The process of knowledge accumulation in family firms: An empirical analysis

Ismael Barros C.[1]

Juan Hernangómez B.[2]

Natalia Martín Cruz [2]

[1] Escuela de Ingeniería Comercial, Universidad Austral de Chile.
[2] Departamento de Organización de Empresas y Comercialización e Investigación de Mercados, Universidad de Valladolid.

Abstract

In the family firm, the process of knowledge accumulation is strongly influenced by the common history of the family, the relationships of trust and the affective relationships between the family members that foster communication which improves knowledge management and promotes learning. All of this leads to better organizational effectiveness in this particular group of businesses. With the goal of verifying these relationships, we conducted an empirical analysis by means of a sample of 102 non-listed family firms in Spain; the data was evaluated through an analysis of *Partial Least Squares* (PLS). The results suggest that the components of involvement and essence, basic to the concept of the family firm, have distinct effects over the process of knowledge accumulation. Furthermore, a direct and positive relation is observed between knowledge accumulation and the organizational effectiveness of the family firm.

1. Introduction

The research suggests that family firms[1] excel in performance over non-family firms (Anderson and Reeb, 2003), however, the mechanisms and processes that bring about these differences in performance still need to be studied in detail (Chrisman *et al.*, 2009). Contributions from the resource-based theory indicate that family involvement in the firm is the source of the bundle of distinctive resources (*familiness*)[2] (Habbershon and Williams, 1999) and the source of competitive advantage in the family firm (Habbershon *et al.*, 2003).

In the process of creating *familiness* in a firm, the founder and descendents must have the desire to pass the business on to the next generations. With this, the family's values and culture are imprinted on the firm and at the same time, the family transfers its experience and knowledge in a way that permits the viability and expansion of the firm. The family vision is thus projected onto the firm, making it have distictive characteristics supported by the family and the family relationships; at the same time the family aborbs the qualities of the business and its impacts on life and family routines. (Sorenson, 2000).

The components of *familiness*, thus, have an essential role in the process of the knowledge accumulation, as recognized by Chirico (2008) in his empirical study of four cases of family firms in the wine sector in Italy and Switzerland. The results of his analysis allowed him to propose a model of knowledge accumulation that serves as the point of departure in the study of the process of knowledge accumulation in family firms. While this model also poses the effects of the accumulation of knowledge on the survival of the family firm, further research remains to be done to improve the understanding of this relationship considering the organizational routines that are generated as a result of this survival. (Teece, 2007).

It is the aim of this work to further the understanding of the antecedents and the consequences of the process of knowledge accumulation in family firms from the model proposed by Chirico (2008). To do this, we use the existing literature on family firms that suggests that the involvement (ownership,

[1] In agreement with the standard criteria such as 'the participation of the family in the business', which have been utilized in prior studies (Chua *et al.*, 1999; Claver *et al.*, 2009; Basco and Pérez Rodríguez, 2011), an operating definition of family firm is adopted based on two characteristics that firms must have in order to be considered family firms: first, the family members must participate in the ownership of the firm, the management boards and the board of directors; second, there must be an intention of transgenerational control.

[2] *'Familiness* is defined as the unique bundle of resources and capabilities a particular organization possesses because of the interaction between the family, its individual members, and the business (Habbershon and Williams, 1999).

management and generational transfer) and the family essence (family values and culture, predispostion of the family to maintain the business for the long term) constitute the distinctive elements of the family firm and form a fundamental part of the process of the knowledge accumulation. In addition, we use the fundamentals of the dynamic capability approach to discover the relationships between this process of the accumulation of knowledge and its effects on the generation of effective organizational routines that guarantee the survival of the family firms.

Our study of a sample of a representative group of non-listed Spanish family firms, contributes to the literature on family firms in several areas. In the first area, in the ambit of family firm research, it improves the understanding of how the involvement and essence of the family in the firm promotes the process of knowledge accumulation (Chirico, 2008). In the second area, this work contributes to the understanding of how involvement and family essence promote the generation of resources and capabilities as basic elements of organizational effectiveness, behavior, and performance of the family firm (Astrachan, 2010). In the third area, this work contribute to the incorporation of dynamic capabilities, providing a discussion about how participation and essence can contribute to this process in the family firm (Chirico and Salvato, 2008). Finally the research offers evidence with respect to the behavior of non-listed family firms (Sharma and Carney, 2012).

In the sections that follow, we first present the conceptual framework and the hypothesis. The second section presents the empirical study, its variables, measurements and the analytical method. Finally we present and discuss the results and the conclusions along with implications and proposals for future research.

2. The process of knowledge accumulation in the family firm

The resource-based theory proposes that the participation of the family in the firm can be the origin of distinctive resources (*'familiness'*) (Habbershon and Williams, 1999), or the source of the competitive advantage for the family firm (Habbershon *et al.*, 2003). However, this theory develops static arguments about the effects of '*familiness*', without incorporating the temporal dimension; it only analyzes the resource contribution and doesn't clearly identify what resources and capabilities the family can transfer by means of the dynamic interaction of the family and the firm (Habbershon *et al.*, 2003). The theory of dynamic capabilities can remedy this deficiency since it considers that knowledge can play a greater role in firm strategy, covering skill acquisition, learning and the accumulation of intangible assets in the organization (Teece *et al.*, 1997).

In the family firm, the process of knowledge accumulation[3] is unique; the emotional involvement, the common life history and the use of private language in family firms all improve communication between family members (Tagiuri and Davis, 1996). This allows them to create more efficient routines of knowledge exchange with greater privacy in comparison with non-family firms, thus developing an idiosyncratic knowledge which fosters the recombination and reconfiguration of family resources and the continuity of the business from generation to generation (Chirico and Salvato, 2008).

One of the principal challenges in the field of family firms is to understand how the family contributes to the performance of the firm (Basco, 2013). In general, the literature shows that the field has evolved using two different approaches to explain family firm performance: the involvement approach and the essence approach (Chrisman *et al.*, 2005).

The involvement approach has been utilized by the research in order to distinguish family firms from non-family firms (Chua *et al.*, 1999), in other words, it is based on family ownership, family management and the presence of multiple generations of the family in the firm. Family participation is a necessary condition but it can't predict the extent to which the family applies its influence (Chrisman *et al.*, 2012). The essence approach considers the intentions of transgenerational control

[3] In our research we understand this as the explicit and tacit knowledge that the family members that work in the firm have obtained and developed through education and experience (Chirico, 2007).

and family commitment, manifested through the long term orientation of the firm, the longevity of the managers, the strong social capital and the socioemotional wealth that usually characterize firms with substantial family involvement (Chua *et al.*, 1999).

Family involvement is a precondition to essence (Chrisman *et al.*, 2012). Together, involvement and essence constitute family influence (*familiness*) (Chua *et al.*, 1999). This influence is manifested in a variety of ways: through the strategic decision-making process of the firm (Klein *et al.*, 2005); in the family's intention to maintain the control (Litz, 1995; Gómez-Mejía *et al.*, 2007); in the behavior that is a consequence of the vision developed by a dominate coalition that controls the firm with the intention that the firm be sustainable throughout the generations (Chua *et al.*, 1999); and the generation of unique resources, indivisible and synergistic capabilities derived from the participation of the family and its interactions (Habbershon *et al.*, 2003).

Both approaches complement and incorporate each other in capturing the diversity of family firms (Chrisman *et al.*, 2005; Chrisman *et al.*, 2012). In this sense we use both approaches in an integrated manner in order to try to explain how the effects of the family can influence the process of knowledge accumulation and can drive the development of routines that improve the efficiency of the family firm.

Recent literature (Carnes and Ireland, 2013) suggests that *familiness* exerts a positive influence on the process of resource stabilization and enrichment; the stabilization process includes activities designed to maintain current firm strategy, on the other hand, the process of enrichment of resources has a goal to extend, develop and recombine the capabilities of the firm. Therefore, *familiness* resources allow the family firm to deploy its capabilities to explore and take advantage of resources, as well as the development of capabilities that adjust resource allocations in a timely manner.

The interactions of the family, the firm and the family members influence the bundle of resources that are available in the organization (Habbershon and Williams, 1999; Habbershon *et al.*, 2003); in order to use these resources, the family firms foster their idiosyncratic process of knowledge management and learning; this process is strongly conditioned by the family's presence in the firm through ownership, management and generational involvement.

Family firms are, in general, organizations where the learning process and knowledge management are accomplished in a distinct manner, promoted by the intense social interactions between family

members (Cabrera-Suárez *et al.*, 2001). Social capital consists of several dimensions: structural (connections and networks between members), cognitive (shared experiences and understandings between members that provide enduring relationships) and relational (the nature and quality of connections) (Nahapiet y Ghoshal, 1998). These elements generate the unique capabilities of the family firm which are responsible for those distinctive processes. The specific knowledge of the family firms, as well as the abilities to create it and transfer it, are considered fundamental assets (Grant, 1996a), which are positively associated with high levels of performance (Cabrera-Suárez *et al.*, 2001).

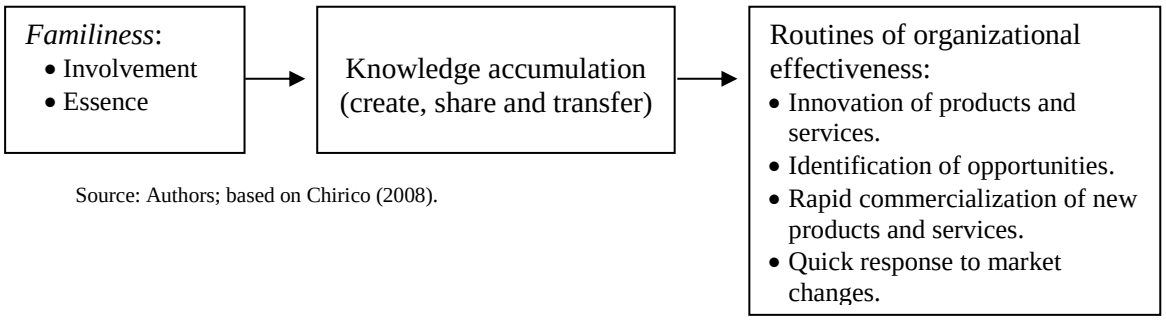
Knowledge in family firms refers to explicit knowledge (family protocols) and tacit knowledge (learned by doing) that the family members have acquired and developed through education and experience both within and outside of the organization (Chirico, 2008). In this sense, it is particularly important to analyze the components of tacit knowledge of family firms; to live in the family and work in the firm from a young age allow the family members to develop profound levels of specific tacit knowledge of the firm (Chirico and Nordqvist, 2010). Thus, the accumulation of knowledge can start within the family, in the home, and continue throughout a career in the firm (Gersick *et al.*, 1997; Chirico and Salvato, 2008). However, it is vital to the development of the process of accumulation of knowledge that a sense of trust exists between the family members that facilitates the ease of their interactions (Chirico, 2008).

Knowledge accumulation is a mechanism of organizational learning from which the firm's organizational routines are developed, providing the basis for the generation of dynamic capabilities (Zollo and Winter, 2002) that permit an organization to create, extend or modify its resource base (Helfat *et al.*, 2007). Dynamic capabilities allow a firm to broaden, change, or create ordinary capabilities by accessing and recombining knowledge, thus enabling success in its organizational effectiveness and generation of value over time (Teece *et al.*, 1997; Eisenhardt and Martin, 2000; Zollo and Winter, 2002).

Organizational effectiveness can be defined as the degree to which a firm makes good decisions which allow it to capture a greater market share, get better results in growth and innovation compared to its competitors (Zheng *et al.*, 2010). Research confirms that knowledge management is a key tool for the

achievement of organizational effectiveness (Gold *et al.*, 2001; Zheng *et al.*, 2010). Thus, a firm can take advantage of learning to improve its capabilities and create value in over time, and, in agreement with Gold *et al.*, (2001), improve its ability to innovate, coordinate efforts, quickly market new products, respond to changes in the market and maintain the capability to anticipate unexpected changes. In this way, from the point of view of the dynamic capability approach, capabilities emerge in the organization to develop specific tasks that become, with the passage of time, organizational routines (Teece, 2007) that allow the knowledge management processes to foster organizational effectiveness. In the family firms, these routines are fostered by involvement and family essence and their idiosyncratic processes of knowledge management. Those elements, taken together, can contribute to explain the potential source of competitive advantage of the family firm (Figure 1).

Figure 1: The process of knowledge accumulation and its effect on organizational effectiveness in family firms



Source: Authors; based on Chirico (2008).

Family involvement and essence and knowledge accumulation

Family influence in the firm is exercised through involvement, that is to say, by means of the ownership and management structures, the family involvement in management, and the generations that participate in the firm (Chrisman *et al.*, 2012), and the essence, which is generated from the family's intention to maintain control over successive generations (Litz, 1995; Chua *et al.*, 1999; Chrisman *et al.*, 2004), which, from a socioemotional perspective, reveals the commitment of the family with the firm (Klein *et al.*, 2005) and promotes the implementation of knowledge accumulation, with the clear objective to maintain control and preserve the family's socioemotional wealth in the long run (Gómez-Mejía *et al.*, 2007).

The literature emphasizes that involvement is a pre-condition to essence in a family firm (Chrisman *et al.*, 2012); thus involvement is related to essence-- if the former increases, the latter should also (Chrisman *et al.*, 2012). Therefore, essence measures the family's intention to manage the firm in order to achieve its vision of the business that goes beyond the life expectancy of the current generation (Chua *et al.*, 1999; Gómez-Mejía *et al.*, 2007) and that leads it to pursue non-economic objectives (Chrisman *et al.*, 2012). It represents an unequivocal signal that the family will exercise its influence to establish processes that guarantee knowledge accumulation, especially processes between family members which will permit knowledge transfer to the following generations, thus creating and preserving the socioemotional wealth of the family members (Gómez-Mejía *et al.*, 2007; Gómez-Mejía *et al.*, 2011a).

Family commitment directs the personal values and beliefs of the family members towards the objectives of the firm (Chrisman *et al.*, 2012); this commitment not only derives from being shareholders of the firm--a necessary, but not completely sufficient condition--but it also requires that the family feel that the firm is theirs, and requires that its members involve themselves in the firm activities, even in an informal way (Carlock and Ward, 2001). Not all of the family members will have the same level of commitment and interest in the family firm, especially after the second or third generation (Thomas, 2001); thus family members from different generations can have differing perspectives and these differences can generate conflicts (Gersick *et al.*, 1997; Grote, 2003) affecting their commitment to the firm. In this sense a low level of commitment with the family firm can negatively affect the process of knowledge accumulation (Barach and Ganitsky, 1995; Nonaka and Takeuchi, 1995; Astrachan *et al.*, 2002). In view of all of the above, it is suggested that the components of involvement (power and experience) can have different impacts over the essence. Family members, who want to retain the family in the firm, are willing to go beyond the parameters of their normal job duties, which help in the transfer of knowledge and experience (Chirico, 2008). The normal co-worker relationships go beyond the boundaries of the workplace which give rise to the existence of better cooperation and interchange of information and experiences, helping to overcome workplace conflicts (Kusunoki *et al.*, 1998). The close workplace relationships allow family members to acquire experience and develop practical skills in the family firm (Chirico, 2007); furthermore, the

trans-generational communication in the family firm can help knowledge creation in the long term (Gersick *et al.*, 1997; Cabrera-Suárez *et al.*, 2001; Kellermanns and Eddleston, 2004).

Thus, the power represented by the family's involvement as shareholders and directors in the firm, as well as the depth of experience, shown by the number of generations involved in the ownership, governance and management, affect the family essence-- in other words, the commitment and the sence of emotional belonging of the family members. This essence becomes an element that mediates in the relation between the components of involvement and the in process of internal knowledge accumulation in the family firm. Thus we formulate the following hypothesis:

H1: Essence has a mediating effect in the relationship between the components of involvement and the process of internal knowledge accumulation in the family firm.

Involvement and essence are considered key aspects of the desire to preserve capital, not just shareholder equity, but also socioemotional capital throughout the generations, causing the family firm to hire family members to occupy management positions--mainly for reasons of control and flexibility-- instead of hiring non-family executives (Eddleston *et al.*, 2008). Prior research suggests that family firms are reluctant to professionalize (Kets de Vries, 1993; Gersick *et al.*, 1997; Gómez-Mejía *et al.*, 2007); this tendency is based on the desire for the preservation of socioemotional wealth of the family in the family firm (Gómez-Mejía *et al.*, 2011a). Delegating authority to non-family members reduces control over strategic decisions; one example is that hiring an expert, who has specialized knowledge which differs from the experience of the family owners, increases the asymmetries of information (Gómez-Mejía *et al.*, 2011b). In particular, hiring of non-family directors increases the conflicts about the firm's goals due to the divergent motivations and career objectives of the family employees versus those non-family employees (Gersick *et al.*, 1997).

Family firms are usually less formal with their human resource policies; the selection processes are normally limited to a small number of candidates who share the same family values and culture (Cruz *et al.*, 2010). In addition, they put more emphasis on informal relationships (Kotey and Folker, 2007) and give more importance to personal relationships (Fiegener *et al.*, 1996). The intention of trans-

generational family control puts on emphasis on long-term planning, while, in general, external training focuses on short-term goals; therefore, new employees are involved with the values and norms of the organization, strengthening their identification with the firm and building the socioemotional wealth of the family (Gómez-Mejía *et al.*, 2011a). In short, the family's desire to build an atmosphere that helps transmit the family culture and values is associated with a lower propensity to use external sources of knowledge accumulation. This argument allows us to propose the following hypothesis:

H2: Essence has a mediating effect on the relationship between the family involvement components and external knowledge accumulation in the family firm.

Knowledge accumulation and organizational effectiveness

Knowledge needs to be accumulated in order to generate value over time (Chirico, 2008); thus accumulation of knowledge is the motor for organizational learning mechanisms (Nielsen, 2006) and constitutes the basic pillar for the generation of dynamic capabilities (Nonaka, 1994; Grant, 1996b; Zollo and Winter, 2002; Nielsen, 2006). In this way, organizational learning mechanisms allow the configuration and re-configuration of the firm's resources and operational routines (Cepeda and Vera, 2005) by means of the management of knowledge within the firm (Easterby-Smith and Prieto, 2008). New knowledge and the exploitation of current knowledge facilitate an understanding of a complex and uncertain environment (Zollo and Winter, 2002).

Knowledge accumulation fosters the adjustment and continuous development of organizational activities and processes; these capabilities allow a firm to innovate new products, processes and services or to improve those already in existence (Nonaka *et al.*, 2000), promoting organizational effectiveness (Gold et al., 2001; Zheng et al., 2010). The knowledge accumulation in the family firm links the bundle of resources and capabilities provided by the family with the development of dynamic family capabilities that permit the continuous development[4] of closer relationships--more family-like--with distributors, which in turn can provide benefits such as insight into changing consumer tastes.

[4] Continuous development incorporates the notion of change and evolution of knowledge and learning over time (Zollo and Winter, 2002).

Knowledge is manifested in the wisdom and skills that the family members have acquired and developed through education and experience both within and outside of the firm (Chirico, 2008). Thus, the form in which the firms create, transfer and use knowledge has an impact on their performance and skill in competing within an industry (Nonaka, 1994; Grant, 1996a; Spender, 1996). Consistent with Chirico (2008), in family firms, knowledge is better accumulated when the family members value the family workplace relationships within the firm, the commitment and psychological ownership with the firm, as well as in-house training courses and family firm experience, and/or hiring of family executives in the firm. In this manner, the family firm develops a strong organizational culture of continuous improvement and learning in which the family workplace relationships have great weight in the process of continuous improvement, achieving greater levels of organizational effectiveness. Thus, we propose the following hypothesis:

H3: The internal accumulation of knowledge has a positive influence on organizational effectiveness in the family firm.

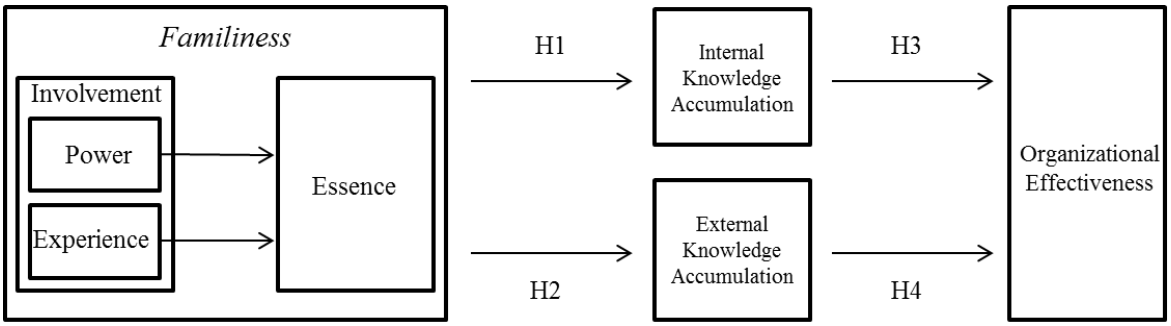
In regards to external knowledge accumulation, training outside the family firm is a form of learning in which the family members have the opportunity to create new knowledge, combining their tacit knowledge with their explicit knowledge (Nonaka and Takeuchi, 1995). This type of training allows family members to acquire new knowledge and develop skills which, when brought to the firm, can be shared and transferred to the other members of the firm (Chirico, 2007) and transferred across the generations (Ward, 1987; Barach and Ganitsky, 1995). Once internalized, this knowledge serves to develop a sense of family identity oriented to develop new strategies, administrative systems or operating systems in the firm (Ward, 1987). Thus, knowledge acquired outside of the family firm, when shared and transferred over time within the firm, generates positive returns for family firm management (Chirico, 2007). Likewise, when the knowledge and experience are acquired by employing the talents of non-family members (specially qualified people) who work for, or have relationships with the family firm, it increases the openness and flexibility of the family firm (Ward, 1987; Jaffe and Lane, 2004).

To summarize, absorbing, combining and integrating the new knowledge with that already available in the firm offers new perspectives of sustainability for the firm over the generations (Chirico, 2008). Obtaining new knowledge results in management improvement, fostering family organizational effectiveness. In agreement with these approaches we propose the following:

H4: *The accumulation of external knowledge has a positive influence on organizational effectiveness in the family firm.*

Figure 2 summarizes the research model and the study's hypothesis

Figure 2: Research model and study hypothesis



3. Empirical research

Information gathering process and characteristics of the sample

The empirical research was structured and designed with the objective of testing the research model. This consisted of establishing the type of information required, the source of the data and the method of collecting it. Due to the nature of the research model, the type of required information is not normally found in existing data bases, thus it was necessary to prepare and conduct a survey to obtain the information.

We adopted the context of Spain to test the research model given its proximity and the relative importance of the family firm; in Spain there are 2.9 million family firms that produce more than 70% of the GDP and create 13.9 million jobs (Casado and Rodríguez, 2009), factors that are important for

our study. More specifically, our area of interest is medium and large family firms that are non-listed. However, as has been noted, there is little research on this segment of family firms, since 80% of the research has concentrated on listed family firms (Sharma and Carney, 2012). Therefore, two restrictions were imposed in order to narrow down the firms that were the object of the research. Listed firms were excluded because their management and ownership structure have defined bodies that distance the family from the firm, limiting the opportunity for family-firm relationship links which are important aspects for our study. In addition, it is thought that these firms don't generally maintain, the qualities of *familiness* that characterize their initial stages, which has been diluted by the partitioning of their ownership (Basco and Pérez Rodríguez, 2009).

The second restriction was to only include firms that met the standard criteria of a *family firm*. Spain doesn't make available official statistics specifically for family firms (Arosa *et al.*, 2010); furthermore in the absence of a consensus with respect to an appropriate definition of what is a family firm (Cruz and Nordqvist, 2012), it becomes necessary to utilize different parameters in order to define this concept (Chua *et al.*, 1999; Astrachan *et al.*, 2002). Following standard criteria such as "the participation of the family in the firm" that have been used in prior studies (Chua *et al.*, 1999; Claver *et al.*, 2009; Basco and Pérez Rodríguez, 2011), an operational definition was arrived at based on two characteristics that the firms must have in order to be considered family firms: first, the family members must participate in the firm ownership, in the board of directors, and in senior management; and second, there must be an intention of trans-generational family control. It is hoped that these elements are ex post acknowledged with the development of study (Claver *et al.*, 2009).

The data base selected, using the characteristics required by the research, was the ranking of the 5000 largest firms in Spain, published in 2012 by the magazine *Actualidad Económica* (ranking defined by sales volume). This ranking is appropriate for this study because it is principally composed of non-listed firms. The final sample included 1656 firms.

The survey was prepared according to a review of related literature with the study variables included in the research model and validated in accordance with standard procedures. The process of sending and receiving the surveys took place between May and September of 2013; 135 surveys were received, representing a response rate of 8.15%, similar to that obtained in other studies of family firms (Lindow

et al., 2010; Zellweger *et al.*, 2012). There were 125 valid surveys, of which 17 were identified as non-family firms and 6 as listed firms, resulting finally in 102 usable surveys.

The usable surveys matched the objectives of the research as 99% of the respondents indicated that their firms were family-owned, with family members on their management boards (95%) and on their boards of directors (98%); in addition, 93% of them anticipated that the future CEO of their firm would be a family member. These aspects are included in the operational definition adopted for the present study (family involvement in the ownership, management and direction of the firm and the intention for transgenerational control).

In order to check for the non-response bias, we divided the sample into three groups and compared the first responses received with the last to respond to the survey. The underlying assumption is that those in the group that responded last are similar to those who didn't respond at all. The completed ANOVA shows statistically insignificant differences between the first and last respondents at a 99% level of significance. Thus we can confirm that there are no problems with respect to the non-response bias.

On the other hand, the possible limitation that our data is based on the subjective evaluation of a main informant can lead to common methods bias (Doty and Glick, 1998). This was rectified by applying the Harman single-factor test that no factor registered a significant portion of variance; our analysis suggests that the common method variance isn't a problem. In addition, to avoid the reduction construct validity due to the participation of an informant, we follow the suggestion Podsakoff *et al.* (2003) to keep the questions as simple as possible and clearly separate the dependent and independent variable in the our questionnaire We have concluded that the sample used is of good quality.

Variables and measures

Power and Experience; Family involvement

Power is the direct and indirect domination exercised through the financing of the firm (firm shares in the hands of the family) and through the direction and control of the firm by means of the management and/or participation of the family members in the boards of management and direction of the firm (Klein *et al.*, 2005). In other words, family influence is manifested by the direct involvement of family members in the ownership, governance and management of the firm (Astrachan *et al.*, 2002) and, in an

indirect form through other firms or by means of the designation of members of the management board that can be family or nonfamily members (Klein *et al.*, 2005).

In our work, one measure of power is the percentage of ownership in the hands of the family; to measure this, the survey respondent was asked to indicate the percentage of the ownership belonging to the family members. Another measure of power is the direct and indirect participation of the family members in the management boards and the boards of directors; this was measured by asking for the percentage of board positions occupied directly or indirectly by family members. Thus to measure power, we used two items of the F-PEC sub-scale of power: (1) the percentage of management board positions occupied directly and/or indirectly by family members and (2) the percentage of governing board positions occupied directly and/or indirectly by family members.

Experience refers to the generational involvement in the ownership and/or positions of direction and management on the boards that govern the firm (more generations provide more opportunities for relevant family memory) (Klein *et al.*, 2005). Thus, family influence in a firm by way of experience is related to leadership succession, the number of active generations and family members that contribute to the family firm. There is a consensus that each succession adds considerable and valuable firm experience to the family and the firm (Astrachan *et al.*, 2002).

Experience was thus measured by asking each survey participant about the family generations present in the ownership, administration and management of the firm (Rutherford *et al.*, 2008; Holt *et al.*, 2010). As suggested by Astrachan *et al.* (2002); Klein *et al.* (2005); Rutherford *et al.* (2008); (Holt *et al.*, 2010), the elements that form part of the sub-scale of experience are weighted taking into consideration that the major transfer of experience takes place between the first and second generations, diminishing with succeeding generations. Therefore, experience was measured by three items of the F-PEC subscale of experience: (1) the number of generations involved in the ownership of the firm, (2) the number of generations involved in the board of management and (3) the number of generations of family members involved on the board of directors.

Theses variable are among the measures most utilized in the literature on family involvement (Chua *et al.*, 1999; Astrachan *et al.*, 2002; Klein *et al.*, 2005; Chrisman *et al.*, 2012).

Family essence

Essence is reflected in the degree to which the family objectives and values are aligned or overlap with those of the firm (Astrachan *et al.*, 2002; Klein *et al.*, 2005; Holt *et al.*, 2010). Thus, from the essence point of view, family influence is linked to the degree in which the family objectives and values are shared by the firm and how this influence might be exerted.

To measure family essence a version of the F-PEC sub-scale of culture was used. Consistent with Holt *et al.* (2010) and Chrisman *et al.* (2012) the representative elements of the F-PEC sub-scale of culture refer to whether the family members (a) feel a loyalty towards the family business, (b) are in agreement with the family firm's objectives, plans and politics, (c) have and share the same firm values, (d) are concerned about the future/destiny of the firm, and (e) are willing to exert great efforts in order for the firm to be successful. The measurement of these five items was done using the Likert 1-5 scale (where 1 is strongly disagree/never and 5 is strongly agree/always).

Knowledge accumulation

This variable includes the sources of internal and external knowledge accumulation proposed by Chirico (2008) that can contribute to the accumulation of knowledge through the generations.

Internal accumulation of knowledge was measured using the following items related to the family members who work in the firm: (a) attend practical training courses within the family firm, (b) show commitment to the family firm, and (c) feel that the family firm is their own.

The accumulation of external knowledge was measured considering the following: (a) family members working in the firm who attend academic courses or practical training courses outside of the firm, (b) the family firm is willing to hire non-family member executives. The measurement of these five items was done using the Likert 1-5 scale.

Organizational effectiveness

This variable was constructed consistent with the microfoundations proposed by Teece (2007). The included items attempt to identify organizational effectiveness by means of the development of permanent organizational activities and processes derived from the learning and knowledge capabilities of the firm. Thus the items used are related to continuous development: (a) internal

activities of research and development, (b) activities to identify changes in customer needs, (c) processes to take advantage of technological developments, (d) adaptation processes for the business model, (e) processes of asset management, (f) activities such as job rotation, regular multi-level meetings, information bulletins/blogs, configuration of multi-functional teams and, (g) processes of resource adaptation to take advantage of new opportunities. These routines have been recognized as evidence of organizational effectiveness (Gold et al., 2001; Zheng et al., 2010). The measurement of these items was again done using the Likert 1-5 scale.

Control variables

We include three control variables that have normally been utilized in prior research related to the behavior of family firms: age, size and industrial sector to which the firm belongs (Chrisman *et al.*, 2004). The age was measured by the years in business; the family can have a deeper attachment to the firm over time (Zellweger and Astrachan, 2008), which can affect its disposition towards knowledge accumulation. The size was evaluated based on the number of employees. A firm that grows in size can formalize and implement specific processes and procedures to accumulate knowledge. The relationship between the family and the firm can become more distant when the size of the firm grows, for example, due to the need to professionalize the firm (Chrisman *et al.*, 2012). The research indicates that family firms compete better in some industries than in others (Pollak, 1985), which could affect their predisposition towards knowledge accumulation. Industries were measured classifying the firms in accordance with the categories proposed by the Standard Industrial Classification (SIC Code). The categories include: agriculture, construction, manufacturing, transportation, commerce, service and others.

The constructs and their measurements are summarized in Table 1.

Table 1: Operationalization of the constructs

Construct Operational question	Sources
Family involvement	
Power	
Pow_1 What percentage of positions on the governance board are occupied directly and/or indirectly by family members are?	
Pow_2 What percentage of positions on the management board are occupied directly and/or indirectly by family members?	Holt et al., 2010
Experience	
Exp_1 How many generations are owners of the company?	
Exp_2 How many generations are active in the governance board?	Holt et al., 2010
Exp_3 How many generations are active in the management board?	
Family essence	
The family members working in the business:	
Ess_1 Do they feel loyalty to the company?	
Ess_2 Do they agree with the objectives of the company, its plans and policies?	Holt et al., 2010
Ess_3 Do they share the same values of the company?	Chrisman et al.,
Ess_4 Are they concerned about the fate of the company?	2012
Ess_5 Are they willing to make great efforts in order to help the business success?	
Internal knowledge accumulation (formative)	
The family members working in the business:	
Intknoacc _1 Are they attending practical training in the family business?	
Intknoacc _2 Are they showing commitment to the family business?	Chirico, 2008
Intknoacc _3 Do they feel that the family business is their own?	
External knowledge accumulation (formative)	
The family members working in the business:	
Extknoacc _1 Are they attending academic courses and practical training outside the family firm?	Chirico, 2008
Extknoacc _2 Are they willing to hire non-family managers?	
Organizational effectiveness	
The company continuously developing:	
Orgeffect _1 Internal research and development activities?	
Orgeffect _2 Activities to identify changes in customer needs?	
Orgeffect _3 Processes to take advantage of technological developments?	
Orgeffect _4 Processes to the adaptation of the business model?	Adapted from
Orgeffect _5 Asset management processes?	Teece, 2007
Orgeffect _6 Job rotation activities, regular meetings at different levels, news / blogs newsletters, MFDs settings?	
Orgeffect _7 Adaptation processes of resources to seize new opportunities?	
Control variables	
Firm_age Age of the firm.	Chrisman et al.,
Firm _size Number of employees.	2004
Firm_Ind Industry.	

4. Results

As in the other studies in the field of family firms (Chua *et al.*, 1999; Vallejo, 2009) and as recommended by recent literature (Binz et al., forthcoming; Sarstedt et al., forthcoming) we use

Partial least squares (PLS) in order to validate our research model. PLS is a model of structural equations based on variance. Our selection was made for several reasons. First, this technique allows us to include latent variable with reflective and formative indicators (Henseler *et al.*, 2009). Second, one of the advantages of PLS-SEM is that it establishes assumptions of normality of the data (Chin, 1998) and can be used in small samples (Kyu Kim *et al.*, 2011). Third, it can analyze structural models with multi-item constructs and direct and indirect relationships (Vallejo, 2009). Finally, this technique is more suitable during the first stages of the development of a theory, supporting research of an exploratory and confirmational character (Premkumar and Bhattacherjee, 2008), primarily in complex research and in research in which the theoretical knowledge is scarce (Wold, 1982). The program SmartPLS 2.0 M3 (Ringle *et al*., 2005) was used.

The estimation process with PLS is done through simple and multiple regressions, thus the required sample will be the one that provides a basis for the most complex multiple regression that can be found (Barclay *et al.*, 1995). It can be determined by multiplying by 10 the best result that is obtained from the following options: (1) the number of indicators in the most complex formative construct, or (2) the greatest number of structural paths directed to whichever of the model constructs (Chin, 1998). In our model the greatest formative construct has three items, and at least two structural paths exist that go towards whichever construct, therefore the minimum required size for a sample in our study is 30. Thus the sample of 102 observations is adequate.

Measurement model

Before estimating the structural model, we did a confirmatory factor analysis (CFA) in order to verify the measurement model. The CFA confirms our measurement model, clearly identifying the representative factors of the F-PEC scale— knowledge accumulation and organizational effectiveness. The most important is the division of the construct of knowledge accumulation into two different factors—that of accumulation of internal knowledge and that of accumulation of external knowledge, which is in agreement with Chirico (2008). The research model presents measurements associated with the constructs of reflective character and formative character. In our model, the constructs of power, experience, essence and organizational effectiveness were modeled in reflective form. The constructs of internal knowledge accumulation and external knowledge accumulation were modeled in

a formative manner. A formative measure implies that the construct is expressed as a function of the items, that is to say, the observed items form or preceded the construct (Cepeda and Roldán, 2004). Table 2 summarizes the parameters obtained in the analysis of the measurement model.

Table 2: Latent variable, measurement item, composite reliability, AVE, and Cronbach alpha

Construct and indicator	Factor loading /Weight Path	t-statistic	Composite reliability	AVE	Cronbach alpha
Power			0.923	0.857	0.836
Pow_1	0.909	6.651			
Pow_2	0.943	13.564			
Experience			0.971	0.918	0.956
Exp_1	0.917	8.940			
Exp_2	0.982	14.268			
Exp_3	0.976	13.715			
Essence			0.855	0.541	0.789
Ess_1	0.747	5.643			
Ess_2	0.711	6.282			
Ess_3	0.731	6.114			
Ess_4	0.684	4.564			
Ess_5	0.802	7.323			
Organizational Effectiveness			0.910	0.595	0.884
Orgeffect_1	0.724	12.023			
Orgeffect_2	0.822	24.770			
Orgeffect_3	0.803	14.693			
Orgeffect_4	0.791	15.289			
Orgeffect_5	0.611	5.485			
Orgeffect_6	0.711	8.763			
Orgeffect_7	0.848	17.577			
Internal Knowledge Accumulation (formative)			---	---	---
Intknoacc_1	0.241	1.428			
Intknoacc_2	0.608	2.514			
Intknoacc_3	0.481	1.855			
External Knowledge Accumulation (formative)			---	---	---
Extknoacc_1	0.699	3.400			
Extknoacc_2	0.509	2.230			
Control variable			---	---	---
Firm_age	0.019	0.362			
Firm _size	0.216	2.702			
Firm_Ind	0.025	0.468			

The measurement model of the reflective constructs was evaluated by examining the reliability of each item, the internal consistency, and the convergent and discriminate validity (Roldán and Leal, 2003). The internal reliability of each item is determined by the *items loading* for the case of the constructs with reflective indicators and is expressed as a percentage of the variance of the item compared to the construct. In order for an item to have good reliability, all the weights must be greater than 0.7 (Carmines and Zeller, 1979). All of the loading of the items exceeded the 0.7 limit with the exception of one of the constructs of essence and another of the constructs of organizational effectiveness whose weights were near 0.6; these are considered acceptable when the scales are in the first stages of development (Chin, 1998). The measurement model of the formative constructs was evaluated according to their weights, not by their factor loading (Chin, 1998). The weights of each item indicate how each one of them contributes to its respective construct (Cepeda and Roldán, 2004). Given that the formative items don't need to be correlated, the traditional indicators of reliability are not applicable (Chin, 1998). However, it must be verified that there isn't a high multicollinearity among them (Diamantopoulos and Winklhofer, 2001). The statistic most used to estimate the multicollinearity is the variance inflation factor (VIF). The VIF must have a level below 5 (Kleinbaum *et al.*, 1988). The values obtained in our analysis meet this requirement (the highest is 1.555), which indicates that multicollinearity would not be a problem.

The internal consistency of the constructs was evaluated by examining the Crombach alpha and the composite reliability. The indicators obtained for the reflective constructs exceeded 0.8 for the composite reliability and 0.7 for the Crombach alpha, which suggests that both measures are acceptable (Nunnally, 2010). The convergent validity of the construct is expressed in the degree that all the items in a construct are measured by the same concept and are evaluated by examining the average variance extracted (AVE). In our analysis the AVE indicator exceeds the 0.5 recommended by Fornell and Larcker (1981).

The discriminant validity was evaluated by examining: (1) the degree to which the square root of AVE is greater than the inter-construct correlations, and (2) the degree to which each item is greater over its respective construct than over others (Fornell and Larcker, 1981). Results showed that all items loaded more highly on their intended construct. Table 3 shows the square root of AVE was larger than any

inter-construct correlation. Thus we are able to state that all the indicators obtained have good measurement properties.

Finally, with respect to the control variables utilized, only the size of the firm, as measured by the number of employees, was significant, which suggests that the growth of the firm can affect the knowledge accumulation of the family firm. An example of this is the willingness or need to professionalize grows over time (Chrisman *et al.*, 2012).

Table 3: Inter-construct correlations and average variance extracted (AVE)

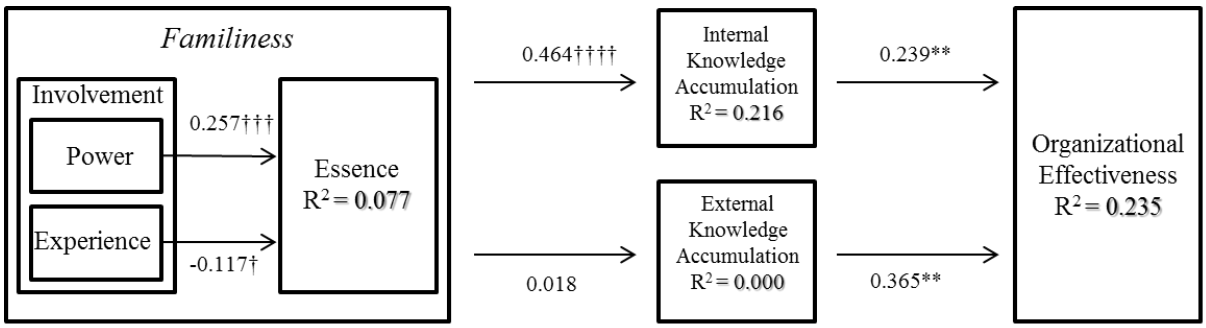
	1	2	3	4
1. Organizational Effectiveness	**0.771**			
2. Essence	0.018	**0.735**		
3. Experience	0.090	0.020	**0.958**	
4. Power	0.260	0.165	0.267	**0.926**

Note: The diagonal elements are the square root of AVE.

Structural model

Figure 3 shows the explained variance (R^2) in the dependent constructs and the *path coefficients* β for the model. In agreement with Chin (1998), a *bootstrapping* (1000 samples) was used to generate standard errors and the t-statistics. The R^2 for the endogenous variables were: essence, 0.077; internal knowledge accumulation, 0.216; external knowledge accumulation, 0.000, and for the dependent variable organizational effectiveness, 0.235.

Figure 3: Empirical model of knowledge accumulation in the family firm.



Note: * p<0.05 ** p< 0.01 (t statistic one tail) † p<0.1 †† p< 0.05 ††† p<0.02 †††† p<0.01 (t statistic two tailed).

Table 4 summarizes the results of the tests of the hypotheses. The results indicate that power positively influences essence with a coefficient of 0.257 (t=2.357) and experience negatively influences it with a coefficient of 0.117 (t=1.652). These results offer evidence with respect to the direct impact that power exercises, in other words, the impact of family involvement in the ownership and on the administrative and management boards of the firm and the incorporation of the values and culture of the family in the firm (Chrisman *et al.*, 2012). At the same time, the evidence suggests that the involvement by various generations in the ownership, administration and direction of the firm can generate conflicts and negatively impact the essence (Gersick *et al.*, 1997; Grote, 2003), that is, the values, culture and long-term vision can be affected in the long term. With respect to H1, essence can positively influence the internal accumulation of knowledge with a coefficient of 0.464 (t=4.155). However, to appropriately measure the mediating effect (Baron and Kenny, 1986) of the essence between those components of involvement (power and experience) and internal knowledge accumulation, we ran eight additional analyses (four with respect to the power component and four related to the experience component) as recommended by Frazier *et al.* (2004). The results of these analyses are shown in Tables 5 and 6.

Table 4: Results of hypothesis testing

	Hypothesis	Path coefficient	t-value	Outcome
H1	Power → Essence	0.257	2.357†††	Supported
	Experience →Essence	-0.117	1.652†	
	Essence → Internal Knowledge Accumulation	0.464	4.155††††	
H2	Power → Essence	0.257	2.357†††	
	Experience →Essence	-0.117	1.652†	Not
	Essence →External Knowledge Accumulation	0.018	0.193	supported
H3	Internal Knowledge Accumulation → Organizational Effectiveness	0.239	2.158**	Supported
H4	External Knowledge Accumulation → Organizational Effectiveness	0.365	3.450**	Supported

Note: * p<0.05 ** p< 0.01* (t statistic one tail) † p<0.1 †† p< 0.05 ††† p<0.02 †††† p<0.01 (t statistic two tailed)

With respect to the element power, the Table 5 shows that in Model 1 there is a positive relation between power (independent variable) and internal knowledge accumulation (dependent variable) with a coefficient of 0.213 (t=2.649). In Model 2 there is a direct relation between power and essence

(mediating variable) with a coefficient of 0.302 (t=3.111). Model 3 indicates a direct relation between essence and internal knowledge accumulation with a coefficient of 0.489 (t=6.365). Finally, Model 4 shows the simultaneous relation between power, essence and internal knowledge accumulation. The relation between power and the internal knowledge accumulation drastically reduces its significance when the mediating variable of essence is incorporated, reaching a coefficient of 0.043 (t=0.548). Thus, there is a complete mediation of essence in the relation between power and internal knowledge accumulation.

Table 5: Mediating effect Power → Essence → Internal Knowledge Accumulation

Structural Path	Model 1	Model 2	Model 3	Model 4
Power → Internal Knowledge Accumulation	0.213 (2.649***)			0.043 (0.548)
Power → Essence		0.302 (3.111***)		0.253 (2.123**)
Essence → Internal Knowledge Accumulation			0.489 (6.365***)	0.467 (4.561***)

Note: Path coefficients; (t-statistic two tailed) *p<0.1 **p<0.05 ***p< 0.01

Table 6 shows the experience component. In Model 5 the relation between experience (independent variable) and internal knowledge accumulation (dependent variable) is shown with a coefficient of -0.113 (t=1.656). Model 6 establishes the relation between experience and essence with a coefficient of -0.233 (t=2.647). Model 7 relates essence with internal knowledge accumulation producing a coefficient of 0.512 (t=6.729). Finally, Model 8, incorporates the joint relations between experience, essence, and internal knowledge accumulation. The relation between experience and internal knowledge accumulation reduces its significance when the mediating variable of essence is incorporated, reaching a coefficient of 0.026 (t=0.409). Thus, there is a complete mediation of essence in the relation between experience and internal knowledge accumulation.

Table 6: Mediating effect Experience → Essence → Internal Knowledge Accumulation

Structural Path	Model 5	Model 6	Model 7	Model 8
Experience → Internal Knowledge Accumulation	-0.113 (1.656*)			0.026 (0.409)
Experience → Essence		-0.233 (2.647***)		-0.153 (1.759*)
Essence → Internal Knowledge Accumulation			0.512 (6.729***)	0.516 (6.842***)

Note: Path coefficients; (t-statistic two tailed) *p<0.1 **p<0.05 ***p< 0.01

Specifically, there is support for H1, that essence completely mediates the relationship between power and internal knowledge accumulation in the family firm.

For H2, we obtain similar results in the relation of power and experience with respect to essence. However, upon evaluating the combined model there is no significant relation between essence and external knowledge accumulation, with a coefficient of 0.018 (t=0.193). When analyzing the possible mediating effects of essence in the relation between each of the components of participation (power and experience) and external accumulation of knowledge, we get the results that are shown in Tables 7 and 8.

Table 7: Mediating effect Power → Essence → Internal Knowledge Accumulation

Structural Path	Model 9	Model 10	Model 11	Model 12
Power → External Knowledge Accumulation	-0.354 (5.007***)			-0.367 (3.523***)
Power → Essence		0.302 (2.951***)		0.303 (2.885***)
Essence → External Knowledge Accumulation			0.301 (2.604***)	0.061 (0.546)

Note: Path coefficients; (t-statistic two tailed) *p<0.1 **p<0.05 ***p< 0.01

Model 12 presents the joint relation of the variables; it shows that there is no significant relation between essence and external knowledge accumulation with a coefficient of 0.061 (t=0.546). Therefore essence would not have a mediating effect between power and external knowledge accumulation.

Table 8: Mediating effect Experience → Essence → External Knowledge Accumulation

Structural Path	Model 13	Model 14	Model 15	Model 16
Experience → External Knowledge Accumulation	0.097 (1.421)			0.113 (1.422)
Experience → Essence		-0.164 (2.062**)		0.067 (0.751)
Essence → External Knowledge Accumulation			0.319 (2.304**)	0.467 (4.561***)

Note: Path coefficients; (t-statistic two tailed) *p<0.1 **p<0.05 ***p< 0.01

Table 8, Model 16 shows that there is no significant relation between experience and essence with a coefficient of 0.067 (t=0.751). Therefore essence would not have a mediating effect between experience and external knowledge accumulation.

Specifically, there is no support for H2; essence does not mediate the relationship between the involvement components (power and experience) and the accumulation of external knowledge.

Finally the results support hypotheses H3 and H4, providing evidence of a positive relation between internal accumulation of knowledge with a coefficient of 0.239 (t=2,158), and external accumulation of knowledge with a coefficient of 0.365 (t=3,450) with organizational effectiveness of the family firm.

In summary, these findings are significant in that they suggest to us that knowledge accumulation, and particularly internal knowledge accumulation, take place in a distinct manner, influenced principally by the involvement and essence of the family in the firm. These results offer initial evidence with respect to the process of the generation of dynamic capabilities in the family firm.

5. Discussion and conclusions

This research offers various contributions to the study of family firms. The first contribution to the field, and consistent with the suggestions of Chirico (2008), is to provide quantitative evidence with respect to the relation between involvement and essence in the family firm and the process of knowledge accumulation. The second contribution, in agreement with Astrachan (2010), is to provide an improved understanding of how participation and family essence promote the generation of resources and capabilities as basic elements of organizational effectiveness, behavior, and

performance of the family firm. Another contribution of this work, following Chirico and Salvato (2008), is the incorporation of dynamic capabilities, providing a discussion about how involvement and essence can contribute to this process in the family firm. Finally, this research investigates non-listed family firms, an area of this field that has been little-studied (Sharma and Carney, 2012). These contributions, taken together, provide a better understanding of the behavior, performance and heterogeneity of the family firm. With respect to the business practices of the family firm, our work provides ideas to the executives and managers as to what aspects condition the firm and what factors promote the accumulation of knowledge in the firm. We discuss these contributions in detail in the following paragraphs.

First, our research provides important empirical evidence of the impact of the components of involvement and essence on internal knowledge accumulation in the family firm. In line with Chrisman *et al.* (2005) and Chua *et al.* (2012), this work recognizes the heterogeneity of family firms, which implies that the relationship between family participation and behavior and firm performance is moderated or mediated by the involvement and essence of the family in the firm which, at the same time, influence the process of internal knowledge accumulation in an idiosyncratic manner. Specifically, essence completely mediates the relation between the components of involvement and the process of internal knowledge accumulation in the family firm. Consistent with Chrisman *et al.* (2005) and Rutherford *et al.* (2008) the levels of ownership and the presence of family members in the administrative and directive bodies impact the capability of the family to transmit its values and culture to the firm. In the same way, in line with Kellermanns *et al.* (2012), the results indicate to us that as the family generations are incorporated into the firm, the family values and culture deteriorate; in effect, family altruism is eroded when the family grows and ownership is spread across the generations. These relations are linked with internal knowledge accumulation; first, we find that essence completely mediates the relation between the components of involvement and the internal accumulation of knowledge supporting H1; given that the relation between power and essence was positive this indicates that a greater involvement by the family members in the ownership and management of the firm generates a greater orientation to internal knowledge accumulation. That is, it fosters the transmission of *know how* in an environment of trust, shared vision and psychological

ownership with the firm. However, experience is related in a negative manner with essence; as more generations participate in the ownership and management of the firm, the intentions to accumulate internal knowledge are reduced. These results are consistent with Gómez-Mejía *et al.* (2007) whose results indicate that the presence of multiple generations in firm ownership causes commitment and shared values, which are initially present, to be reduced due to conflicts and the passage of time, having a negative impact on internal knowledge accumulation.

Our second finding refers to external knowledge accumulation. Our results suggest that essence does not mediate the relationship between the involvement components (power and experience) and the accumulation of external knowledge. This evidence suggests that the relationship of the involvement components could be different. Indeed, with respect to power, the data support a possible direct or moderating relation to the accumulation of external knowledge. This it because the mediating effect of essence in the relationship between power and the accumulation of external knowledge was not significant. However, there is a significant negative relationship between power and the accumulation of external knowledge (Table 7, Models 9 and 12). This suggests that when power in the family business increases, the interest in acquiring external knowledge may be reduced. Similarly, the evidence indicates that essence does not mediate the relationship between experience and the accumulation of external knowledge. However, the analysis in Table 8 Model 16 indicates that there is a significant relationship between essence and the accumulation of external knowledge, which would suggest the possibility of, a moderating effect of experience in the relationship between essence and external knowledge accumulation. This indicates to us that with the entry of new family generations into the firm there will be a greater tendency towards external knowledge accumulation. These results are consistent with the notion that the presence of multiple generations causes a reduction in the initial commitment and shared values (due to conflicts and the passage of time), encouraging a search for external knowledge; in these circumstances the firm will value the hiring of non-family executives and will focus itself on the preparation and academic training of its members, including delegating the

administration of the firm to a family office[5] (Jaffe and Lane, 2004). Together these results show that hypothesis 2 is not supported.

Finally, we conclude that both internal and external knowledge accumulation are related with organizational effectiveness, totally supporting H3 and H4; thus, the knowledge accumulation processes decisively influence the development of capabilities and the organizational effectiveness of the family firm. These findings are consistent with Eisenhardt and Martin (2000) who suggest that new value creation strategies are generated by the process of the recombination of resources. In this sense, specifically, knowledge accumulation, which is founded on the strong and close relationships between the family members, facilitates communication and learning (Adler and Kwon, 2002; Sirmon and Hitt, 2003), and thus, the organizational effectiveness of the family firm. In addition, and in agreement with Chandler and Hanks (1994) and Chrisman *et al.*, (2009) a further examination provides us with a positive and significant relation between the development of organizational effectiveness and perceived performance, which suggests that the accumulation of resources (in our case, knowledge) and the performance of the firm can be positively related (Chandler and Hanks, 1994).

Together, these contributions respond to our research question, that is, they provide empirical evidence with respect to the family's effect in the firm—involvement and essence—which influences the processes of knowledge accumulation and can help the generation of dynamic capabilities, and in this way the effectiveness and performance of the family firm.

Our results also have implications for the managers of the family firms, and therefore it is essential that they be familiar with the mechanisms of knowledge accumulation and the aspects of the firm that foster them; this will permit the managers to create a collaborative environment for the exchange of information and knowledge, especially tacit knowledge, coming from both family members and non-family members. The executives should promote a climate of trust and commitment that facilitates the interaction of the firm members and the family members, providing the necessary incentives that stimulate the accumulation of knowledge in the family firm. Management has a mission to ensure that the different generations consolidate their relationships in the context of the firm; in this way the

[5] 'The family office is the administrative structure that provides services to family members and monitors family investments It may manage money, offer tax and legal services, and support each family member in financial affairs. It may provide individual guidance about investments and other financial matters, such as obtaining a mortgage or home. It may administer family recreational assets, like vacation property, or even maintain a family website'(Jaffe and Lane, 2004).

family members will be able to make the vision and the organizational values their own across the generations, guaranteeing the permanence of the family firm. Thus, and in agreement with Chirico (2008), those strong affective ties--the trust and the closeness of the relationships-- will create a sense of belonging to the firm where the firm is part of the individual and the individual is part of the firm.

6. Limitations and future lines of research

Although this study is a first step in quantitative research on the process of knowledge accumulation in the family firm and offers important implications for the theory and practice, we recognize that this type of study has some inevitable limitations. In the first place, it refers to a cross-sectional study, that is particularly problematic when it attempts to measure phenomena over time. The static nature of this type of study doesn't allow the establishment of causal relationships, making it impossible to capture dynamic essence and the effects of the process of knowledge accumulation. In the second place, the use of surveys in data collection can be questionable. The characteristics of the variables of the study and the unavailability of appropriate data bases made it necessary to use this type of instrument. Another limitation, on a purely methodological level, was obtaining data based on the subjective evaluation of a survey respondent, which can lead to the common method bias; to rectify this we used the procedures recommended by the literature to ensure that this was not a problem. Finally, the use of the PLS method does not establish causal relationships but rather the predictability between the independent and dependent variables, since it deals with a flexible modeling; however, the presence of formative and reflective indicators, the state of the development of the theory, and the complexity of the model make this method appropriate for an evaluation in our study.

This research opens interesting lines for further investigation; studies can be developed to identify the behavior and the impact of the variables of knowledge accumulation over time and capture its dynamic essence as a possible case method. Other possible future research could be directed to evaluate our model in other contexts and cultures, contributing to its mainstreaming and adaptation. In addition, further studies could be devoted to study the possible moderating effect of the components of involvement in the relationship between essence and the accumulation of external knowledge. Finally, the next step in research could evaluate how this accumulated knowledge could be integrated and used

as a source of value and continuity, in this sense, it would be interesting to evaluate how socioemotional factors might influence the process of knowledge management and generate dynamic capabilities in the family firm.

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