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Organizational learning and entrepreneurship in family firms: exploring the moderating effect of ownership and cohesion

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Abstract Organizational learning can significantly improve family firms' ability to counter by stimulating entrepreneurship. Applying the behavioral theory of the firm, this study empirically examines the effect of family ownership on the breadth, depth, and speed of organizational learning. Each of these dimensions can influence entrepreneurship. Furthermore, the effect of ownership on organizational learning depends on family cohesiveness, the extent to which members of the owner family feel closeness, mutual solidarity, and the desire to stick together. Data from 741 firms show that family ownership is positively associated with the breadth and speed of learning but is negatively associated with the depth of learning. Though cohesiveness does not alleviate the negative effect of family ownership on the depth of learning, it amplifies the effect of family ownership on the breadth and speed of learning. Organizational learning, especially its breadth and depth, positively influences the pace of family firms' entrepreneurship.

Keywords Family firms · Organizational learning · Behavioral theory of the firm · Learning theory

JEL Classifications M13

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Organizational learning is important for successful organizational adaptation, survival, and successful performance (Argote 1999; Brown and Duguid 2001; Burgelman and Grove 2007; Fiol and Lyles 1985; Hoy 2008; Rao and Argote 2006). It generates new knowledge for building new skills and capabilities that could lead to competitive advantage (Chirico 2008; Zahra et al. 2007a). Learning also promotes entrepreneurial activities by enabling companies to innovate, create new businesses, and renew their operations (Zahra 2008).

The need for renewal is especially acute in family firms, which frequently value organizational longevity. However, the dominance of a single controlling family of the firm might encourage conservatism (for a critique of these views, see Miller et al. 2008). While members of the owner family are usually active in the company, they may exclude outsiders and thus limit their knowledge of changes that could alter their company's strategic direction. The prospects of dysfunctional inertia grow over time, especially when the owner family is cohesive. Cohesion creates a sense of groupness and increases loyalty, which can insulate members from outside influences and even lead to conformity. However, this can severely constrain family firms' ability to capitalize on their members' diverse opinions, possibly eliminating a source of

learning that could stimulate entrepreneurship. Currently, evidence on the effect of family ownership, cohesion, and their interactions on family firms' learning is sparse. Our knowledge of how organizational learning influences family firms' entrepreneurship is also limited.

This study addresses three related questions: (1) How does the firm's ownership influence the breadth, depth, and speed of its learning? (2) When is the effect of ownership on organizational learning more pronounced and evident? and (3) What are the consequences of this learning for family firms' entrepreneurial activities? To answer these questions, the study invokes the behavioral theory of the firm (March and Simon 1958; Cyert and March 1963), which suggests that companies limit their search for opportunities along well-known and predictable paths (Fleming and Sorenson 2004; Levitt and March 1988). This search increases the focus on exploiting existing skills but can also stifle the accumulation of new knowledge essential to competing in dynamic environments (Leonard-Barton 1995; Miller 1993).

Definitions of the family firm abound (Anderson and Reeb 2003; Chua et al. 1999; Miller and Le Breton-Miller 2005; Maury 2006; Sharma et al. 1996, 1997). Most definitions, however, emphasize the strong presence of an owner family that controls a large percentage of the company's equity (for exceptions, see Anderson and Reeb 2003; Maury 2006; Villalonga and Amit 2006). What sets family firms apart from other companies is their simultaneous focus on economic and family-related goals, combined with attention to the longevity and sustainability of their operations. Family members are also heavily involved in the company.

Family firms offer an interesting context in which to study organizational learning and its implications for entrepreneurship. Entrepreneurial family firms are usually proactive, willing to take calculated risks, and are innovative. Ownership, family involvement, and a willingness to share the risks enable these firms to engage in different entrepreneurial ventures. However, as they become established, some family firms may lose their entrepreneurial zeal and emphasize their ongoing operations and legacy over innovating. One reason is that family members typically dominate decision-making and control the flow of information while excluding non-family members, reducing the variety of knowledge flows from external sources as well as opportunities for learning and entrepreneurship. Fortunately, family ownership influences the motivation, incentives, and power of decision-makers (Maury 2006), possibly determining their willingness to explore different opportunities to learn and innovate. Ownership aligns the interests of owners and their firm, increasing their focus on long-term objectives such as creating new revenue streams and survival. Entrepreneurial activities are a major source of new business and revenue creation that could enrich owners, giving them the incentive to learn. Still, family dynamics could adversely influence organizational learning. For instance, though cohesive family members might share what they learn and explore ways to use it, sibling rivalries sometimes stifle knowledge sharing and learning. Excessive cohesiveness could also silence dissent, limiting the strategic options being considered. Thus, much depends on the cohesiveness of the owner family; i.e., "the degree of closeness and emotional bonding experienced by the members of the family" (Lee 2006). If ownership gives the controlling family the incentive to learn, its cohesion determines how information is shared, processed, interpreted, and used as well as how the firm learns. Cohesion could strengthen or weaken the effect of family ownership on organizational learning and entrepreneurial activities.

1 Theory and hypotheses

1.1 Organizational learning

The behavioral theory of the firm suggests that, over time, companies limit their search for opportunities (Levinthal and March 1993). This narrow search is triggered by organizational problems where solutions are sought within the firm's existing knowledge domains (Cyert and March 1963). Though this narrow and focused search can be efficient, it becomes increasingly deadly when it promotes inertia that breeds strategic simplicity (Zahra 2008). This cycle could be broken, however, by experimenting and learning (Grant 1996; Eisenhardt and Santos 2002). Entrepreneurship, whether formal or informal, can also break this cycle by inducing strategic variety into the firm's ongoing operations.

Organizational learning means different things to different people (Argote 1999; Fiol and Lyles 1985;

Huber 1991; Rao and Argote 2006). This study views learning as the process by which individuals, groups or organizations gain knowledge through experimentation, analysis, training, instruction or experience. This knowledge, in turn, can lead to major changes in the decision rules or the behaviors of those involved. Organizations have the capacity to learn from experience as well as experimenting or undertaking innovative and entrepreneurial activities (Burgelman and Grove 2007; Hoy 2008; Huber 1991; Leonard-Barton 1995; Nelson and Winter 1982; Pérez-Nordtvedt et al. 2008). Learning gives the family an opportunity to develop, hone, and leverage different routines that encourage the effective deployment of resources and gain an advantage through entrepreneurial activities.

Organizational learning is usually the result of a proactive process where family members actively develop, acquire, share and transfer, and use new knowledge (Christensen 2003; Nonaka and Takeuchi 1995). Entrepreneurial activities, within existing operations or in new business domains, can contribute to the creation of such knowledge. Different individuals and groups are involved in each of these activities, creating a political process of mutual sense-making and shared understanding. As the behavioral theory posits, these individuals and groups interact at different points in the process (Cyert and March 1963), advancing different views and interpretations of what is being learned and how it might be useful. Some of these interpretations are context specific, and only those involved can appreciate their meanings and implications. For instance, members of the owner family accumulate considerable experience over generations and often share lessons learned with younger relatives.

Organizational learning is multifaceted (Huber 1991) and its breadth, depth, and speed can have different implications. *Breadth* refers to the variety of fields (e.g., industries) and areas (e.g., technology and marketing) in which the firm acquires and masters underlying knowledge bases and structures. As with individuals, firms vary in their interest in exploring and mastering different areas. Some firms become skilled in only one or a few fields. Others collect, synthesize, and integrate knowledge in multiple fields (Pérez-Nordtvedt et al. 2008; Zahra et al. 2000). These diverse knowledge bases serve as a foundation for entrepreneurial activities (Zahra et al. 2007b). While integration is difficult (Zahra 2008), it can generate combinative knowledge (Kogut and Zander 1992). Specialization (or mastering a few fields) often leads to higher levels of expertise but can limit adaptation.

Depth refers to the extent of a firm's mastery of the knowledge that it develops internally or receives from external sources. Mastery becomes evident in the firm's ability to draw new conclusions and make new connections among diverse knowledge bases (Huber 1991; Pérez-Nordtvedt et al. 2008; Zahra et al. 2000). Deep learning usually increases the firm's ability to create and exploit new knowledge combinations, spurring entrepreneurial initiatives that redefine the industry's value chain and alter the rules of competition. Deep learning might slow down information processing, thus constraining the organizational response to changing environmental conditions.

Speed refers to the quickness of the firm in acquiring, processing, and understanding the knowledge gained from internal and external sources (Pérez-Nordtvedt et al. 2008). Speedy learning is important, especially in dynamic environments where obsolescence is commonplace and companies have to pursue continuous innovation. It safeguards against decaying organizational memory that can lead to inertia and handicap the firm's innovativeness and responsiveness to changing conditions. The rapidity of knowledge flows might cause organizational fatigue, possibly slowing the comprehension and assimilation of new knowledge. The speedy processing of knowledge can also result in superficial learning that only promotes incremental innovation.

1.2 Effect of family ownership

A distinguishing characteristic of the family firm is the strong presence of an owner family that controls a large percentage of the company's equity. High ownership stakes give the family control of the company's operations, defining its mission and goals, and selecting its strategy (Zahra 2003). Ownership also promotes the involvement and participation of multiple generations in the firm (Gersick et al. 1997), providing an opportunity to learn about the business. It strengthens members' psychological identification with and involvement in the company (Pierce et al. 2001), stimulating learning. Family firms are usually

embedded in their environments and connect with their stakeholders and networks (Aldrich and Cliff 2003; Aldrich and Ruef 2006). These interactions give firms important knowledge that can stimulate their learning. Because of their longevity and investment in building enduring relationships, family firms often capitalize on the trusting relationships that have developed and learn different things about a variety of issues, possibly broadening their learning.

When a family controls a high percentage of equity, it has also the motivation to learn broadly. High ownership means that the family's wealth depends on how well the company performs. Successful performance, in turn, rests on learning and using new skills to pursue opportunities and address the challenges arising from changing markets and competitive forces. Given that the wealth of the family and the success of the firm are so intertwined, managers are likely to value learning and develop the mechanisms that promote it. The flow of knowledge from external sources also stimulates entrepreneurship that can lead to the development of new revenue streams that enrich members of the owner family. The opportunity to create wealth, in turn, gives members of the owner family an incentive to allocate the resources required to analyze the environment, research markets, as well as understand potential changes in competitive conditions. These investments increase the breadth of family firms' learning. The situation will be different when family ownership is low, where salaried managers run the firm. These managers' performance is usually judged based on short-term success and therefore they may not invest as heavily in building and cultivating relationships with different stakeholders, limiting the flow of diverse knowledge into the firm and thus constraining learning. Therefore:

Hypothesis 1 Family ownership is positively associated with the breadth of organizational learning.

Though family firms might learn broadly, they may not learn deeply for several reasons. These firms are usually managed by family members whose views are often similar; over time, dissident family members are usually excluded from the management team. Family firms also do not involve outsiders in their operations, especially those that hold different views. The need to retain harmony in the family also might prevent discussions of sensitive issues, making it difficult to learn deeply. Interactions with key stakeholders and networks are also likely to occur along the familiar territories where the firm has developed historical ties. The tendency to search for opportunities in familiar places (Levinthal and March 1993) is further reinforced by the stability of these firms' leadership (Miller et al. 2008). As a result, family firms are likely to fail to learn deeply. Therefore:

Hypothesis 2 Family ownership is negatively associated with the depth of organizational learning.

Family firms also have good reasons to learn fast to ensure responsiveness to their changing conditions and safeguard against those competency traps that develop over time and stifle their growth (Levinthal and March 1993). These traps emerge as firms continue to use their existing capabilities to address changing market needs. Infusion of new knowledge could stimulate the development of new managerial and operational skills. Speedy learning could also enhance family firms' ability to introduce new products that upgrade their competitive offerings. When a single family controls a large share of equity, the flow of information is likely to be centralized and will move quickly to influence the company's operations, barring major conflicts among family members. Information will also be shared, processed, and interpreted informally, speeding up learning. This focused search for opportunities (Levinthal and March 1993; Zahra 2008) expedites the flow and processing of knowledge, promoting speedy learning. Therefore:

Hypothesis 3 Family ownership is positively associated with the speed of organizational learning.

1.3 Moderating effect of family cohesion

Family ownership may have a stronger effect on organizational processes and outcomes (e.g., learning) when members are cohesive, share common goals, function as a unified group, wish to stay with the group, support its goals, and work hard to accomplish its mission (Beal et al. 2003; Lee 2006). Cohesion enhances members' satisfaction with their family, strengthening their identification with its goals. A cohesive family benefits from and leverages the varied connections of its members in reaching

different networks, gaining knowledge about different things. Members of a cohesive family also share their experiences, facilitating the accumulation of experience across generations and different functional areas (Zahra et al. 2007a). Consequently, higher cohesion magnifies the positive effect of family ownership on the breadth of organizational learning. Therefore:

Hypothesis 4 The higher the family cohesion, the higher the positive effect of family ownership on the breadth of organizational learning.

Cohesion increases when members of a group are similar in their beliefs and attributes (Beal et al. 2003). However, the family may avoid divisive decisions that could polarize its members. Paradoxically, conflicts about the interpretation of events and their implications for the family and its business could deepen members' understanding of each other's assumptions about the industry and changing dynamics of the competition. Conflicts may also sharpen the owner family's focus on the different strategic tools that could generate a competitive advantage. Absent open and honest discussions, members of the owner family may dismiss disconfirming information that threatens family cohesion. Family members may also develop similar thinking patterns, oversimplifying the issues at hand. Thus, they may dismiss warning signals of pending industry changes as temporary market adjustments or focus on the obvious causes of change without exploring its root causes. This reduces the depth of organizational learning. Therefore:

Hypothesis 5 The higher the family cohesion, the higher the negative effect of family ownership on the depth of organizational learning.

Highly cohesive owner families are able to exchange, share, and process information more quickly than families that lack this cohesion. Cohesion also promotes mutual understanding, enabling family members to share sensitive information. The solidarity of a cohesive owner family also means that members are likely to assist each other with gathering, processing, and interpreting incoming knowledge. This can quicken family firms' learning. Members of a cohesive family also interact informally and share what they know about changing market conditions that could impact their firm's performance. Given the possibility that these families are likely to avoid divisive issues and engage in self-serving explanations of change (hypothesis 2), they are apt to learn superficially but do so quickly. Therefore:

Hypothesis 6 The higher the family cohesion, the higher the positive effect of family ownership on the speed of organizational learning.

1.4 Organizational learning and entrepreneurship

Organizational learning enables the family firm to recognize changing market conditions and opportunities to be exploited. Broad learning generates the knowledge base needed to conceive different entrepreneurial initiatives (Zahra 2008). The family firm can combine different types of knowledge and develop ideas for these activities. As the breadth of learning increases, family firms are more likely to pursue different types of initiatives, intensifying the pace of entrepreneurship. Therefore:

H7a Broad organizational learning is positively associated with entrepreneurship.

The depth of learning could be helpful as well in conceiving new innovative avenues for the family firm to pursue. Deep learning means that the family firm has mastered the foundation and content of the knowledge it has and become proficient in deploying it. While this depth could become a barrier to communicating and sharing this knowledge, it helps to protect the family firm's advantage by demanding a high level of mastery to imitate the entrepreneurial activities it pursues. The deeper the family firm's learning, the higher its entrepreneurial pace. Therefore:

H7b Deep organizational learning is positively associated with entrepreneurship.

The speed of learning also allows the family firm to be proactive in pursuing the entrepreneurial activities that give the firm an opportunity to enjoy pioneering advantages by setting its industry's standards. Companies that learn fast are apt to streamline their systems and processes as well as encourage responsiveness to the market, gaining insights into how to identify areas where it can initiate entrepreneurial activities. Therefore:

H7c Speedy organizational learning is positively associated with entrepreneurship.

2 Method

Data on family firms' learning are not available from public sources. Therefore, a mail survey, combined with phone calls and archival data, was used to gather this information. The survey was developed based on a comprehensive review of the family business and entrepreneurship literatures. To ensure the accuracy of the survey data, follow-up phone interviews were conducted with eight managers/owners of the family firms who did not participate in the final study. Three professors who teach graduate family business courses were also interviewed. Information collected from these interviews helped to refine the study's focus and the questions included in the survey. Once the questionnaire was ready, it was sent to the eight family firm managers and three additional professors for comments, which were incorporated into the final survey.

The sampling frame consisted of the 50 largest and 50 smallest US companies in 40 different US manufacturing industries. Companies were identified from *Compustat Research Insights* (2002). The 4,000 companies were targeted in a mail survey, covering a wide range of company size, age, and profitability. A total of 163 questionnaires were not delivered for various reasons. Two mailings conducted 2 months apart yielded 779 completed responses, for a response rate of 20.3%. This response rate compares favorably with those achieved in similar studies (see Schulze et al. 2003). Data used in this paper are part of this larger study.

2.1 Response bias

The χ^2 test was used to examine response bias by comparing respondents to the first and second mailings. Differences were found in less than 2% of items, which was lower than the random chance of 10%. Next, the t and χ^2 tests were used to examine whether the sample was representative of its population in terms of company assets, full-time employees, return on assets, net profit margins, industry type, age (in years), and the state where the company is headquartered. There were no significant differences ($p > 0.05$) between responding and nonresponding companies.

2.2 Respondents and interrater agreement

The survey targeted the companies' chief executive officers (CEOs) or highest senior executives, who are the most informed about overall operations, strategies, investments, alliances, and other relationships with key stakeholders (Covin and Slevin 1989; Schoonhoven et al. 1990). Given that faulty recall is a common problem in mail surveys, questions emphasized the last 3 years as a common frame of reference. The survey was sent to a second senior manager from each responding company. Two mailings yielded 151 responses, which were then matched with the replies from the initial respondents. The simple correlation between these two sets of responses on the study's items/measures was 0.62 ($p < 0.001$). This indicated a reasonable level of agreement between senior informants. Senior executives usually have access to different types of information and thus differ in their perceptions and interpretation of events, making perfect agreement unlikely.

2.3 Source bias

Collecting data from the same respondent on the dependent and independent variables raises concern over source bias, a common problem in survey research. The "single-factor" test was performed to address this concern. This test is predicated on the notion that, if survey data generate multiple factors and the first factor does not explain disproportionately higher variance than other factors, then source bias is not a major problem. A principal component factor analysis yielded seven significant factors with eigenvalues of 1.0 or higher, indicating that source bias was not serious (Podsakoff and Organ 1986). Still, to ensure the validity of the findings, data were gathered from secondary sources, as reported in the appropriate sections below.

2.4 Measures

The following measures captured the study's dependent, independent, moderating, and control variables. Items used to construct different measures appear in the Appendix.

2.4.1 Dependent variables

The breadth, depth, and speed of organizational learning were measured using five-item indices each, as reported in the Appendix. Items were extracted from the literature (Huber 1991; Pérez-Nordtvedt et al.

2008; Zahra et al. 2000). In each case, scores were summed and then divided by the number of items used, and the average score was then used. The three scales were reliable (breadth, ten items, $\alpha = 0.71$; depth, seven items, $\alpha = 0.70$; and speed, six items, $\alpha = 0.72$).

Firm-level entrepreneurship was measured using the six-item index shown in the Appendix. Items were taken from prior research (Miller and Le Breton-Miller 2005; Zahra 1996, 2003, 2008). The overall index was reliable ($\alpha = 0.75$). Average responses on the six items were used in the analyses.

2.4.2 *Independent variables*

A key indicator of family firm status is concentration of control within a single family (Eddleston and Kellermanns 2007; Gersick et al. 1997). This control is reflected in the percentage of a company's equity held by a single family. Data obtained through the survey captured this variable.

2.4.3 *Moderator variable*

Family cohesion was measured using the eight-item index reproduced in the Appendix. Items were based on the literature (e.g., Bollen and Hoyle 1990; Chang and Bordia 2001; LePine et al. 2008) and interviews with managers. The average response on eight items was used in the analysis. The index was reliable ($\alpha = 0.73$).

2.4.4 *Control variables*

Analyses also controlled for five variables. The first was company age, measured by the number of years a firm has been in existence (Anderson and Reeb 2003). The second was company size, measured by the natural logarithm of the company's full-time employees (Eddleston et al. 2008). The third was company research and development (R&D) spending, measured by R&D outlays divided by sales, all in million US dollars (Anderson and Reeb 2003; Miller et al. 2008; Villalonga and Amit 2006). The fourth was liquidity, measured by the 3-year average current ratio. The fifth was the firm's primary industry's knowledge intensity. Industries were classified into high and low technology, based on multiple sources (e.g., National Science Foundation 2000; Oakey et al. 1988). High-technology firms were coded 1 and low-technology firms were coded 0.

3 Analysis

As reported, two surveys were used to collect data. The first resulted in 779 responses and the second targeted a second respondent in each of the participating firms, yielding 151 responses. The second survey was used for validation purposes only. Analyses are based on the responses from the first survey. Table 1 displays the descriptive statistics for the sample; missing data reduced the final sample from 779 to 741 companies. On average, responding companies were 23 [standard deviation (SD) 14] years old and had 15,136 (SD 14,870) employees. Table 1 also presents the intercorrelations among the study's variables. Family ownership and cohesion were positively and significantly associated, but the coefficient is modest, indicating that they are distinct constructs. Family ownership was significantly and positively associated with the breadth and speed of learning. However, it was negatively associated with the depth of learning. Cohesion was positively and significantly associated with the three dimensions of organizational learning, but the coefficients are modest. Finally, inspection of factor inflation variables (all below 2.89) suggests that multicollinearity is not a concern in the dataset.

Hierarchical regression analysis was run to test hypotheses 1 through 6. In the first step (model 1), each dimension of learning was regressed on the control variables. In the second (model 2), each dimension of learning was regressed on the control *and* independent variables. In the third and final step, a series of interaction terms was created by multiplying family ownership by the independent variables. Each dimension of organizational learning was then regressed on the control, independent, *and* interaction variables (model 3). Changes in the explanatory powers of successive models were tested using Cohen and Cohen's (1983) formula. The results appear in Table 2, which shows beta values rather than unstandardized coefficients.

3.1 Breadth

Model 1 was significant ($p < 0.05$), explaining 13% of the variance in breadth of organizational learning. Company R&D spending, past performance, and competing in a high-technology industry were significant (all at $p < 0.05$). Model 2 was also significant,

Table 1 Descriptive statistics and intercorrelation matrix

Variables	Mean	SD	01	02	03	04	05	06	07	08	09	10	11
01 Learning breadth	2.83	1.09											
02 Learning depth	2.45	1.47	0.29										
03 Learning speed	2.91	0.99	0.27	−0.23									
04 Ownership[a]	28.03	37.49	0.20	−0.10	0.17								
05 Cohesion	3.07	1.14	0.18	0.12	0.15	0.28							
06 Size	2.91	4.03	0.13	−0.15	−0.15	−0.09	−0.15						
07 Age	23.4	14.1	−0.08	−0.08	−0.04	0.18	0.03	0.21					
08 Liquidity	2.03	1.19	0.02	0.04	0.10	−0.11	0.10	0.16	0.08				
09 R&D spending	2.11	1.67	0.15	0.15	0.18	−0.03	0.09	0.14	−0.13	0.11			
10 Past return on equity (ROE)[a]	2.19	2.78	0.09	0.14	0.13	0.12	0.13	0.10	−0.11	0.10	0.09		
11 High-tech industry	0.41	0.56	0.13	0.08	0.15	0.25	−0.06	−0.14	−0.17	0.03	0.34	0.16	0.13
12 Entrepreneurship	3.11	1.43	0.20	0.17	0.09	0.22	−0.03	0.11	0.09	0.16	0.31	0.14	0.10

[a] These variables were logged. Furthermore, all variables were standardized prior to calculating intercorrelations and conducting regressions. Simple r has be 0.07 to be significant at $p < 0.05$, 0.09 to be significant at $p < 0.01$, and 0.12 to be significant at $p < 0.001$

Table 2 Moderated regression results of the relationship between ownership and organizational learning

Organizational learning	Breadth			Depth			Speed		
Model no.	1	2	3	1	2	3	1	2	3
Family ownership		0.29**	0.26**		−0.18*	−0.18*		0.17*	0.15*
Family cohesiveness		0.07	0.07		0.09	0.06		0.10	0.11
Cohesiveness × Ownership			0.21*			0.06			0.17*
Company age	0.09	0.08	0.09	−0.05	−0.07	−0.04	−0.19*	−0.15*	−0.13*
Company size	0.11	0.10	0.11	−0.08	−0.05	−0.09	−0.16*	−0.14*	−0.17*
Liquidity	0.03	0.07	0.05	−0.10	−0.11	−0.08	0.09	0.06	0.04
Company R&D spending	0.17*	0.15*	0.18*	0.19*	0.20*	0.16*	0.19*	0.18*	0.20*
Past performance (ROE)	0.16*	0.14*	0.17*	0.08	0.10	0.10	0.09	0.11	0.13
High-tech industry (=1)	0.14*	0.13*	0.14*	0.12***	0.13*	0.15*	0.14*	0.13*	0.09
Adjusted R^2	0.13	0.16	0.17	0.15	0.18	0.19	0.16	0.18	0.19
F-value	3.41*	4.18*	5.83**	3.59*	5.02**	6.71***	4.09*	5.64**	7.19***
ΔR^2		0.03	0.01		0.03	0.01		0.02	0.02
F-value		13.04***	6.54***		12.74***	6.13***		8.84*	12.71***

Beta values are shown; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

explaining 16% of the variance ($F = 4.18$, $p < 0.05$). The increase in R^2 of model 2 (over model 1) was significant ($F = 13.04$; $p < 0.001$). The control variables that were significant in model 1 were significant in model 2. Furthermore, the coefficient for family ownership was positive and significant ($p < 0.01$), supporting hypothesis 1. Family cohesion was positive but insignificant. Model 3 was also significant ($F = 5.83$; $p < 0.01$) with an R^2 of 17%. The change in R^2 between models 2 and 3 was significant (6.54, $p < 0.01$). Family ownership was significant ($p < 0.01$), and its interaction with cohesiveness was also significant ($p < 0.05$), supporting hypothesis 4.

3.2 Depth

Table 2 shows that model 1 was significant ($F = 3.59$, $p < 0.05$), explaining 15% of the variance. Company R&D spending was also significant (both at $p < 0.05$). Competing in a high-technology

industry was marginally significant ($p < 0.10$). Model 2 was also significant, explaining 18% of the variance ($F = 5.02$, $p < 0.001$). The increase in R^2 of model 2 (over model 1) was also significant ($F = 12.74$, $p < 0.01$). R&D spending and competing in a high-technology industry were significant (both at $p < 0.05$). Family ownership was significant but negatively associated with depth of learning ($p < 0.5$), supporting hypothesis 2. Model 3 was significant ($p < 0.01$) with R^2 of 19%. The change in R^2 was significant ($F = 6.13$, $p < 0.001$). Again, R&D spending and competing in a high-technology industry were significant (both at $p < 0.05$). While the interaction of family ownership with cohesion was not significant, it was positive. These results do not support hypothesis 5.

3.3 Speed

Table 2 also shows that model 1 was significant ($F = 4.09$, $p < 0.05$), explaining 16% of the variance in speed of learning. Company age and size were negatively associated with speed (both at $p < 0.05$). Competing in a high-technology industry had a positive and significant coefficient ($p < 0.05$). Model 2 was also significant, explaining 18% of the variance (5.64, $p < 0.01$). The increase in R^2 of model 2 (over model 1) was significant ($F = 8.84$, $p < 0.05$). Company age and size had negative coefficients, but competing in a high-technology industry had a positive coefficient (all at $p < 0.05$). Family ownership was significantly associated with depth of learning ($p < 0.05$), supporting hypothesis 3. Model 3 was also significant ($F = 7.19$, $p < 0.001$), explaining 19% of the variance in learning speed. The change in R^2 was significant at ($F = 12.71$, $p < 0.001$), supporting hypothesis 6.

3.4 Organizational learning and entrepreneurship

Hypotheses 7a–c focus on the effect of organizational learning on entrepreneurship. Multiple regression results are presented in Table 3. Predictors included family ownership, cohesion, interaction of cohesion and ownership, and the three facets of learning (breadth, depth, and speed). In addition, six control variables were used. The results were significant, explaining 23% of the variance ($F = 7.83$, $p < 0.001$). Family ownership and the interaction of family ownership with cohesiveness had positive and significant associations with entrepreneurship. Cohesion was negative but not significant. Breadth and depth of learning had positive and significant associations with entrepreneurship. Learning speed, which had a positive coefficient, was not significant.

Table 3 Organizational learning and entrepreneurship

Predictor	Entrepreneurship
Family ownership	0.22**
Family cohesiveness	−0.03
Cohesiveness × Ownership	0.21*
Organization Learning-Breadth	0.17*
Organizational Learning-Depth	0.19*
Organizational Learning-Speed	0.09
Company age	−0.11
Company size	−0.07
Liquidity	0.12
Company R&D spending	0.34***
Past performance (ROE)	0.26*
High-tech industry (=1)	0.15*
Adjusted R^2	0.23
F-value	7.83***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4 Discussion

Learning is conducive to a company's successful performance. It promotes knowledge creation and exploitation, activities that create value for the firm and its owners. As a result, researchers have attempted to delineate those factors that influence organizational learning (e.g., Argote 1999; Huber 1991; Leonard-Barton 1992; Nonaka and Takeuchi 1995). However, researchers have paid limited attention to family firms, which typically focus on longevity as one of their primary goals but become conservative over time. Some assert that family dynamics also insulate these companies from their key stakeholders, making it difficult to gain new knowledge that can spur entrepreneurship, a key means of strategic renewal and adaptation (for a discussion and critique of these views, see Miller et al. 2008). These and similar assertions have not been subjected to careful empirical analysis. As a result, we know little about the factors that determine

organizational learning and its consequences for entrepreneurship in family firms.

The results of this study underscore the important effect of family firms' ownership on the breadth, depth, and speed of organizational learning. Arguing that the percentage of a company's equity held by a single family provides the motivation to invest in creating the mechanisms that foster organizational learning, this study shows that family ownership can enhance the breadth and speed of learning, thereby supporting hypotheses 1 and 3. Family ownership is negatively associated with the depth of organizational learning, supporting hypothesis 2. These results are in line with the behavioral theory of the firm, which posits that when managers/owners have an incentive (e.g., ownership), they are likely to engage in learning. The results are also consistent with the behavioral theory insofar as learning occurs within well-known paths and limited domains (Levinthal and March 1993). However, the results depart somewhat from the behavioral theory in showing that learning could occur broadly when there is a strong ownership stake (hypothesis 1), a key motivator to experiment and learn on a wider range of issues. Instead, the results reinforce the view that incentives (e.g., ownership) could stimulate learning and knowledge creation (Nonaka and Takeuchi 1995).

The results also contradict the folklore that family ownership and dynamics inhibit organizational learning. Instead, the study shows that family ownership is positively associated with the speed and breadth of learning but negatively associated with the depth of learning. Ownership, therefore, appears to provide an incentive to engage in learning. The negative association observed with depth might signal the varying interpretations of this variable, and different measures might have yielded different insights. Depth, as used in this research, refers to the level of mastery of particular skills and expertise. However, it might reflect accumulated experience gained from practice, even from formal planning of the firm's different strategic actions (De Kok et al. 2003). If respondents equate depth with formal planning, for example, it becomes easier to understand the negative association found; family firms are reputed to engage in less formal planning than other firms. Overall, managers' different interpretation of the depth of organizational learning might have attenuated the results given that a survey was used to capture this complex measure.

The data also show that cohesion moderates the relationship between family ownership and learning. Its results support this prediction, showing that, when family ownership is high, the breadth and speed of organizational learning were higher when family cohesion was high. These results support hypotheses 4 and 6 but contradict hypothesis 5. These results may reflect the dysfunctional effects of extreme cohesion among family members. When cohesion is high, the relationship between ownership and the depth of learning is less negative than when cohesion is low, though the coefficient for the interaction term remains insignificant.

It is noteworthy that organizational learning can stimulate entrepreneurial activities. Learning generates knowledge about those areas where entrepreneurial opportunities might exist. The results suggest that breadth and depth of learning (hypotheses 7a and 7b) are also conducive to entrepreneurship. The speed of learning does not seem to matter, however. This is counter to hypothesis 7c. Thus, when it comes to entrepreneurship, how much the family firm learns and how well it masters this knowledge—rather than how fast it learns—is what matters. This is understandable because the breadth and depth of learning pertain to the family firm's knowledge and how it is used to promote entrepreneurship.

Interestingly, family ownership, not cohesion, is positively associated with entrepreneurship. Specifically, ownership provides the incentive and opportunity to create new businesses or innovate and create wealth. The results show that ownership can significantly influence family firms' learning, but much depends on the cohesion of the owner family. For instance, the owner family might have the incentive to learn, but its cohesion could determine how ownership influences learning, another extension of the behavioral theory of the firm (Nelson and Winter 1982). This finding should be corroborated in future research to establish the independent effect of family cohesion, if any, on entrepreneurship. Researchers should probe when the effect of cohesion on entrepreneurship is positive versus negative, and whether this relationship is nonlinear.

To recap, this paper makes four contributions to the literature. First, it empirically explores the positive and negative consequences of family ownership on organizational learning, a precursor to entrepreneurship. Second, the study adopts a

multidimensional definition of learning. This sets the stage for examining the potential tradeoffs that managers encounter in capturing and exploiting resultant knowledge. Third, the study explores the moderating effect of family cohesion on the relationships between family ownership and organizational learning. Finally, the study documents the effect of organizational learning on the family firm's entrepreneurship, an issue that has not been examined systematically.

4.1 Limitations

The results should be interpreted with the study's limitations in mind. Data were collected from primarily the same source. Even though the analyses revealed that source bias is not a serious problem and archival sources of data provided validation for some of the measures used, it is important to use multiple sources of data in future analyses. Furthermore, the data were collected at one point in time whereas the relationships examined usually unfold over time, favoring future longitudinal research designs and analyses. The nature of learning, cohesion, and ownership might change, leading to results that differ from those reported here. Finally, the fact that results appear to contradict those of other studies finding a negative effect of family ownership on entrepreneurship might reflect the way variables are defined and measured. For example, measuring family ownership as a proportion of total ownership can create a confounding effect with a "founder's effect." This suggests caution in interpreting the results, and researchers should consider using alternative measures in future studies to better capture these relationships.

4.2 Implications for managerial practice

The results suggest that family firm managers need to recognize that adaptation to the external environment begins within their own family. Managing family dynamics to stimulate and induce learning requires attention to different members' incentives and learning styles. Sensitivity to these issues can improve the breadth, depth, and speed of organizational learning. Specifically, the finding that family ownership is negatively associated with the depth of organizational learning deserves careful attention. As noted, shallow organizational learning could hamper the firm's capacity to engage in entrepreneurial activities, undermining its survival and wealth creation potential. Reversing this process in ways that promote deep learning entails working through family dynamics and how they influence discussion of various issues. The ability to engage in critical thinking, challenge the views of other family members, and even question the company's chosen course of action could promote deeper organizational learning. Bringing consultants and other outsiders' views into the discussion can also deepen the firm's learning.

The effect of family cohesion is another area that deserves recognition. Cohesion strengthens the key relationships observed between ownership and organizational learning, especially its breadth and speed. This indicates a need to work through family dynamics to build and sustain family cohesion in order to have smooth operations while improving learning. Some of the variables that could affect cohesion are fairly stable but others change over time. Addressing these different forces often requires the owner manager to use different strategies with different family members.

4.3 Implications for future research

The results also highlight the importance of ownership for learning in family firms, consistent with the behavioral theory of the firm, underscoring the role of decision-makers' incentives in fostering learning (Cyert and March 1963). Family firms offer an interesting setting where the incentive to learn readily exists. The insights gleaned from this learning can improve these firms' ongoing operations and are also passed to future generations of family members. Future researchers need to explore the influence of specific factors that are related to the family and its firm and how they influence organizational learning. The behavioral theory of the firm posits that managers' aspirations, time horizons, and external environment might influence learning; these factors should be studied in the context of family firms.

Researchers need to link the three dimensions of learning (breadth, depth, and speed) to various measures of operational and strategic performance (e.g., Zahra et al. 2000). By considering operational and strategic effects of organizational learning, we can also appreciate the implications of the tradeoffs

that some family firms might have to make regarding the breadth and speed of learning versus its depth. Finally, the study has explored the effect of learning on entrepreneurial activities. Over time, entrepreneurial activities could promote organizational learning. Researchers, therefore, would benefit from exploring these dynamic relationships.

5 Conclusions

Learning is crucial for gaining the knowledge needed to build and upgrade a family firm's capabilities, thereby allowing it to sustain a competitive advantage. The current study's results show that family ownership could influence the breadth, depth, and speed of organizational learning differently. The learning benefits that accrue from being family owned, however, depend on family cohesiveness. The study's results highlight the significant influence of family variables on organizational learning and entrepreneurship, setting the stage for future explorations of these complex but important relationships.

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Appendix

This Appendix presents the items used to construct the measures that captured several of the study's variables. Indices developed based on these items as well as the study's other measures are reported in the text.

Family cohesiveness

Respondents were asked to express the extent of their agreement (or disagreement) with each of the following items that referred to the identification of family members with their own family. For each item, respondents were asked to **circle** the one number that best describes their response.

	Strongly disagree				**Strongly agree**
Members of this family					
• … care deeply about one another.	1	2	3	4	5
• … support one another.	1	2	3	4	5
• … are proud of being part of the family.	1	2	3	4	5
• … depend on each other.	1	2	3	4	5
• … work closely together to accomplish family goals.	1	2	3	4	5
• … would do almost anything to remain together.	1	2	3	4	5
• … are always engaged in dysfunctional conflicts (r).	1	2	3	4	5
• … stick together.	1	2	3	4	5

Breadth of organizational learning

How would you describe your company's ability to learn about the following issues over the past 3 years? For each item, please **circle** the one number that best describes your response.

	Little learning				**A great deal of learning**
• Changes in your competition	1	2	3	4	5
• Changes in your competitors' strategies	1	2	3	4	5
• Changes in your industry	1	2	3	4	5
• Changes in technological conditions	1	2	3	4	5
• Changes in demographics	1	2	3	4	5
• Changes in the regulatory environment	1	2	3	4	5
• Developing new products	1	2	3	4	5
• Commercializing new products	1	2	3	4	5
• Being responsive to customer needs	1	2	3	4	5
• Responding quickly to competitive forces	1	2	3	4	5

Depth of organizational learning

How thoroughly has your company analyzed the following issues over the past 3 years? For each item, please **circle** the one number that best describes your response.

	Strongly disagree				**Strongly agree**
To understand industry trends, this company thoroughly analyzes:					
• … causes of success & failure in the industry.	1	2	3	4	5
• … competitors' assumptions about the industry.	1	2	3	4	5
• … shifts in competitors' market positions.	1	2	3	4	5
• … lessons learned from strategy implementation.	1	2	3	4	5
• … competitors' intentions.	1	2	3	4	5
• … factors underlying technological changes.	1	2	3	4	5
• … analyzing factors underlying regulatory changes.	1	2	3	4	5

Speed of organizational learning

How would you describe the speed at which your company has been able to learn about the following issues over the past 3 years? For each item, please **circle** the one number that best describes your response.

	Very slow				**Very fast**
• Technological changes	1	2	3	4	5
• Regulatory changes	1	2	3	4	5
• Demographic changes	1	2	3	4	5
• Political changes	1	2	3	4	5
• Competitive changes	1	2	3	4	5
• Market trends	1	2	3	4	5

Entrepreneurship

We would like to know how true or untrue each of the following statements of your company's situation is, over the past 3 years? For each item, please **circle** the one number that best describes your response.

	Totally untrue				**Very true**
Over the past 3 years, this company has:					
• Introduced several innovative programs	1	2	3	4	5
• Encouraged employees to take calculated risks	1	2	3	4	5
• Solicited employee ideas for innovative products	1	2	3	4	5
• Rewarded employees for being innovative	1	2	3	4	5
• Pursued business opportunities in existing operations	1	2	3	4	5
• Pursued business opportunities in new fields	1	2	3	4	5

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