

Innovation in small firms: Does family vs. non-family matter?

Saurabh Ahluwalia¹, Raj V. Mahto², Steven T. Walsh³

¹University of New Mexico, sahluwalia@unm.edu

²University of New Mexico, rmahto@unm.edu

³University of New Mexico, walsh@unm.edu

www.jsbs.org

Keywords:

Small firm, Family firm, Innovation, Owner's perception, Commitment

ABSTRACT

Small firms are the backbone of our economy. These firms need to innovate to thrive and compete. However, research on innovation in small firms, especially non-technology and less knowledge-intensive firms, is lacking. In this study, we explore antecedents of innovation in such firms. We build and test a theoretical model that links employee training, employee commitment, family employees, and emphasis on learning to innovation in small firms. We also argue that a small-firm owner's perception about his firm being a family firm or a non-family firm will influence the relationship between predictors and firm innovation.

Introduction

Small firms, being a major source of employment and new job creation, make a significant contribution to the development of regional and national economies. Economies with burgeoning healthy small firms reap many benefits associated with those firms, including economic development and a higher standard of living for residents in the firms' communities. Despite agreement among scholars about the benefits of small-firm economies, a consistent definition of "small firm" is absent across the world. In the United States of America, a small firm is defined as a manufacturing entity with fewer than 500 employees or a service firm with annual sales revenue lower than \$7.5 million (US Small Business Administration, 2010). These entities are the dominant form of enterprises in the US economy representing 99.7% of employer firms and are responsible for generating 64% of private sector jobs. The dominance of small firms in our economy and their critical role in maintaining the health of our economy requires small-business scholars to investigate and explain factors

influencing small-firm performance and survival in an increasingly hypercompetitive environment, characterized by short product life cycles and intense competitive rivalry (Wiggins & Ruefli, 2005).

Researchers have identified innovation as a key competitive tool for firm survival and for maintenance of superior performance in an environment of intensifying competition (Dess & Picken, 2000; D'Aveni, 2010). In this paper, we define innovation as "adoption of new idea or behavior by a firm" (Daft, 1978; Damanpour & Evan, 1984). Innovation scholarship has focused mostly on large public corporations or technology-based entrepreneurial firms (a miniscule section of the economy) while ignoring non-technology-based small firms due to the risk associated with innovative activities and endeavors (Crossan & Apaydin, 2010; De Massis, Frattini, & Lichtenthaler, 2013; Terziowski, 2010). Innovation requires significant commitment of resources by initiators, and is, therefore, risky. Small firms, susceptible to business failure and resource constrained, are perceived negatively because they lack resources to invest in innovation (Chandy & Tellis, 2000) and are unable to absorb the failures associated with high-risk innovative activities (Yap & Souder, 1994).

Small firms, especially firms with fewer than 60 em-

ployees, constitute over 90% of all firms in the US economy (US Small Business Administration, 2010). Given that dominance, our limited understanding of factors influencing innovation in small firms is detrimental to ensuring development of the national economy and the well-being of its citizens. It is important to remove the gap in our understanding about factors influencing innovation undertaken by small firms to adapt to today's hypercompetitive environment. Our research goal in this paper is to address this significant gap in our understanding of innovation in small firms.

Given the significant overlap between family firms and small firms in our economy (e.g. Shanker & Astrachan, 1996), a discussion of small firms invariably includes family firms. A key distinguishing feature of the latter type is the involvement of a family or multiple members of a family who intend to maintain control of the firm over multiple generations (Chrisman, Chua, & Litz, 2003). Even though innovation research on family firms is slightly more advanced than innovation research on non-technology-based small firms (De Massis et al., 2013), research on innovation in small family firms is almost non-existent. Thus, it is also critical to understand factors influencing innovation in small family firms because family-firm scholars have concluded that family involvement has direct and indirect effects on firm innovation (e.g., De Massis et al., 2013). In this study, we also assess the influence of family factors on innovation in the small-firm context.

As employees are an important form of (human) capital and a source of competitive advantage, we assess employees' influence on innovation in small family and non-family firms. Our study complements others that have established the importance of employee involvement in firm innovation (De Winne & Sels, 2010). Ours also appears to be the first study to test whether a firm owner's perception about his or her firm being a family firm or a non-family firm moderates the relationship between employee-related predictors and firm innovation. More specifically, we theoretically propose and then assess how employee learning, employee training, employee commitment (to the firm), and family employees (the number of employees related to the family) influence innovation in small firms with fewer than 60 employees. We also assess the moderating effect of the owner's perception.

This is also one of the first studies to examine predictors of innovation in the dominant non-technology sectors of the economy comprising mostly small family and non-family firms with fewer than 60 employees.

The structure of our paper is as follows. We provide a brief overview of the literature on innovation in small family and non-family firms in the first section. Next, we sketch our theory in the following section. We then offer hypoth-

eses and theoretical models followed by a description of our sample, variables, and results in the methods section. We conclude the paper with a discussion of our findings, offering practical implications of study findings, and listing some study limitations.

Literature Review

In the current economic environment, where firms face intense competition, there is a rush to move up the value chain by engaging in more knowledge-intensive work and by outsourcing the low-value, commoditized portion of the operation. This competitive rush has enhanced the importance of innovation, which positively impacts firm performance (Christensen & Raynor, 2003). Literature on innovation has increased significantly over the last few decades, reflecting the increased importance of the concept among business owners and managers. In their quest to decode the black box and understand various factors associated with the concept of innovation, researchers have focused on innovation inputs (e.g., research and development expenses), activities (e.g., firm culture or organization structure) and/or innovation outcomes (e.g., performance) (De Massis et al., 2013).

The resource constraints faced by small firms has led to limited research on their innovation with studies focusing mainly on the human capital aspect of the firms, such as owner-managers or employee characteristics (e.g., De Winne & Sels, 2010). Studies using the strategic view of human resource management or the knowledge-based view of a firm (i.e., knowledge is required for innovation) have demonstrated the positive influence of small-firm CEOs or owner-managers on firm innovation (Klaas, Klimchak, Semadeni, & Holmes, 2010). Some scholars have suggested that CEOs or owners have only indirect influence on innovation because highly educated CEOs or managers tend to hire talented or educated employees. These employees, in turn, contribute to firm innovation (Winne & Sels, 2010). Studies of employee involvement have suggested that as employees are the primary repositories of knowledge (e.g., Grant 1997), their involvement in enhancing firm innovation is critical (Hitt, Bierman, Shimizu, & Kochhar, 2001; Lado & Wilson, 1994). This supposition has been supported by small-firm studies that show the positive influence of non-managerial employees on firm innovation (Andries & Czarnitzki, 2014). However, our understanding of non-managerial employees' contributions to small-firm innovation is still limited (Slevin & Terjesen, 2011), requiring a significant amount of future research to build our knowledge base (Andries & Czarnitzki, 2014).

Scholarship on innovation in family firms, like scholarship on small-firm innovation, is thin and underdevel-

oped (De Massis et al., 2013). Still in the early stages of development, most work has focused on establishing a separate identity for the field by comparing family firms' innovation performance to non-family firms' performance. These studies generally agree that family involvement or embeddedness in a firm influences its innovation because of a family's large ownership stake in a firm or their desire to preserve the family entity for the next generation (e.g., Chrisman & Patel, 2012; Gomez-Mejia, Makri, & Kintana, 2010; Breton-Miller & Miller, 2009). In addition, these studies often focus on technological innovation versus adoption of new ideas or behaviors, practices more common in small family and non-family firms in traditional sectors of the economy.

The significant differences in small family firms' and large family firms' behaviors (e.g., Lussier & Sonfield, 2009) creates a significant void in our understanding of factors influencing innovation in small family firms. This, combined with our limited understanding of factors influencing innovation in small firms in non-technology industries, magnifies the urgency to undertake more studies on innovation in this context, as these are the dominant entities in major economies across the globe. In this study, we attempt to address this important and critical void in the field.

Theory

It is widely accepted that a firm's innovation output is related to availability of resources and firm capability. The resources and capability of small firms operating in traditional non-technology sectors of an economy are dependent on the firm's employees and managers, as these firms are resource-constrained in other aspects. This argument is consistent with two theoretical frameworks commonly utilized to study innovation, the Resource-based View (Barney, 1991) and the Absorptive Capacity Theory (Zahra & George, 2002). We utilize these two theoretical perspectives to build hypotheses.

The Resource-based View (RBV), which emerged out of strategic management scholars' quest to search for sources of competitive advantage (possibly innovation), is based on Wernerfelt (1984) and Penrose's (1959) seminal work. Barney's (1991) conceptualization of RBV attracted a significant following to this theoretical framework in many different streams of the business discipline. Per RBV, resources that are valuable, rare, inimitable, and non-substitutable provide firms with a competitive advantage. For small firms, employees and the management team (founders and CEOs) are the resources because of their knowledge base (about the firm, its customers, and market inter-linkages). The knowledge that employees possess is often rare and socially complex (Hitt, Dacin, Levitas, Arregle, & Borza, 2000). We argue that the small firms can make this key re-

source more valuable by training their employees, emphasizing learning, increasing employee commitment to the firm, and having a higher composition of employees with a connection to the founder and owners (i.e. family employees). Family embeddedness in firms has been identified as a resource that offers family firms a performance edge over non-family firms (Habbershon & Williams, 1999).

Absorptive Capacity Theory has been used extensively in the literature to explain sources of innovation in firms (e.g., Zahra & George, 2002; Cohen & Levinthal, 1990). The multidimensional construct absorptive capacity is a firm's ability to value, assimilate, and apply knowledge (Cohen & Levinthal, 1990) to create innovation. The primary focus of this theory is the utilization of knowledge to create innovation that gives firms a competitive advantage. Even though this theoretical framework has been applied primarily in the context of large firms (e.g., Qian & Acs, 2013), it is an appropriate model for explaining innovation in small firms. For most firms, employees are the key repositories of valuable knowledge and skills (Schultz, 1961). A small family firm may emphasize enhancing its absorptive capacity and the employee knowledge base to enhance the firm's position because of its desire to preserve the family entity for future generations.

Hypotheses

In this study, we argue that employees are the primary source of innovation for small firms. Various employee characteristics may help a small firm increase its level of innovation. We focus on a small firm's training of employees, emphasis on learning, employee commitment, and family employees as predictors of firm innovation. A small firm owner's perception about theirs as a family firm or non-family firm may influence the relationship between employee-related variables and firm innovation.

Employee Training and Innovation

Knowledge residing in small-firm employees contributes to firm innovation. Many small firm owners recognize the importance of employees in increasing firm innovation and competitiveness, and surveys of small firm owners/managers confirm it (Lichtenstein & Brush, 2001). Per Absorptive Capacity Theory, knowledge allows employees to understand and absorb new knowledge in their daily practices. With time, however, knowledge can become obsolete, endangering a firm's competitive position in the market. In the absence of new knowledge, a small firm's ability to learn and solve problems will decline, resulting in lower levels of firm innovation (e.g., Kim, 1998).

Employee training is a way to keep the employee knowledge base updated and enhance an employee's capacity to

engage in innovation. Through in-firm training small firms can allow employees to continue to accumulate the latest knowledge (Killingsworth, 1982) and utilize it to solve or improve a firm's complex processes and/or product/service offerings. A higher level of employee knowledge enhances a firm's absorptive capacity and thus its ability to gather knowledge and apply it to invent or innovate. Studies have supported the benefits of employee training on firm innovation (e.g., Bauernschuster, Falck, & Heblich, 2009). Thus, we propose the following hypothesis:

Hypothesis 1. In small firms, employee training is positively associated with firm innovation.

Emphasis on Learning and Innovation

In small firms, employees' motivation to enhance their knowledge and firm-related expertise is dependent on a firm's culture. A firm that hopes to maintain a competitive position in the industry by building and ensuring its capacity to innovate will not only train its employees but will also motivate employees to acquire knowledge on their own (e.g., MacDonald, Assimakopoulos, & Anderson, 2007).

Conversely, firms with low emphasis on learning will emphasize efficiency, resulting in employees focusing more on doing their work efficiently. Without an owner's emphasis on learning, employees will have less incentive to acquire or accumulate new knowledge and thus build a firm's absorptive capacity to innovate. Thus, we propose:

Hypothesis 2. In small firms, emphasis on learning is positively associated with firm innovation.

Commitment and Innovation

Employee commitment is a measure of an employee's identification with a firm. It is among the most extensively researched organizational constructs. Employee commitment toward a firm has been shown to produce firm-valued outcomes, such as lower turnover (Bellou, 2008), higher employee performance (Weeks, Loe, Chonko, & Wakefield, 2004), and higher employee creativity (e.g., Chang, Jia, Takeuchi, & Cai, 2014).

Given the resource constraints that small firms face, employees demonstrating a higher commitment are especially important to firm innovation levels. Employees with lower commitment are likely to perform at a minimum required level for continued employment (Ricketta, 2002), which implies that employees will not be engaging in new knowledge acquisition activities that build a small firm's absorptive capacity. Conversely, employees who are more committed feel a greater sense of responsibility (Morrison & Phelps, 1999) and are more likely to learn and acquire new knowledge to enhance their firm's capability to inno-

vate. Studies have also found that employees with higher commitment support and accept change (indicators of innovation) more strongly compared to employees with lower commitment. In addition, employee commitment is shown to be an important factor in fostering innovative behavior in a firm (Xerri & Brunetto, 2013). Therefore, we propose:

Hypothesis 3. In small firms, employee commitment is positively associated with firm innovation.

Family Employees and Innovation

Employees' relationships to owning family (i.e., family members who are employees) or to the firm owner should influence their contribution to a firm's innovation. Family members employed in the firm have a higher stake in performance of the firm. These family employees benefit financially (profit sharing or appreciation of firm equity holding) and emotionally (their concern for family well-being). Unlike non-family employees, who can terminate employment with the firm with no or negligible emotional cost, most family employees may endure significant emotional harm on terminating their employment with the firm (Kellermanns & Eddleston, 2006). Thus, family employees are more likely to exhibit a higher level of commitment to the firm. Because of their commitment and deep connection, these employees are more likely to engage in knowledge-acquisition behavior to build their firm's capability to innovate and to achieve a higher market standing for the firm. Thus, we propose:

Hypothesis 4. In small firms, a higher number of family employees in a firm is positively associated with firm innovation.

Owner Perception and Innovation

Studies on innovation have suggested that firm ownership has an influence on innovation levels (e.g., Classen, Carree, Van Gils, & Peters, 2014). Empirical studies comparing innovation performance of family and non-family firms have produced inconsistent results (Carnes & Irland, 2013). Some studies find support for the superiority of family firms over non-family firms in innovation practices (e.g., Gudmundson, Tower, & Hartman, 2003) because of these firms' ability to stimulate learning, innovation (Zellweger, 2007), and knowledge sharing (Zahra, 2012). Literature on innovation that supports the superiority of non-family firms is equally strong, with these studies suggesting that a family's desire to pass the family entity to the next generation forces them to act cautiously and deter innovation (Gomez-Mejia et al., 2010). Others studies suggest that a high degree of family ownership negatively influences a

firm's innovation output (Chrisman & Patel, 2012). Thus, family ownership can influence a firm's innovation output either positively or negatively.

As we mentioned previously, a significant overlap exists between small firms and small family firms in our economy. Not all small-firm owners consider theirs a family firm (e.g., Fernández & Nieto, 2005), however, because of the negative connotation associated with the term. Small-firm owners who do not consider their firm to be a family firm are likely to operate it differently compared to owners who consider theirs a family firm. As family and non-family firms have different firm innovation outputs, small-firm owners' perceptions about their firm as family or non-family operated may influence a firm's innovation, and influence the relationship between predictors and firm innovation. Thus, we propose:

Hypothesis 5. In small firms, owners' perceptions about their firm (being family or non-family) will moderate the relationships between predictors and firm innovation.

Method

We tested the proposed study hypotheses using a sample of small firms located in the southwestern part of the United States. The data was collected toward the end of 2011 through a survey instrument developed by one of the study authors. The sampled firms were selected from a database of local businesses maintained by the executive arm of a business school from a state university located in the region. The organization maintained the data to market its executive graduate and certificate programs and advertise multiple business events. The organization was in the process of developing new executive education programs targeting small-business owners in the surrounding communi-

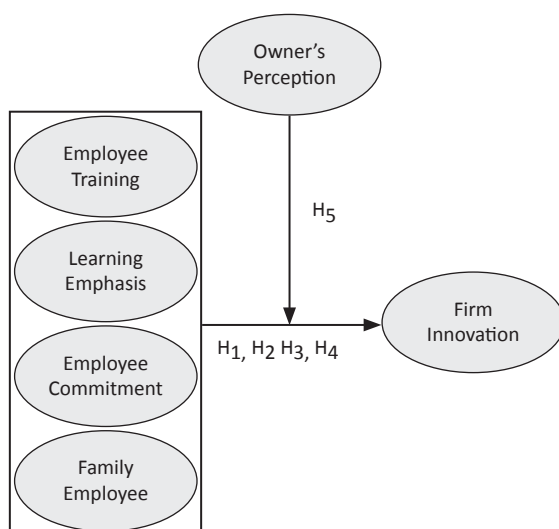


Figure 1. Proposed theoretical model.

ty and the state. Organization leadership approached one of the authors to develop a survey instrument to assess the suitability of those programs for the target audience. The organization allowed the author to include additional questions and items in the survey instrument in exchange for help on the survey.

The organization's original database contained a total of 3902 active firms operating in the state. The data contained the names of firms, addresses (street, city, county, state, and zip code), and title and contact information of firm insiders. Given budget constraints, the author could only survey about 300 contacts from the database. To randomly select a sample of 300 firms from the 3902 firms, the author used a two-step process. In the first step, he used the randomization function available in Microsoft Excel to assign a random number (in format 0.xxx, xxx, xxx) to each company in the database. In the second step, he used the sort function to rearrange companies in the data from the smallest to the largest (on random number) to select the first 300 companies in the list. If any firm in the selected list was a local branch of a large corporation, he moved to the next firm on the list after removing the branch location from the selected list. He continued the sample refinement process till our final sample of firms to be contacted for the survey included only local firms.

As the database lacked email addresses, the author personally called the listed contact person for each firm to extend an invitation to participate in the survey and reconfirm the firm's address and the name and contact information for the top executive. Most of the contacted firms agreed to participate in the survey due to the reputation of the associated business school. We mailed the survey questionnaire to these firms along with a letter explaining the survey instrument and the purpose of the survey. A single respondent from each targeted firm completed the mailed survey. As multiple researchers have raised concern about the reliability of organizational data obtained using a single firm respondent (e.g., Bowman & Ambrosini, 1997), we used only respondents who were either owners of the firm or the top officers of the firm. Such respondents have been shown to be knowledgeable about organizational practices and to possess reliable information about the firm, especially if the firm is small (Zahra & Covin, 1995; Mahto, Davis, Pearce, John, & Robinson, 2010). We received completed surveys from 66 firms, representing a response rate of 22%.

The average age of respondents in the study sample was 53.62 years with the majority of respondents being male (46 males and 20 females). On average, the sample firms had 30 full-time employees and sales revenue of about \$2 million (average 2.66 with 1 represents less than \$550K per year and 5 represents more than \$5 million per year).

These firms represented 20 different industries (food manufacturing to medical, precision, and optical instruments) with fabricated metal and transportation equipment, aircraft etc. being the dominant group, with each constituting 12% (8 observations) in the sample. A large number of respondents (20 out of 66) left the nature-of-business question unanswered. In general, small firms in our sample were engaged primarily in manufacturing. Finally, 36 respondents identified their firm as a family firm, while 29 identified their firm as a non-family firm. One respondent failed to answer the question.

Survey respondents' failure to complete all survey questions (e.g., innovation and employee training) resulted in a smaller usable sample of 47 firms for the study. The average firm age in our sample was 30 years and most firms had an average of 14 employees. These firms also had average sales revenue of between \$1 million and \$2 million per year and an average annual growth rate of about 5%, which was higher than the state economic growth rate over the same period.

Study Variables

Innovation. A review of innovation literature suggests that researchers have employed different measures of the construct, such as patents (Archibugi & Planta, 1996), Research and Development expenditure and intensity (Armbruster, Bikfalvi, Kinkel, & Lay, 2008), or number of new products and/or services introduced by the organization (e.g., Nohria & Gulati, 1996; Damanpour, 1996; Johannesen, Olsen, & Lumpkin, 2001). In a small-business context, however, especially among micro-firms, some measures, such as R & D intensity and patents, are inappropriate to assess innovation. Resource constraints limit such measurement. As a result, we operationalized innovation in our study using the number of new products or services introduced by a sample firm (e.g., De Massis, Frattini et al., 2013). We asked respondents to indicate the number of new products or service families that they introduce each year to obtain innovation measure. Respondents indicated their preference on a scale of 1 to 4, where 1 indicated 1 to 2 introductions and 4 indicated 10 or more new products or service families.

Employee Training. Uniformity is lacking in employee training literature on operationalizing the construct (e.g., Tharenou, Saks, & Moore, 2007). Given small-business resource constraints, it is unrealistic to utilize absolute, proportional, or content measures of training in such an environment. The emphasis measure of training, which assesses the importance of training for an organization, is a better measure of a small firm's commitment to employee training (e.g., Bassi & McMurrer, 1998). Thus, in this study

we measured employee training using a single indicator that asked respondents to indicate the percentage of sales revenue their companies spent on training employees. The respondents indicated their response on a 5-item Likert-type scale, with a range of 1, representing "Less than 1%," to 5, representing "more than 20%".

Learning Emphasis. We measured a firm's emphasis on learning using a two-item scale that we adopted from the learning-orientation scale utilized in the marketing literature (Sinkula, Baker, & Noordewier, 1997). The first item on the scale asked respondents about the importance of learning to the company's competitive position. The second item of the scale assessed linkage between learning and the firm's values. The respondents indicated their preference on both items using a 5-point Likert-type scale ranging from with 1, representing "Strongly Disagree," to 5, representing "Strongly Agree". The scale had a reliability (Cronbach's $\alpha = .87$) higher than recommended (.70) in the literature. We average the two items to obtain a single measure representing the firm's level of learning emphasis.

Employee Commitment. We measure employee commitment using three items of effective commitment scale developed by Meyer and Allen (1984). The first item of the scale assessed consensus on organizational vision. The second item of the scale assessed employee's commitment to firm goals. Finally, the third item assessed employees' participation in the company's strategic direction. The respondents indicated their preference for all three items using a 5-point Likert-type scale ranging from 1, representing "Strongly Disagree," to 5, representing "Strongly Agree". The scale with a Cronbach's $\alpha = .71$ satisfied the reliability requirements recommended in the literature.

Family Employee. As the family-employee construct focuses on the presence of members of a business-owning family, we follow Mahto et al. (2010) to measure the construct by counting the number of employees related to the owner(s) of the firm. We obtained this number by asking firm respondents to indicate the number of family members currently employed in the firm.

Owner Perception. Multiple definitions of family firm exist in the literature (Mazzi, 2011) with the broader definition of the construct suggesting a majority of private firms being family firms (Shanker & Astrachan, 1996). As firms in our study sample are private small firms, they satisfy the broad definition of family firms as suggested in Shanker and Astrachan (1996). In this study, however, we want to assess if a firm owner's identification of theirs as a family firm or non-family firm influences firm behavior. Thus, we followed Mahto et al. (2010) and Kotey and Folker (2007) in allowing respondents to self-classify their firm as either

a family firm or a non-family firm. We operationalized this construct by asking firm respondents to respond “yes” or “no” to the question of whether theirs was a family firm or a non-family firm.

Gross Margin. We utilized gross margin as the control variable in our model to parse out the effects of profitability in our model. The summary statistics of the variables are presented in Table 1.

Analysis

As we obtained the study data about small firms from a single firm respondent, we first assessed if our data suffered from the common method bias. We utilized Herman’s single factor test, outlined in Podsakoff, MacKenzie, Lee, and Podsakoff (2003), to confirm or rule out the possibility of common method bias in our data. In the test, we conducted a factor analysis (principal component analysis) in which all study variables were allowed to load on a single factor to assess the existence of a high correlation between them. Results of the component analysis suggested a five-factor solution including two factors with Eigen value greater than 1. In the resulting model, the factor with the highest Eigen value (1.69) explained only 34% of the variance in the sample. Thus, based on the result of factor analysis we rule out the possibility of common method bias in our sample.

We tested study hypotheses using linear regression using STATA®. In addition, we also performed a descriptive analysis for study variable (presented in Table 1) along with a correlation among study variables. The correlation among study variables and the results of the regression analysis are presented in Tables 1 and 2, respectively. As can be

observed in Table 1, some study variables are correlated as expected, but the correlation between study variables are not too high to reach a level indicating collinearity in the data. For example, employee commitment and family employees are positively and significantly correlated with the dependent variable innovation. However, the rest of the four independent and control variables are not significantly correlated with innovation. Some inter-correlation also exists between independent variables. For example, employee commitment is correlated with emphasis on learning.

Results

The results of regression analysis are illustrated in Table 1. The regression model for the study sample was significant and explained approximately 27% of variance in innovation, the dependent variable. The two sub-samples’ regression models were also significant with independent variables explaining approximately 47% and approximately 14% of variances in innovation in family firms and non-family firms sub-samples, respectively. We also obtained Variance Inflation Factor (VIF) statistics in regression analysis results for all three models to assess collinearity issues in our model. None of the VIF measures reached higher than 1.5, thus ruling out the possibility of collinearity influencing our results.

In Hypothesis 1, we suggested a positive influence from employee training on firm innovation. However, as can be seen in the Table 3, the employee training variable failed to reach the significance level, thus Hypothesis 1 is not supported. Similarly, Hypothesis 2, which predicted a positive influence from learning on firm innovation is not supported, as the learning emphasis failed to reach significance level. In Hypothesis 3 we predicted a positive influ-

Table 1
Descriptive statistics and pairwise correlations between sample variables

Variables	Innovation	Employee Training	Learning Emphasis	Employee Commitment	Family Employee	Owner Perception	Gross Margin
Innovation	1						
Employee Training	-0.005	1					
Learning Emphasis	0.162	0.243	1				
Employee Commitment	0.332*	0.090	0.4313**	1			
Family Employee	0.426**	0.167	0.196	0.228	1		
Owner Perception	-0.029	0.145	-0.084	0.137	0.263	1	
Gross Margin	0.077	-0.079	0.018	0.101	0.052	-0.156	1
Mean	1.326	1.651	4.163	3.915	1.558	0.600	3.326
Std. Dev.	0.778	0.686	0.705	0.663	1.736	0.495	1.375

Sample $N = 43$

Significance level † $p < 0.10$ * $p < 0.05$ ** $p < 0.01$ *** $p < .001$

ence from employee commitment on firm innovation. In Table 3, employee commitment has a positive and significant influence on firm innovation, thus providing support for Hypothesis 3. Similarly, Hypothesis 4, which suggested a positive influence from family employees on firm innovation, is also strongly supported. Overall, among the four hypotheses predicting positive influence from independent variables on firm innovation, two Hypothesis (H3 and H4) are supported, and the other two (H1 and H2) are not supported.

Finally, in Hypothesis 5 we suggested a moderating influence from a firm owner's perception of theirs being a family or non-family firm. To assess this Hypothesis, we divided the sample into two sub-samples of family firms and non-family firms to rerun the regression analysis. We included the results of sub-sample regression analysis in Table 3 with results of regression analysis for family firms and non-family firms displayed under the columns Family Firm and Non-Family Firm, respectively. As can be observed in the Table, the results are quite different for family and non-family firms. In the family firm sub-sample, family employees and employee commitment have positive and significant influence on firm innovation. While the results in the non-family sub-sample are quite different, with nei-

ther family employee nor employee commitment reaching significance level. The regression coefficients for the other two predictors, learning emphasis and employee training, are also quite different for both sub-samples. We also assessed for heteroscedasticity using a robust standard error regression and results largely remained the same. Thus, the result offers partial support for Hypothesis 5.

Discussion and Conclusion

Our results are consistent with findings in the family-business literature that suggests family involvement in a firm influences firm innovation (De Massis et al., 2013). Our findings about innovation in family firms and non-family firms is consistent with previous findings in the literature that indicate that family firms are more likely than non-family firms to invest in innovation (e.g., Classen et al., 2014). However, this is the first study to replicate those findings in the context of small family firms operating in traditional sectors of our economy. Study findings suggest that family employees are the key predictor of innovation in firms, which offers support for the stewardship perspective advanced in the family-firm literature. Given the multiple benefits that family employees receive from the family firms, their commitment to and ownership of innovation in such firms is understandable. In addition, the emergence of employee commitment as another predictor of innovation in the sample mirrors the effects of family employees. On a psychological basis, non-family employees with high levels of commitment to a firm may resemble family employees (e.g., Mahto et al., 2010) and thus can contribute to higher level of innovation in firms.

An important finding that emerged from our study is the influence of a firm owner's perception about his firm being a family firm or a non-family firm. Even though our sample comprises of only small firms, which are mostly owned by an individual or family, some owners consider their firms as family firms while others label it as non-family. In our total sample almost 60% of firm owners identifying their firm as a non-family firm reported employing at least one family member besides themselves. Unlike previous studies that allowed firm owners to self-identify their firm as a family firm or a non-family firm but then imposed additional restrictions to identify a family firm (e.g., Schulze, Lubatkin, & Dino, 2003; Mahto et al., 2010), we trusted the firm owner's decision and assessed its impact on firm innovation. It seems a firm owner's classification of their firm as a family firm or a non-family firm not only helps in identification of family firm but also influences firm outcomes, probably indirectly. This is consistent with similar findings in the family-firm literature (Mahto et al., 2010; Mahto & Khanin, 2015). Owners who perceive their firms as a family firms operate them differently and may

Table 2
Regression results of survey variables on innovation

	Full Sample	Family Firm	Non Family Firm
	1	2	3
Employee Training	-0.077 (0.167)	0.056 (0.243)	-0.066 (0.265)
Learning Emphasis	-0.039 (0.182)	-0.034 (0.206)	-0.248 (0.507)
Employee Commitment	0.329* (0.189)	0.526** (0.211)	0.207 (0.564)
Family Employee	0.191*** (0.069)	0.200** (0.071)	0.148 (0.233)
Gross Margin	-0.003 (0.083)	-0.117 (0.101)	0.158 (0.170)
Owner Perception	-0.273 (0.2435)		
Constant	0.2074 (0.8511)	-0.763 (0.984)	1.003 (1.603)
Observations	43	26	17
R-squared	0.274	0.468	0.135

Standard errors in parentheses

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

experience different relationships between employees and firm innovation as compared to owners of small firms, who identify theirs as a non-family firms.

Practical Implications

Our findings have multiple important implications for small-business owners. A key implication is that small-business owners are more likely to experience positive outcomes associated with employees when they classify their firms as family firms. Small-business owners who classify their firms as non-family firms are unlikely to transform higher employee commitment to high firm innovation. A small-business owner who classifies his firm as a family firm generally has employee commitment and family employees that transmute to higher innovation output for the firm. However, owners who do not consider their firms as family firms are unable to reap the benefits of relationships between employees and firm innovation.

Limitations

Our findings have significant implications for small firms, especially for firms with fewer than 60 employees. Nevertheless, we caution readers in interpreting our findings because of limitations associated with the study. Sample size is a limitation of this study. Limited sample size constrained our choice of statistical methods available to test our study models and hypotheses. We encourage scholars to test these relationships using a large sample of small firms to reconfirm the findings. A second limitation of the study is the geographical location of the sample firms, in the southwestern part of the United States. Since all our sample firms are from a specific area of the nation, readers should be cautious in generalizing our findings to small firms operating outside the study's geographical area. This also presents an opportunity for future research, where researchers can assess the strength of study relationships using data from different regions and countries across the globe. Finally, our study only assesses association between independent and dependent variables because of the cross-sectional nature of study data. It might be useful to assess causality among the variables using longitudinal data. We encourage scholars to design such a longitudinal study to enhance our understanding on the topic. While acknowledging the methodological limitations, we still believe that our study makes significant contributions to the small-firm and family-firm literatures.

References

Andries, P., & Czarnitzki, D. (2014). Small firm innovation performance and employee involvement. *Small*

Business Economics, 43(1), 21-38.

- Archibugi, D., & Planta, M. (1996). Measuring technological change through patents and innovation surveys. *Technovation*, 16(9), 451-468, 519.
- Armbruster, H., Bikfalvi, A., Kinkel, S., & Lay, G. (2008). Organizational innovation: The challenge of measuring non-technical innovation in large-scale surveys. *Technovation*, 28(10), 644-657.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management* 17(1), 99-120.
- Bassi, L. J., & McMurrer, D. P. (1998). Training investment can mean financial performance. *Training & Development*, 52(5), 40-43.
- Bauernschuster, S., Falck, O., & Heblich, S. (2009). Training and innovation. *Journal of Human Capital*, 3(4), 323-353.
- Bellou, V. (2008). Exploring civic virtue and turnover intention during organizational changes. *Journal of Business Research*, 61(7), 778-789.
- Bowman, C., & Ambrosini, V. (1997). Using single respondents in strategy research. *British Journal of Management*, 8(2), 119-131.
- Breton-Miller, L., & Miller, D. (2009). Agency vs. stewardship in public family firms: A social embeddedness reconciliation. *Entrepreneurship Theory and Practice*, 33(6), 1169-1191.
- Carnes, C. M., & Ireland, R. D. (2013). Familiness and innovation: Resource bundling as the missing link. *Entrepreneurship Theory and Practice*, 37(6), 1399-1419.
- Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of Marketing*, 64(3), 1-17.
- Chang, S., Jia, L., Takeuchi, R., & Cai, Y. (2014). Do high-commitment work systems affect creativity? A multilevel combinational approach to employee creativity. *Journal of Applied Psychology*, 99(4), 665-680.
- Chrisman, J. J., & Patel, P. C. (2012). Variations in R&D investments of family and nonfamily firms: Behavioral agency and myopic loss aversion perspectives. *Academy of management Journal*, 55(4), 976-997.
- Chrisman, J. J., Chua, J. H., & Litz, R. (2003). A unified systems perspective of family firm performance: An extension and integration. *Journal of Business Venturing*, 18(4), 467-472.
- Christensen, C. M., & Raynor, M. E. (2003). *The innovator's solution: Creating and sustaining successful growth*. Boston: Harvard Business School Press.
- Classen, N., Carree, M., Van Gils, A., & Peters, B. (2014). Innovation in family and non-family SMEs: An exploratory analysis. *Small Business Economics*, 42(3), 595-609.

- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Crossan, M. M., & Apyadin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154-1191.
- D'Aveni, R. A. (2010). *Hypercompetition*. New York, NY: Simon and Schuster.
- Daft, R. L. (1978). A dual-core model of organizational innovation. *Academy of Management Journal*, 21(2), 193-210.
- Damanpour, F., & Evan, W. M. (1984). Organizational innovation and performance: The problem of "organizational lag". *Administrative Science Quarterly*, 39(2), 392-409.
- Damanpour, F. (1996). Organizational complexity and innovation: Developing and testing multiple contingency models. *Management Science*, 42(5), 693-716.
- De Massis, A., Frattini, F., & Lichtenthaler, U. (2013). Research on technological innovation in family firms: Present debates and future directions. *Family Business Review*, 26(1), 10-31.
- De Winne, S., & Sels, L. (2010). Interrelationships between human capital, HRM and innovation in Belgian start-ups aiming at an innovation strategy. *The International Journal of Human Resource Management*, 21(11), 1863-1883.
- Dess, G. G., & Picken, J. C. (2000). Changing roles: Leadership in the 21st century. *Organizational Dynamics*, 28(3), 18-34.
- Fernández, Z., & Nieto, M. J. (2005). Internationalization strategy of small and medium-sized family businesses: Some influential factors. *Family Business Review*, 18(1), 77-89.
- Gomez-Mejia, L. R., Makri, M., & Kintana, M. L. (2010). Diversification decisions in family-controlled firms. *Journal of Management Studies*, 47(2), 223-252.
- Grant, R. M. (1997). The knowledge-based view of the firm: Implications for management practice. *Long Range Planning*, 30(3), 450-454.
- Gudmundson, D., Tower, C. B., & Hartman, E. A. (2003). Innovation in small businesses: Culture and ownership structure do matter. *Journal of Developmental Entrepreneurship*, 8(1), 1-17.
- Habbershon, T. G., & Williams, M. L. (1999). A resource-based framework for assessing the strategic advantages of family firms. *Family Business Review*, 12(1), 1-25.
- Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, 44(1), 13-28.
- Hitt, M. A., Dacin, M. T., Levitas, E., Arregle, J. L., & Borza, A. (2000). Partner selection in emerging and developed market contexts: Resource-based and organizational learning perspectives. *Academy of Management Journal*, 43(3), 449-467.
- Johannessen, J. A., Olsen, B., & Lumpkin, G. T. (2001). Innovation as newness: What is new, how new, and new to whom?. *European Journal of Innovation Management*, 4(1), 20-31.
- Kellermanns, F. W., & Eddleston, K. (2006). Corporate venturing in family firms: Does the family matter. *Entrepreneurship Theory and Practice*, 30(6), 837-854.
- Killingsworth, M. R. (1982). "Learning by doing" and "investment in training": A synthesis of two "rival" models of the life cycle. *The Review of Economic Studies*, 49(2), 263-271.
- Kim, L. (1998). Crisis construction and organizational learning: Capability building in catching-up at Hyundai Motor. *Organization Science*, 9(4), 506-521.
- Klaas, B. S., Klimchak, M., Semadeni, M., & Holmes, J. J. (2010). The adoption of human capital services by small and medium enterprises: A diffusion of innovation perspective. *Journal of Business Venturing*, 25(4), 349-360.
- Kotey, B., & Folker, C. (2007). Employee training in SMEs: Effect of size and firm type—family and nonfamily. *Journal of Small Business Management*, 45(2), 214-238.
- Lado, A. A., & Wilson, M. C. (1994). Human resource systems and sustained competitive advantage: A competency-based perspective. *Academy of Management Review*, 19(4), 699-727.
- Lichtenstein, B. M. B., & Brush, C. G. (2001). How do "resource bundles" develop and change in new ventures? A dynamic model and longitudinal exploration. *Entrepreneurship Theory and Practice*, 25(3), 37-37.
- Lussier, R. N., & Sonfield, M. C. (2009). Founder influence in family businesses: analyzing combined data from six diverse countries. *Journal of Small Business Strategy*, 20(1), 103-118.
- MacDonald, S., Assimakopoulos, D., & Anderson, P. (2007). Education and training for innovation in SMEs: A tale of exploitation. *International Small Business Journal*, 25(1), 77-95.
- Mahto, R. V., & Khanin, D. (2015). Satisfaction with past financial performance, risk taking, and future performance expectations in the family business. *Journal of Small Business Management*, 53(3), 801-818.
- Mahto, R. V., Davis, P. S., Pearce, I. I., John, A., & Robinson

- Jr., R. B. (2010). Satisfaction with firm performance in family businesses. *Entrepreneurship Theory and Practice*, 34(5), 985-1001.
- Mazzi, C. (2011). Family business and financial performance: Current state of knowledge and future research challenges. *Journal of Family Business Strategy*, 2(3), 166-181.
- Meyer, J. P., & Allen, N. J. (1984). Testing the "side-bet theory" of organizational commitment: Some methodological considerations. *Journal of Applied Psychology*, 69(3), 372.
- Morrison, E. W., & Phelps, C. C. (1999). Taking charge at work: Extrarole efforts to initiate workplace change. *Academy of Management Journal*, 42(4), 403-419.
- Nohria, N., & Gulati, R. (1996). Is slack good or bad for innovation? *Academy of Management Journal*, 39(5), 1245-1264.
- Penrose, E. T. (1959). *The theory of the growth of the firm*. New York: John Wiley & Sons.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Qian, H., & Acs, Z. J. (2013). An absorptive capacity theory of knowledge spillover entrepreneurship. *Small Business Economics*, 40(2), 185-197.
- Ricketta, M. (2002). Attitudinal organizational commitment and job performance: A meta-analysis. *Journal of Organizational Behavior*, 23(3), 257-266.
- Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1-17.
- Schulze, W. S., Lubatkin, M. H., & Dino, R. N. (2003). Toward a theory of agency and altruism in family firms. *Journal of Business Venturing*, 18(4), 473-490.
- Shanker, M. C., & Astrachan, J. H. (1996). Myths and realities: Family businesses' contribution to the US economy—A framework for assessing family business statistics. *Family Business Review*, 9(2), 107-123.
- Sinkula, J. M., Baker, W. E., & Noordewier, T. (1997). A framework for market-based organizational learning: Linking values, knowledge, and behavior. *Journal of the Academy of Marketing Science*, 25(4), 305-318.
- Slevin, D. P., & Terjesen, S. A. (2011). Entrepreneurial orientation: Reviewing three papers and implications for further theoretical and methodological development. *Entrepreneurship Theory and Practice*, 35(5), 973-987.
- Terziovski, M. (2010). Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: A resource-based view. *Strategic Management Journal*, 31(8), 892-902.
- Tharenou, P., Saks, A. M., & Moore, C. (2007). A review and critique of research on training and organizational-level outcomes. *Human Resource Management Review*, 17(3), 251-273.
- US Small Business Administration (2010). Analysis of Small Business & Jobs. Accessed at <https://www.sba.gov/sites/default/files/files/an%20analysis%20of%20small%20business%20and%20jobs.pdf>
- Weeks, W. A., Loe, T. W., Chonko, L. B., & Wakefield, K. (2004). The effect of perceived ethical climate on the search for sales force excellence. *Journal of Personal Selling & Sales Management*, 24(3), 199-214.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Wiggins, R. R., & Ruefli, T. W. (2005). Schumpeter's ghost: Is hypercompetition making the best of times shorter?. *Strategic Management Journal*, 26(10), 887-911.
- Xerri, M. J., & Brunetto, Y. (2013). Fostering innovative behaviour: The importance of employee commitment and organisational citizenship behaviour. *The International Journal of Human Resource Management*, 24(16), 3163-3177.
- Yap, C. M., & Souder, W. E. (1994). Factors influencing new product success and failure in small entrepreneurial high-technology electronics firms. *Journal of Product Innovation Management*, 11(5), 418-432.
- Zahra, S. A., & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. *Journal of Business Venturing*, 10(1), 43-58.
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-203.
- Zahra, S. A. (2012). Organizational learning and entrepreneurship in family firms: Exploring the moderating effect of ownership and cohesion. *Small Business Economics*, 38(1), 51-65.
- Zellweger, T. (2007). Time horizon, costs of equity capital, and generic investment strategies of firms. *Family Business Review*, 20(1), 1-15.