (.46)
Constant	.30 (.71)	-1.58 (1.37)	-.41 (.68)	-.06 (1.34)
-2 Log likelihood	<b>314.75<sup>a</sup></b>	<b>312.10<sup>a</sup></b>	<b>311.91<sup>a</sup></b>	<b>310.07<sup>a</sup></b>
Cox and Snell	.16	.16	.16	.17
Nagelkerke $R^2$	.21	.22	.21	.22
Percentage Correctly Classified	65.6	69.1	66.0	66.4

<sup>a</sup> Significant at the 0.01 level; <sup>b</sup> Significant at the 0.05 level; <sup>c</sup> Significant at the 0.10 level. Standard errors between parentheses.

## 6. Discussion

Whilst a substantial amount of research exists on product or service innovation, particularly in terms of manufacturing firms, there is a relatively poor understanding of the innovation profiles of family businesses. This study has therefore added to an emerging literature on innovation in this context (Chrisman and Patel 2012; De Massis et al. 2015a; Patel and Chrisman 2014), through the investigation of incremental and radical innovation of products, services and processes using a large scale data set of family firms in Saudi Arabia. This has allowed the validation of the strategic management theory in terms of family involvement and social capital in Saudi Arabia, a wealthy but nonetheless still developing nation.

This study has used logit regression techniques to investigate the presented hypotheses; two hypotheses were supported. We found a positive relationship between social capital and incremental innovation in family firms. This is consistent with the ongoing argument of the importance of resources for innovation in family firms, particularly in terms of available social capital (De Massis et al. 2015a, 2015b; Bennedsen and Foss 2015). The findings also support the argument made by Duran et al. (2016) that family businesses are efficient in rendering the conversion rate of innovation inputs into innovation outputs due to the deployment of their valuable resources such as superior relations with their external networks. This is especially prevalent in the Saudi context, where relationships are an essential element in doing business. Family businesses with strong social capital tend to be better informed about market opportunities and best practices, and their involvement in managing the business often means that they are able to deploy this knowledge to their products and services.

We also found support for the hypothesis that there is a positive relationship between the degree of family involvement in management and incremental innovation in family firms. Indeed, family involvement in managing the business can be expected to provide family businesses with the power to develop and implement the particular capabilities necessary for innovation (Duran et al. 2016). This role of family members is essential in the Saudi context given the dominance of expats in the private sector and the huge governmental support for entrepreneurship. Furthermore, family reputation is a critical cultural value that infuses the everyday life of Saudis and is strongly related to every family business, as they usually carry the family name. As a result, family members are considered the stewards of the firm and are therefore incentivized to protect the reputation of the family and the company, typically making them prefer innovation outputs that are characterized by low levels of uncertainty.

Whilst we do not know the governance structures of the family businesses and the possibility of idiosyncratic authority structures, incentives, or accountability norms (Chrisman et al. 2014), our research findings clearly suggest that family involvement and social capital are both conducive to incremental innovation within these kinds of companies. Saudi family businesses have the ability and willingness to develop innovations (De Massis et al. 2014). However, we found no positive or negative systematic relationship between family involvement and social capital with radical innovation. It is important to note that radical innovation offers more scope than incremental innovation to establish and perpetuate competitive advantage (Porter 1990), meaning that the step difference between incremental and radical innovation involves substantially greater risk and allocation of more resources over a longer period of time. As such, it involves the leaders in family businesses operating in domains outside of their comfort zones, as well as the investment and commitment of greater amounts of finance. Pursuit of radical innovation rather than incremental innovation, and thus attempts to implement innovations that are new to the

industry, poses a higher risk of potential loss of face within the family and the wider business community.

Firm size was found to be positively systematically related to all of the measures of innovation, with the exception of incremental product innovation. This suggests that businesses that are smaller may have less ability to develop innovations than their larger counterparts. Policy makers face the dilemma of either channeling resources to larger firms that are doing well in developing innovations, thereby allowing them to consolidate their positions in the market, or providing resources to smaller firms, in the belief that such initiatives might allow them to perform as well as their more successful counterparts.

The sector of firm activity had little systematic influence upon incremental innovation. Firms in manufacturing and also construction are less likely than those in the service sector to introduce an incremental product innovation. In contrast, all five of the sector dummy variables in the model of radical product innovation and three of the sector dummy variables – import/export, wholesale/retail and transport were significant in the models of radical process innovation. The results suggest that there is substantial variation based on sector on whether firms are going to be radical innovators. Firms in the service sector are more likely than firms in the other sectors in our study to be radical product or radical process innovators. Policy makers are thus faced with the dilemma of either channeling more resources to service sector firms who are already more likely to be radical innovators or to target firms in other sectors in an attempt to close the gap between sectors in the prevalence of radical product and process innovation.

The prior business ownership experience of the key decision makers, which our study measured by capturing data on whether they were habitual or novice entrepreneurs, was found to have a strong association with radical innovation. Specifically, habitual entrepreneurs were found to be more likely than novice entrepreneurs to have introduced radical products/services or radical process innovation. This supports previous established research into the differences between novice and experienced entrepreneurs (Westhead et al. 2005). Finally, the level of educational achievement among participants was not systematically related to innovation. This suggests that policy makers who target successful habitual entrepreneurs will see greater rewards because that type of entrepreneurs are more successful with regard to radical innovation.

## **7. Conclusions, Limitations and Future Research**

This study is one of the few to have investigated innovation in Saudi Arabia. It presents an interesting and complex account of how incremental and radical innovation are influenced by resource capabilities, namely social capital, and family business involvement, as well as firm size, age and entrepreneurial experience. The decision was made to focus upon family businesses because these are the predominant organizational structure in Saudi Arabia and because of the

broader need to understand the heterogeneous nature of family businesses in emerging and developed nations in more detail. In Saudi Arabia, the overwhelming majority (95%) of all companies are family run, contributing approximately 50 percent of non-oil GDP and providing employment for 80 percent of total private sector employees (The Council of Saudi Chambers, 2014). Our research has examined family businesses in Saudi Arabia. We believe that the results will resonate with studies in other Gulf Cooperation Council (GCC) countries, such as Kuwait, Bahrain, Oman, and the United Arab Emirates, as well as other nations where family businesses are the main organizational form, such as Italy, Spain and many countries in Asia (Kets de Vries et al. 2007). Our results indicate that incremental innovation is strongly related to resources, including social capital, family business involvement and firm size. In contrast, neither social capital nor family involvement were found to be related to radical innovation. Furthermore, in contrast to incremental innovation, we found that business people with previous entrepreneurial experience are more likely to engage in radical innovation.

Our study makes the following contributions. First, it enriches the literature on family business innovation, by focusing attention on the business resources of family involvement and social capital as antecedents of innovation outputs. This is important, as deployment of unique resources in family businesses is pivotal in the high transformation rate of innovation inputs into outputs in these kinds of companies (Duran et al. 2016). In so doing, this study also responded to the call made by De Massis et al.'s (2015b) for research to provide deeper understanding of innovation through an examination of family firms' resources and innovation strategies. This was achieved through the examination of the fit between family business resources (represented by family involvement and social capital) and family business innovation output (represented by adopting incremental and radical innovation outputs). Furthermore, control variables related to the quantity and quality of resources available were included in our study.

Secondly, the investigation of whether family businesses entail incremental or radical innovation in products and processes offers a better understanding of the types of innovation output that are best supported by family businesses resources. This contributes to the family involvement and social capital literature by highlighting the importance of social networks regarding the innovativeness of family firms. It also emphasizes the risk-averse attitude of family members involved in the business with regards to innovations with uncertain outcomes in a context where social relationships and family reputation are highly regarded and preserved. Additionally, process innovation has been comparatively under-researched in investigations of the innovation activities of family firms.

Thirdly, this study has made an important contribution to understanding the heterogeneous nature of family firms and their associations with innovation. We emphasize the heterogeneity of family firms to enable better understanding of the impact of the degree of the unique resources available to these companies and the effect that management involvement can have on the innovativeness of family

firms (De Massis et al. 2015a; Chrisman et al. 2014; De Massis et al. 2013). Lastly, the vast majority of the previous research on family firm innovation has focused on studying companies in the US and Western European countries, such as Italy and Spain. Clearly, there is therefore a need to investigate and better understand family business innovation in Gulf countries, such as Saudi Arabia.

All studies suffer from limitations and as such offer possibilities for future research. Like the vast majority of research in this field, the current study along has utilized cross-sectional data. However, a longitudinal study could be conducted to potentially provide useful insights of innovations outputs in family firms. The findings of this study are also based on self-reported data to measure innovation, although it should be noted that the common method bias test showed no concerns. Additionally, the empirical results provided by this study are based on a sample of Saudi family SMEs. Most studies on family businesses have been conducted in western countries, which are different from Saudi Arabia in both cultural and social terms. As the features of entrepreneurship and family businesses vary across countries and cultures (Krueger et al. 2013; Ivanova et al. 2015), it would be interesting to test the relationships in a nearby Gulf estate with a similar culture. Furthermore, innovation in this study was measured using dichotomous variables, which may limit our understanding of such a complex phenomenon as innovation. Although our research has drawn upon quantitative techniques to analyze a large data set, space in the questionnaire was limited. Whilst we were able to obtain information about the innovation outcomes, we did not include questions on how the various innovation activities are conducted, preventing our effective contribution to the debate on open and collaborative innovation (Chesbrough 2003a, 2003b; Chesbrough and Bogers 2014; Feranita et al. 2017). A future study could therefore include questions on information usage to contribute to the open innovation debate. Finally, any future study should consider utilizing qualitative research techniques to investigate how and to what degree each family member contributes to innovation management at the participating companies.

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