The Effect of Behavioral Strategic Control and Family Involvement on Family Firm Innovation

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ABSTRACT

The crucial variable in family firm innovation is how interaction between family members determines collaborative and innovative outcomes. This study examines the effect of behavioral strategic controls on family firm innovation. We especially set out to address a key issue: whether the relationship of behavioral strategic controls on family firm innovation is moderated by the numbers of generations involved in management. We use multiple regression analysis to test our hypotheses in a sample of 124 managers from Taiwanese family firms. The results show that behavioral strategic controls have a significantly positive effect on family firm innovation. Furthermore, family involvement is found to positively moderate the relationship between behavioral strategic controls and family firm innovation. The result implies that high family involved firms can use behavioral strategic controls to promote innovation.

Keywords: Behavioral strategic control, family firm innovation, family involvement
INTRODUCTION

Family firm innovation is distinctive from non-family firms because the firms must include more than simply the sum of individual members’ efforts; these firms must also include the innovation that emanates from the synergies between family members (Litz and Kleysen, 2001). In other words, the crucial variable in family firm innovation is how interaction between family members determines collaborative and innovative outcomes. Viewing family business from behavior of the people who manage the firm, Chua, Christman, and Sharma (1999) find that family members must behave as they do to shape and pursue the vision (i.e., innovation) of one or a few families that control in the firm. Future, a family firm’s strong senses of identity, unique social system, and “familiness” are specific social resources (Habbershon, Williams, and MacMillan, 2003) which can foster frequent formal and informal face-to-face discussions and interactions (Miller and Le Breton-Miller, 2006; Pearson, Carr, and Shaw, 2008). Hence, family firm innovation involves interpersonal and interactive issues that consider the effects of the family members involved (Litz and Kleysen, 2001).

Behavioral strategic controls within the firm consist of a combination of internal, forced, and personal controls that shape and influence the behavior of managers in the pursuit of long-term goals (Hitt, Hoskisson, Johnson, and Moesel, 1996; Zahra, Hayton, and Salvato, 2004). Effective behavioral strategic controls require the use of face-to-face meetings to obtain the complex information necessary to make appropriate subjective assessments (Hitt et al., 1996). Top managers often use behavioral strategic controls to process external and internal information in order to execute organizational strategies and allocate resources (Hitt et al., 1996). Connecting with “familiness”, behavioral strategic controls, which consider interactive issue, potentially play an important role in family firm.

This study uses the definition of family firms proposed by Litz (1995). Their definition is
appropriate for this research because it considers two important elements of family involvement: (1) the stable nature of family ownership, and (2) generational involvement within a firm. Previous research finds that high rates of family ownership can facilitate the use of behavioral strategic controls (Hsu and Chang, 2011). Higher levels of generational involvement in family firms may increase the benefits of firms’ knowledge sharing practices (Zahra, Neubaum, and Larraneta, 2007). Accordingly, this study would like to ask whether the relationship of behavioral strategic controls on family firm innovation is moderated by the numbers of generations involved in management.

This study investigates social capital as a theoretical and fundamental element of behavioral strategic controls in a sample of Taiwanese family businesses. Taiwan is characterized by a concentration of high familial ownership, the lack of an active external market, and an abundance of family cross Holdings (Claessens, Djankov, and Lang, 2000), all features that are associated with a relational governance system, it is an ideal setting for examining this issue. In Taiwanese family firms, the informal influence of the family is more powerful than formal authority, because most of the family members are in the top management positions (Yen, 1996). Hence, the behavioral control research focusing on Taiwanese family firms becomes especially noteworthy. Viewing family firm innovation as intentional action, we examine the effects of behavioral strategic controls on innovation in Taiwanese-listed family firms, and then in turn, examine the moderating role of family involvement in the relationship between behavioral strategic controls and family firm innovation. Figure 1 is the conceptual framework.
LITERATURE REVIEW AND RESEARCH HYPOTHESES

In general, social capital is the sum of the actual and potential resources embedded within, available through, and derived from a network of relationships (Nahapiet and Ghoshal, 1998). Scholars have identified social capital as a set of social resources embedded in individual relationships (e.g., Burt, 1992), and has attracted critical attention as a concept that can link the actions of individuals and collectivities (Coleman, 1988; Portes, 1998). The basic characteristic of family firms that distinguishes them from other businesses is the influence of familial relationships (Moores, 2009), which operate as a collective good within family firms. Social capital in family firms cannot be hired or imported, because it exists within these relationships (Arregle, Hitt, Sirmon, and Very, 2007; Hoffman, Hoelscher, and Sorenson, 2006). In other words, a family’s social capital is located not in the family members themselves, but in their relationships with each other. For many family firms, the social capital residing in familial relationships is an important element of their capability to create a competitive advantage (Arregle et al., 2007; Hoffman et al., 2006; Mustakallio, Autio, and Zahra, 2002; Pearson, Carr, and Shaw, 2008; Sorenson, Goodpaster, Hedberg, and Yu, 2009). Prior researchers propose that family interaction and involvement are uniquely behavioral, and constitute the social resource of “familiness” (Arregle et al., 2007; Habbershon et al., 2003; Pearson et al., 2008) that is essential to the creation of social capital.
relationships and familiness are viewed as social resources (Arregle et al., 2007; Mustakallio et al., 2002; Pearson et al., 2008), social capital theory may therefore prove to be a stronger and more useful discourse than others (e.g., RBV) in the analysis of family firms.

**Behavioral strategic controls in family firms**

The purpose of any control system is to make sure the company strategies meet predetermined goals. Baysinger and Hoskisson (1990) propose two corporate-level controls: “Strategic control entails largely subjective, strategically relevant long-term criteria, whereas financial control involves objective short-term criteria, such as return on investment.” Hitt et al. (1996) find that strategic controls involve the use of long-term and strategically relevant criteria to evaluate resource allocation. The use of behavioral strategic controls emphasizes the management of information and resources in the pursuit of long-term goals, largely via formal and informal face-to-face interactions (Hill and Jones, 2004). The primary objectives of behavioral strategic controls are to solve problems and reach a consensus via face-to-face meetings and open communication. From a social capital perspective, behavioral strategic controls may be understood as informal governances (social controls) that use formal and informal meetings to foster mutual understanding among managers, with the desired result of agreement on long-term goals.

In family firms, formal and informal meetings highlight the communication and interaction between family and non-family CEO, managers, and owner and family members (Hall and Nordqvist, 2008). Ketokivi and Castaner (2004) find that the deeply embedded formal and informal interactions of a family firm can be an integrative device that allows individuals to share information and better understand the allocation of company resources. Mustakallio et al. (2002) indicate that familial institutions (including informal get-togethers, formal meetings, councils, and plans) contribute to the level of social interaction between
owner-family members. They indicate that the informal governances of a family are critical in the decision-making process. Hall and Nordqvist (2008) find that formal and informal meetings create opportunities for family members to meet and discuss issues, which leads to increased interaction. Social interaction within a family firm works as valuable social capital when family member-managers are encouraged to know one another and to exchange information and resources (Tsai and Ghoshal, 1998). In addition, familial relationships are usually strong and long lasting due to family shareholding and succession in family businesses (Miller and Le-Breton Miller, 2006; Moores, 2009). As noted above, family firms with social capital residing in family relationships possess potential advantages for developing behavioral strategic controls.

Following Schumpeter’s (1934) view, innovation concentrates on the ways in which a firm manages its resources and develops the capabilities that influence its degree of innovation. To date, only a few studies have addressed organizational innovation from a relational perspective (Damanpour, 1999; Tsai and Ghoshal, 1998; Zahra, 2010). Investigating organizational innovation via social relational mechanisms, Damanpour (1991) finds that both internal and external communications are positively associated with innovation. Drawing on a social network perspective of interorganization, Tsai and Ghoshal (1998) suggest that social interaction is significantly related to the extent of resource exchange and combination, which in turn has a positive association with innovation. Zahra (2010) proposes that family firms can employ their organizational social capital to achieve new ventures.

However, what does it mean for a family firm to be a creative and innovative entity? West and Farr (1989) define innovation as the “… intentional introduction and application within a role, group or organization of ideals, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit role performance, the group, the organization or the wider society.” Based on West and Farr’s definition, Litz and Kleysen
Litz and Kleysen redefine West and Farr’s definition of innovation by including interpersonal and interactive issues. They argue that the interaction between family members that results in collaborative and innovative outcomes is the central variable (Litz and Kleysen, 2001), and that family firm innovation requires communication in a collective, familial context to generate or introduce novel ideals, processes, products, or services.

In generally, family firms often encourage family members to share information with each other and tend to experience less pressure during meetings (Gersick, Davis, Hampton, and Lansberg, 1997; Ibrahim, Soufani, and Lam, 2001). Social interactions between family owners and managers become valuable social capital when family members encourage information sharing and the establishment of a common perspective (Pearson et al., 2008). The use of a behavioral strategy control leads family member-managers to interact in the decision-making process and to agree on long-term goals. These characteristics of behavioral strategic controls are important to sustain the kinds of products or process innovations that take a long time to reach the market (Hoskisson, Hitt, and Hill, 1991). Several studies also find that strategic control systems are capable of fostering firm managers on innovations (Barringer and Bluedorn, 1999; Damanpour, 1991; Ghoshal, Korine, and Szulanski, 1994; Tsai and Ghoshal, 1998; Zahra, 2010). Therefore, the use of behavioral strategic controls is likely to promote a greater degree of innovation in family firms. Hence, we propose

**Hypothesis 1:** Behavioral strategic controls in family firms are positively related to family firm innovation.
The moderating effects of family involvement

H1 suggests that behavioral strategic controls positively associate with innovation in family firms, respectively. This relationship, however, may vary when the family members involved in business becomes more generations. Family ownership is an important factor influencing the relationships and interactions between the firm and the family (Zahra, 2003; 2005). However, the transfer of ownership to the next generation is often the prime objective of the owners of a family firm (Chua, Chrisman, and Sharma, 2003). Several researchers posit that multi-generational involvement in management may help preserve family connections, tacit knowledge, and build superior capabilities (Habbershon et al., 2003; Miller and Le Breton-Miller, 2006; Zahra et al., 2007). In line with the argument on the nature of family firms, family involved in formal and informal interactions is very high, which allow family individuals to share information and better understand company resource allocation (Hoffman et al., 2006; Ketokivi and Castaner, 2004). Gersick, Daivs, Hampton, and Lansberg (1997) indicate that sharing information across multiple generations is likely to be richer than single generation in a family firm, because verbal and nonverbal communication can be largely speeded up in families. Therefore, using behavior strategic controls to share information and exchange knowledge might further encourage family owner-managers to promote the perception of innovation under conditions of multi-generations involvement. Given the importance of family involvement, the following relationship is proposed:

Hypothesis 2: The positive relationship between behavioral strategic controls and family firms’ innovation is stronger if there is a greater level of generational involvement.
RESEARCH METHOD

Data collection and sample

The present study employed a questionnaire survey to collect the necessary data for testing the validity of the model and research hypotheses. Variables in the questionnaire included background information, control variables, behavioral strategic controls, generational involvement, and innovation. The questionnaires were on a seven-point Likert scale, with responses ranging from “strongly disagree” to “strongly agree.” To test the study’s hypotheses, a survey was conducted by mail in October of 2008 that targeted family firms in Taiwan. Firm data was collected from the Taiwan Economic Journal (TEJ) Database, which provides financial, ownership and board information on publicly traded firms in Taiwan. Ultimately, 1545 companies were targeted using the following sample-selection criteria, in the fiscal year ending in 2010.

The definition of the intentional essence of family firms proposed by Litz (1995) is as follows: a business firm may be considered a family business to the extent that its ownership and management are concentrated within a family unit, and to the extent its members strive to achieve, maintain and/or increase intra-organizational family-based relatedness. This study uses Litz’s definition of family firms, and follows Astrachan and Kolenlo’s (1994) sample-selective criteria, which characterize the family firm as a company in which (1) the members of the controlling family jointly hold at least 10% of the company’s equity ownership, and (2) the members of the family or the legal representatives from other companies/entities controlled by the family jointly hold more than 50% of the board seats.

We drew a total sample of 217 Taiwanese family firms that meet the sample-selection criteria, and targeted CEOs and high senior executives (President, Vice-President, Directors, or General Managers), those who are the most informed about the innovation and strategic operations of an organization. In top management team research, the CEO is considered to a
reliable, key person who minimizes informational and motivational bias (Glick, Huber, Miller, Doty, and Sutcliff, 1990).

We collected data via a mail-in survey. The survey package contained five questionnaires for each family firm, and asked that the questionnaires be distributed to key family members of the business’ management team. The questionnaires were numbered to match the respondents, in order that the data could be aggregated. A total of 136 questionnaires were returned, and 12 responses were incomplete. The remaining 124 valid questionnaires were received from 76 family firms, representing an 11.43% response rate of 217 valid samples at the firm level of analysis.

Respondents and non-respondents were compared according to firm age and firm size (total number of employees). The $t$ test for the firm age ($t = 0.073, p = 0.941$) and firm size ($t = 0.236, p = 0.800$) revealed no significant difference between the two groups. Thus, source bias was not a serious problem. Additionally, this study conducted a one-way ANOVA of the innovation variables as well as the behavioral strategic controls between family firms with one and multiple respondents and found no significant differences between them, thus mitigating the single-respondent concerns.

Previous research indicates that common method variance (CMV) is a potential problem in behavioral research (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). Since our data was collected via mail survey, common method bias was indeed a concern. To check for potential common method bias, we split the sample into two parts, and ran the innovation variables from one half with the behavioral strategic controls from another. The results were similar to the reported findings, thus indicating little common method variance. A factor analysis was also performed on the items of behavioral strategic controls and innovation variables, yielding two factors with eigenvalues greater than one. The factor analysis extracted two factors that explain 75.6% of the total variance; the first factor accounted for 45.1%, and the remaining
factors explained 30.5%. Hence, we concluded that common method variance was not a major concern.

**Measures**

The measures will be discussed in a later section, and the individual items and their associated alphas of the construct are listed in the Appendix.

**Innovation** This study assesses family firm innovation with three items on a 7-point Likert scale. We redefine family firm innovation as intentional actions (Litz and Kleysen, 2001) based on the perception of innovation. The measures were adapted from a seven-item scale developed by Miller (1983), who defines an entrepreneurial firm as one that engages in (1) product, market, and technology innovation, (2) risky ventures, and (3) proactive innovations (p.771). In Miller’s view, entrepreneurship involves two firm-level decisions: “innovation” and “new venture creation.” We used Miller’s view of innovation to frame intentional innovative behaviors, specifically applying a version of his measures to better fit the family firm context (Kellermans, Eddleston, Barnett, and Pearson, 2008; Litz and Kleysen, 2001; Zahra, 2005). These measures demonstrate an acceptable reliability with an alpha of 0.88.

**Behavioral Strategic controls** Our study includes a measurement of the behavioral strategic controls used by the top level of management to process external and internal information, in order to evaluate resource allocation and innovation (Hitt et al., 1996). Formal and informal face-to-face meetings in family-controlled firms highlight the interaction and communication between family owners and managers (Hall and Nordqvist, 2008). They are treated as a proxy for behavioral strategic controls here. Therefore, we use formal and informal meetings to measure the ability of behavioral strategic controls to capture the degree of interaction and communication in family firm innovation. This study also uses the term of
achieving agreement on long-term objectives to capture the intention to reach consensus on innovation. According to our definition of behavioral strategic controls, we assessed the measures with three items on a 7-point Likert scale: (1) formal face-to-face meetings, (2) informal face-to-face meetings, and (3) reaching consensus on long-term objectives. The measures of behavioral strategic controls were composed of three survey items, two borrowed from Johnson et al. (1993) and Hitt et al. (1996) and one that was created for this study. The coefficient alpha for this scale is 0.78.

**Generational involvement** The number of generations involved in the family firm was measured via a self-reporting question using responses to the survey item, “Currently, how many generations of the owner family are participating in the business? Please circle ONE only: 1 2 3 4 or more.” This survey item is borrowed from prior research (Zahra, 2005). About 42% of the responding family firms were managed by one generation, 49% were managed by two generations, and 9% were managed by three or more generations. The average number of generations managing family firms was 1.69. We controlled for generational involvement using dummy coding: one-generation firms were coded 0, and multi-generation were coded 1.

**Control variables** We included four control variables in our model. Because older companies are more often unwilling to change and are less associated with innovation (Zahra, 2005), we controlled for firm age, measured by the number of years the firm has been in existence. The data originated from the TEJ, as well as company and trade publications. The average firm age in our sample was 31.8 years, with a standard deviation of 11. Firm size was the second control variable. Larger companies may allow the family firm to accumulate more slack resources that encourage R&D projects and new product introductions (Baysinger and Hoskisson, 1990; Hitt et al., 1996). Large family firms are also well-connected within and outside of the industry setting, which makes it possible for them to engage in entrepreneurship
We calculated firm size by using the logarithms of the number of full-time employees. Data also came from the TEJ, as well as company and trade publications. The average number of employees was 767.5. CEO tenure was measured by the number of years the current CEO had held his or her position, via a self-reporting question that asked how many years one had worked in the family firm. Longer tenures might allow a CEO to directly control more organizational resources for entrepreneurial behaviors in family firms (Zahra, 2005). After verifying the TEJ data, the average CEO’s tenure was found to last 13.9 years, with a standard deviation of 10.5.

This study also controls the firm’s major industry type. In growing industries, opportunities are abundant, and managers use them to build new capabilities by undertaking high-risk investments (Zahra, 1996; 2005). High-technology industries offer greater opportunities for innovation than do low-technology industries. In our study, high-tech industries, as defined by the Industrial Technology Research Institute (ITRI) of Taiwan, include semiconductors, computers, communications, precise equipment, photo electronics, and biotechnology. Businesses that did not fall into these sectors were designated as low-technology industries. Industry designation was classified into high and low using dummy coding: high-tech firms in the sample were coded 1, and other firms were coded 0.

**Analysis**

Following Anderson and Gerbing’s (1988) work, this study purifies its measures by assessing reliability and validity. Reliability was evaluated using Cronbach’s alpha; an inspection of the alpha coefficients revealed that two items are greater than 0.70 (see Appendix). Confirmatory Factor Analysis (CFA) was used to verify the validity of the measures. Convergent validity concerns whether multiple measures of the same construct are in agreement. In CFA, convergent validity is evaluated by the significance of each
standardized coefficient loading. According to Anderson and Gerbing’s (1988) study, CFA revealed that all factor loadings passed the significance test, but those that had standardized factor loadings less than 0.5 were eliminated from the measurement model. Consequently, no scale item needed to be deleted in order to improve the model fit. The convergent validity of the scales was supported because factor loadings (see Appendix) were significant (t >2.0). Thus, adequate convergent validity for the scale items was established.

To consistently test the presented hypotheses, a confirmatory forced entry multiple regression analysis approach was used to identify statistically significant models at the 0.05 level of significance. This study uses the version of Cohen and Cohen's (1983) multiple regression-correlation procedure to analyze the moderating effects. Cohen and Cohen’s (1983) formula is used to test for improvements in the explanatory power of the regression after adding the interaction terms. We tested four regression models. The first included the innovation of dependent variables, and then entered control variables. In model 2, we included the behavioral strategic controls for direct effects and then followed by family ownership and generational involvement in the third model. In order to test moderating effects, this study enters the interaction term of behavioral strategic control and family ownership and family involvement in the fourth model.

RESULTS

Table 1 presents means, standard deviations, and zero-order corrections. Variance inflation factors (VIFs) were used to examine the effect of multicollinearity. The lowest observed VIF equaled 1.35 and the highest equaled 3.86, both of which fall within acceptable limits (Hair, Anderson, Tatham, and Black, 1998). The correlations suggest that multicollinearity is not a serious concern, and thus permit the use of multiple regression analysis to test the hypotheses.
Table 1. Descriptive statistics and correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Firm age</td>
<td>31.75</td>
<td>11.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Firm size</td>
<td>767.50</td>
<td>1194</td>
<td>0.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. CEO tenure</td>
<td>13.90</td>
<td>10.52</td>
<td>0.13</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Industry type*</td>
<td>0.32</td>
<td>0.47</td>
<td>-0.52</td>
<td>-0.11</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Generational involvement</td>
<td>1.68</td>
<td>0.68</td>
<td>-0.06</td>
<td>-0.05</td>
<td>-0.14</td>
<td>-0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Strategic control</td>
<td>5.55</td>
<td>0.86</td>
<td>0.32</td>
<td>0.01</td>
<td>-0.09</td>
<td>-0.03</td>
<td>-0.11</td>
<td></td>
</tr>
<tr>
<td>7. Innovation</td>
<td>5.05</td>
<td>1.13</td>
<td>-0.03</td>
<td>0.22</td>
<td>0.13</td>
<td>-0.04</td>
<td>-0.15</td>
<td>0.28</td>
</tr>
</tbody>
</table>

N = 124

Correlations with absolute value above 0.11 are significant at p < 0.05.

* Dummy variable coded as high-tech industry, 1; otherwise, 0.

Table 2 presents the results of the multiple regression analysis. To assess the hypothesized relationships, we tested four models. In Model 1, we employed firm age, size, CEO tenure, and industry type as control variables. All control variables did not affect family firm innovation.

Model 2 examined the effect of behavioral strategic controls on family firm innovation. The regression is significant and explains 20% of variance, an increase of 9% from model 1. This improvement in R² is significant. The coefficient for behavioral strategic controls was positive and significant (β = 0.48, p < 0.001), indicating that behavioral strategic control has a significant impact on family firm innovation. This result supports Hypothesis 1 and indicates that, in general, family firms tend to use behavioral strategic controls to evaluate and determine long-term resource allocations such as innovation. The positive and significant coefficient of behavioral strategic controls (β = 0.48***) indicates that family firms tend to distribute more resources for innovation when family owner-managers are able to communicate and interact with managers to gain support on long-term investments.

Model 3 shows the relationship between behavioral strategic controls and generational involvement on family firm innovation. The regression is significant and explains 27% of variance. This improvement in R² is also significant. The coefficient for variables is positive...
and significant for innovation. This result demonstrates that all independent variables have significant impacts on innovation.

Table 2. Results of multiple regressions analysis

<table>
<thead>
<tr>
<th></th>
<th>Innovation</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm age</td>
<td>-0.12</td>
<td>-0.25</td>
<td>0.15</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Firm size(^a)</td>
<td>0.23</td>
<td>0.25</td>
<td>0.10</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>CEO tenure</td>
<td>0.06</td>
<td>0.07</td>
<td>0.05</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Industry type(^b)</td>
<td>-0.07</td>
<td>-0.05</td>
<td>-0.05</td>
<td>-0.05</td>
<td></td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td>0.48***</td>
<td>0.31**</td>
<td></td>
<td></td>
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<tr>
<td>Behavioral strategic control</td>
<td></td>
<td>0.16*</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Interaction effect</strong></td>
<td></td>
<td>0.12*</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Generational involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral strategic control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\Delta R^2)</td>
<td>0.11**</td>
<td>0.09***</td>
<td>0.07**</td>
<td>0.05*</td>
<td></td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.11</td>
<td>0.20</td>
<td>0.27</td>
<td>0.32</td>
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</tr>
<tr>
<td>(R^2) (adjusted)</td>
<td>0.10</td>
<td>0.19</td>
<td>0.24</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>(F)</td>
<td>2.41</td>
<td>4.57***</td>
<td>6.96***</td>
<td>4.82***</td>
<td></td>
</tr>
<tr>
<td>(N)</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Logarithms
\(^b\)Dummy variable coded as high-tech industry, 1; otherwise, 0.

Model 4, in Table 2, is significant and explains 32% of variance, an increase of 5% from model 3. As shown in Table 2, generational involvement is found to moderate the relationship between behavioral strategic controls and innovation. This model is significant (\(F = 4.82, p < 0.001\)). A significant change in \(R^2\) is observed (\(\Delta R = 0.05; p < 0.05\)). The coefficient for interaction term is positive and significant (\(\beta = 0.12*, p < 0.05\)). The results strongly support Hypothesis 3. The results indicate that in high family involvement firm would like to use social interaction to encourage family owner-managers to distribute more long-term resources on innovation.
DISCUSSION

Innovation is an important strategic process used by family firms to create distinctiveness and achieve a competitive advantage (Astrachan, 2003; Kellermanns and Eddleston, 2006; Zahra, 2005). As Table 2 indicates, the use of behavioral strategic controls is positively and significantly associated with family firm innovation. This result supports Hypothesis 1, and is consistent with earlier studies showing that strategic controls promote an increased managerial commitment to innovation (Hitt et al., 1996; Hoskisson and Hitt, 1988; Hsu and Chang, 2011; Zahra et al., 2004). As hypothesized, the use of behavioral strategic controls appears to facilitate family firm innovation. This result shows that if family owner-managers are more likely to communicate with managers in face-to-face meetings, they will receive the necessary resources for generating and introducing new products or services. Therefore, formal and informal meetings between family member-managers may constitute an important resource for developing innovations that create a competitive advantage (Pearson et al., 2008; Tsai and Ghoshal, 1998). The present evidence implies that family firm innovation can be achieved through the promotion of effective communication and interactions between family members (Hsu and Chang, 2011; Litz and Kleysen, 2001). This finding reflects that if a behavioral control is to be implemented to influence and enforce managers’ behaviors, the potential benefits of behavioral controls may help family firms to cultivate their innovative capacity.

Concerning generational involvement, as noted in Table 2, the results show that multi-generational involvement is positively associated with the use of behavioral strategic controls on family firm innovation. It is consistent with our expectations, Hypothesis 2 was supported. This finding implies that when a family business is dispersed across generations, by anticipating the future transfer of the business to family members, family firms could have more opportunities to develop positive interactions and shared visions between family
members for long-term development (Litz and Kleysen, 2001). Our analysis succeeds to confirm the effect of a social control system when family businesses are dispersed across generations.

A key implication from the current study is that family involvement can moderate the effect of behavioral controls on the strength of family firms’ innovation. As reported, the number of generations involved in the family firm strengthens the positive relationship of behavioral strategic controls and innovation intention. This suggests family firms’ formal and informal meetings and discussions facilitate opportunities to share experiences and information among family members in the business (Corbetta and Slavato, 2005). As a social control mechanism, behavioral controls play a critical role under conditions of high family involved firms because greater communication and discussions about innovative activities are needed. Hence, this finding illustrates that behavioral using of strategic controls by family firms’ to communicate effectively and share information of new product and idea in multi-generational family firms becomes increasingly important.

This article contribution is the use of behavioral strategic controls as social control systems, and demonstrates that formal and informal meetings are important for family firm innovation. The finding indicates that the value of behavioral strategic controls on innovation is greater under the condition of multi-generational involvement. This finding, therefore, provides the opportunity to understand the effects of behavioral strategic controls on family firm innovation, and how to reap the advantages in multi-generational involvement firms.

Social capital theory has confirmed the importance of interpersonal and interactive networks to individual career success (Burt, 1992). This study highlights the role of behavioral strategic controls by illustrating how social controls contribute to innovation in family firms. The results have some important implications. First, the findings reflect that encouraging managers to interact in the process of strategic planning may help family firms
better understand their strategies and goals (Cabrera-Suarez, Saa-Perez, and Almeida, 2001). Thus, because of the strength of the relationships between key family member-managers, social capital theory appears highly applicable to the study of family firms. Second, some researchers assert that multi-generational involvement can be a source of social capital (Eddleston and Kellermanns, 2007; Habbershon et al., 2003; Harvey, 1999). Indeed, this illustrates that family involvement is a good facilitator for using behavioral controls to encourage family firm innovation.

Limitations and future research

This study has some limitations. First, it is based on a small, Taiwanese sample. Thus, the results and findings should be interpreted with caution, since the sample does not represent the situations of other countries. Our sample includes only companies from the Taiwan Stock Exchange (TSE), and so the results may not apply to companies from family firms whose stocks are not publicly traded in the TSE market. Second, a problem common to all organizational-level study concerns whether an individual response can represent actual situations at the firm level. To alleviate this problem, we requested executives who are familiar with the topic to complete the questionnaire. However, this problem may still exist, and therefore is noted as a possible limitation. Third, we deliberately chose to examine variables that support Miller’s (1983) view of innovation, and that are associated with behavioral strategic controls. We do not provide the outcome from the firms’ focus on innovation. The variable used in this study is based on perceptual and intentional measures of product/service innovation. Future research should certainly consider observed measures of innovation, such as the proportion of products, services, or processes introduced, and the sale of new products or services.
In addition, our questionnaire for behavioral strategic controls captures only the notion of formal and informal face-to-face meetings between managers within a family firm. However, family firms have various ways to accomplish behavioral control, such as informal get-togethers, family councils, and family plans. These methods also create opportunities for family members to meet and discuss issues (Mustakallio et al., 2002), leading to increased interaction. Future research should conduct interviews with some sample firms to generate methods of behavioral controls for interpretation. The potential remains for further study of behavioral strategic controls in family firms. Finally, given the significant contribution it has made to many family firms, the social control system may also be beneficial for non-family firms (Mustakallio et al., 2002; Pearson et al., 2008). Future research should address the differences in the effect of social control on innovation between family and non-family firms. Consequently, the possible effects of a formal control system on managerial motivation should be considered. Family researchers need to place more attention on refining the different effects of informal control and formal control systems in family firms.
REFERENCE


## Appendix: Scales items and reliabilities

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Factor Loading</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEO tenure</td>
<td>How many years is the current CEO holding this position in the family firm?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral strategic controls ($\alpha = 0.78$)</td>
<td>Our company prefers to use formal face-to-face meeting to process external and internal information in order to evaluate business strategy and allocate resources using over the past three years.</td>
<td>0.79</td>
<td>6.52</td>
</tr>
<tr>
<td></td>
<td>Our company prefers to use informal face-to-face meeting to process external and internal information in order to evaluate business strategy and allocate resources using over the past three years.</td>
<td>0.73</td>
<td>5.10</td>
</tr>
<tr>
<td></td>
<td>Our company prefers to use formal or informal face-to-face meeting to get agreements on long-term objective over the past three years.</td>
<td>0.76</td>
<td>2.58</td>
</tr>
<tr>
<td>Generational involvement</td>
<td>Currently, how many generations of the owner family are participating in the business? Please Circle ONE only: 1 2 3 4 or more.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation ($\alpha = 0.88$)</td>
<td>Our firm has introduced many new products or services over the past three years.</td>
<td>0.92</td>
<td>8.98</td>
</tr>
<tr>
<td></td>
<td>Our firm has made many dramatic changes in the mix of its products and services over the past three years.</td>
<td>0.88</td>
<td>7.73</td>
</tr>
<tr>
<td></td>
<td>Over the past three years, our firm has emphasized making major innovation in its products and services.</td>
<td>0.88</td>
<td>7.89</td>
</tr>
</tbody>
</table>