

# THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

## Is Family Ownership Good for Firm Performance?

**Junho Park**

Master Student, Department of Management, Kyungpook National University, South Korea

**Jaeyoung Cho**

Ph.D. Candidate, Department of Management, Kyungpook National University, South Korea

**Jangwoo Lee**

Professor, Department of Management, Kyungpook National University, South Korea

### **Abstract:**

*This study examines the impact of family ownership on the performance of family small and medium-size enterprises (SMEs), the mediating impact of R&D Investment, and the moderating impact of performance hazard. Additionally, by integrating the mediating and moderating impacts, we propose a moderated mediation model for the performance of family SMEs. Using 148 samples of domestic SMEs from 2000 to 2016 show that the relationship between family ownership and performance is negatively correlated, and R&D investments also negatively affects performance. Furthermore, performance hazard acts as a positive moderator in the family ownership and R&D investment. The finding's implications for research and managerial practice are discussed.*

**Keywords:** R&D investment, small and medium-size enterprises (SMEs), family firm, performance hazard, family ownership

### **1. Introduction**

According to recent research, the proportion of family corporations is increasing both in developed nations and developing nations. Poza (2013) stated that the corporations controlled and owned by families in the United States account for 90% of all corporations, and Anderson & Reeb (2003) stated that 1/3 of corporations of S&P 500 are family-owned. Also, according to the research of Chu (2009), 2/3 of East Asian nations are being controlled by individuals or families.

With the worldwide trend of family-owned corporations increasing, there are continued research that the share ratio of families and performance of corporations are positively related. For instance, according to the research of Randøy & Goel (2003), higher share ratio of families led to higher performance, and in the research of Chu (2011) researching family corporations, there was a positive relationship between family ownership and corporation performance, and stronger effects were conceived when a family member is the CEO or a manager. However, the amount of research between family share ratio and corporation performance is insufficient (De Massis et al., 2015). Therefore, this research hopes to explore the relationship between family share ratio and corporation performance based on the stewardship theory of family corporations with family share of 70% (Nam Young Ho and Moon Seong Joo, 2007).

Also, it is anticipated that with the new paradigm of Fourth Industrial Revolution, and worldwide dispersion of protection trade and narrowed technological gap with China, research and development investment to develop new products and services and enhancing organizational operation abilities are deemed important in uncertain business environment (Gohen & Levinthal, 1990). This research anticipates that investment in research and development would have mediating effects to the relationship between family share ratio and corporation performance. It is realized that research and development investment affects corporations' performance through the research of Chauvin & Hirschey (1993) who stated that corporations' research and development expenditure increases corporation profitability and has positive influence on corporate value and the research of Park Young Seok, Kim Nam Gon and Choi Woon Yeol (2010) who revealed that research and development investment and corporate performance have positive (+) influence from domestic corporations, and it is verified from the research of Fama & Jensen (1983) who stated that entrepreneurs are reluctant to invest in long-term and uncertain investments because of their burden of creating performance through their employment that research and development investment tendencies differ according to corporate structure.

Additionally, in this research, based on family entrepreneurs perceiving the decline of performance as failure of the corporation, or their survival being threatened and increasing research and development investment to free themselves from the threat because not being able to survive means that they are not able to maintain socioemotional wealth that they pursue from the research of Chrisman et al., (2012), the controlling effect of performance threat between family share ratio and research and development investment.

Therefore, this research hopes to validate the relationship between family share ratio and performance as well as the mediating effect of research and development investment and controlling effect of performance threat of domestic SMEs. For this purpose, based on the data provided by the Korea Listed Companies Association, research was conducted based on 148 SME manufacturers enlisted on the Korean securities market from 2000 to 2016. The SMEs selected as research sample are corporations investing in research and development continuously from 2000 to 2016, and corporations whose family member is owning 5% or more of the corporation's share and participating in management.

## 2. Theoretical Background and Hypothesis

### 2.1. Family Owned Share Ratio and Firm Performance

There are many factors deciding corporate performance, and the efforts to explore corporate performance are being carried out continuously. There have been many researches conducted to investigate corporation performance according to the ownership structure of corporations. In earlier research regarding family entrepreneurship, family corporations were viewed negatively as relative inefficient and profitless organization. Shleifer & Vishny (1997) insisted that family shareholders have the tendency of providing employment services for family members and treating them as private banks. Also, some research suggested problems of family corporations forming their management from family members instead of recruiting able experts with qualifications (Carney, 1998). Likewise, research that the problem of deputy due to the combination of ownership and control had negative effects on corporate performance was dominant.

Recently, research that there are positive effects between family share ratio and company performance had positive effects started appearing. In research of 68 SMEs listed in Norway by Randøy & Goel (2003), higher proportion of family share meant higher performance. Through research of Yammeesri & Lodh (2004) showing that there was a positive relationship between family ownership share ratio and corporate performance in Thailand, it was revealed that there was a positive relationship between family ownership and corporate performance. The research of Chu (2009) stated that there was a positive relationship between family ownership share ratio and corporate performance, and that it had more influence in SMEs. Research after that stated that positive effects for corporations were stronger if there are family members serving as corporate CEOs or managers (Chu, 2011). Likewise, through similar research, not only in Asia but Europe, there are research results of family share ratio having positive effects on corporate performance. This shows results of different direction from hypothesis based on agency theory used in various past research.

The positive research results between family share ratio and corporate performance from recent research could be explained through stewardship theory meaning that individuals are not acting for egoistic purposes but acting for the organizational goals and pro-organizational theoretica state, and this stewardship theory has more influence on family corporations (Jaskiewicz & Klein, 2007, Lane, Astrachan, Keyt, & McMillan, 2006).

Anderson & Reeb (2003) discovered that family corporations of S&P 500 had 6.65% higher returns on assets compared to non-family corporations not controlled by families, and had 10% higher return on equity. Before that, on Morck, Shleifer, Vishny (1998) researched Fortune 500 corporations and discovered that increase of family share ratio increased Tobin Q as well. Also, Thomsen and Pedersen (2000) stated that concentration of family share ratio had positive relationship on the profitability and market value of corporations.

This research hopes to explore the relationship between family share ratio and corporate performance with domestic SMEs based on prior research. Most of domestic SMEs are categorized as family corporations, with owners participating in management with most of stocks and family members placing themselves as major family executives. Considering the environment of domestic SMEs and prior research, it is anticipated that family share ratio would have positive influence on corporate performance. Therefore, this research deduced the following hypothesis.

- Hypothesis 1. Share ratio owned family members would have positive influence on corporate performance

### 2.2. Mediating Effects of Research and Development Investment

Corporations are able to develop new products and services and increase organizational operation abilities (Gohen & Levinthal, 1990). However, corporations have different tendencies of research and development investment, and there have been many researches carried out to investigate this. According to the research of Fama & Jensen (1983), managers have tendencies of avoiding danger compared to stockholders, and are reluctant to invest in long-term and uncertain investment as research and development investments because of their burden of having to create performance through their term in office. In the research of Kim Hyun Seob and Song Jae Yong (2011), when managers own the corporation's stock, they are less likely to avoid danger, taking the danger and actively taking part in long-term investment. This is line with the suggestion of Phan & Hill (1995) who believe that higher share of managers mean that the goals of stockholders and managers are likely to be the same. Expert managers are burdened by R&D investment, but are motivated by being able to avoid risks by owning stocks, increasing R&D investment. Likewise, increase of family stock share ratio influences research and development investment positively from the motivations of family altruism, loyalty, devotion, family relationship and stability (J. Lee, 2006; Miller & Le Breton-Miller, 2005).

Also, owner-managers have their own wealth connected strongly to the wealth of the corporation that they have tendencies of attempting to maximizing corporate wealth (Anderson & Reeb, 2003 ;2004). As examined before, owner-

managers own stock, they are likely to carry out research and development investment in the direction of creating corporate wealth through long-term investment.

Additionally, according to the research of Miller & Le Brenton-Miller (2005), managers in family corporations try to maintain close relationships with organizations useful to their corporations, maintaining the financial flow of corporations through this effort. Corporation partnership maintaining close relationship with financial organizations will have tendencies of having positive effect on securing resources needed for research and development investment and increasing research and development investment.

Corporations until now have promoted the growth of corporations through various innovations of increasing productivity through new manufacturing methods, deducting costs and combining technologies. These innovations were possible because of the investment into research and development, and this is because corporations were able to develop new products and services and were able to enhance organizational operation abilities (Gohen & Levinthal, 1990). Investment in research and development not only provides the source of performance creation but long-term corporation survival. According to the research of Chauvin & Hirschey (1993), the research and development expenses of corporations increase corporation profitability and influences corporate value positively. There have been many research regarding research and development investment and corporate performance domestically, and the research of Park Young Seok, Kim Nam Gon and Choi Woon Yeol (2010) revealed that there is a positive relationship between domestic corporations' research and development investment and corporation performance. Additionally, Oh Seung Ryoung and Kim Geon Woo (2011) revealed that there is positive influence of research and development investment on corporate culture, verifying that research and development investment had positive influence on corporation performance. Therefore, the following hypothesis is suggested.

- Hypothesis 2. Investment in research and development will have positive mediating influence between family share ratio and corporation performance. Specifically, higher family share ratio will increase research and development investment, and it will have positive influence on corporation performance.

### *2.3. Controlling Effect of Performance Hazard*

According to the agency theory of Balkin et al., (2000), managers have tendencies of avoiding danger. This is because failure in investment with high uncertainty will cause the manager's reward to decrease, and stability will be lowered. Therefore, managers are more likely to focus on facility investment or advertisement with short-term effects rather than long-term and highly dangerous investments like research and development (Coff, 2003; Lynn, Morone, Paulson, 1996; Baysinger et al., 1991).

However, managers owning corporate stock will cause the conflict between stockholders and managers regarding corporate goals, and danger-avoiding tendencies will decrease as well (Fama & Hensen, 1983). This is because managers owning stocks will synchronize corporate value and stock value that managers will establish strategies with long-term perspectives and manage the corporation. Therefore, higher share of managers will cause them to bear danger and carry out long-term and aggressive investment (Kim Hyeon Seob and Song Jae Young, 2011).

Management style differs according to stock ownership. In case of family management in which ownership and management are carried out at the same time, it is likely that there will be aggressive research and development investment like the manager owning stock. According to James (1999), family corporations are more likely to have longer-term investments compared to non-family corporations because they would like to succeed the corporation in future generations, and this supports the idea of Casson (1999) that they consider corporations as assets to be passed onto the next generation. A family corporation's goal is continuous survival rather than short-term profit, and it makes long term investments to pass the corporation to next generations.

However, not all corporations make same investments in research and development and increase or decrease the scope according to circumstances. This could be explained by performance hazard. According to the research of Chrisman et al., (2012), family corporations have higher research and development investments than non-family corporations when performance hazard occurs. This could be interpreted as a strategy to avoid the loss of socioemotional wealth pursued by family corporations. Family corporations perceive decrease of performance as corporate failure, or as their survival being threatened. Because they cannot maintain their socioemotional wealth if they cannot survive, they increase investment in research and development to avoid performance hazard. In summing up their research, it is anticipated that family entrepreneurs make long-term research and development, and that they control scope of research and development investment according to performance hazard. Therefore, the following hypothesis is suggested.

- Hypothesis 3. Performance hazard will control the relationship between family share ratio and research and development investment. More specifically, higher performance hazard will cause the research and development investment of corporations to increase.

Summing up the contentions of Hypothesis 1 and Hypothesis 2, it is anticipated that performance hazard will be able to control the relationship between family share ratio and corporation performance mediated by research and development. (Share ratio) Higher performance hazard will cause corporate survival to be threatened that corporations will make more aggressive investments into research and development, and the research and development investment will have positive influences on corporate performance. In other words, it could be anticipated that higher performance hazard, not low

performance hazard would cause stronger indirect effects for corporation performance mediated by research and development investment. Therefore, the following hypothesis is suggested.

- Hypothesis 4. Performance hazard will control indirect effects of family share ratio on corporate performance mediated by research and development investment. Specifically, higher performance hazard would cause the positive effects of family share ratio on corporation performance through research and development investment to become stronger.

### 3. Research Method

#### 3.1. Material Collection and Definition of Variables

For this research, by using TS2000, a database provided by Korea Listed Companies Association, companies from 2000 to 2016 have been extracted with the subject of SME manufacturers listed on Korean stock market, ultimately acquiring 2,516 samples from 148 corporations. Also, before verification, analysis of the average, standard deviation and correlation was conducted, and this is outlined in <Table 1>. To verify the problem of multicollinearity, VIF (Variance Inflation Factor: VIF) verification was conducted, and there was no problem in multicollinearity with the result being 10 or less.

The reasons for process of material collection and period selection is as follows.

- The reason for period selection is because, after IMF fiscal crisis in 1997, many corporations went bankrupt or their investments decreased. Therefore, for the accuracy of measurement, the period of 2000 to 2016 when Korea started to escape the effect of financial crisis (Shin Min Sik and Kim Soo Eun, 2013) was set as the research period.
- The subject of this research was domestic SMEs, and the criterion for SME is corporations with total assets under 500 billion won and average sales less than 150 billion won according to Article 2 of the Basic Law of Small and Medium corporations and Article 3 of the Enforcement Ordinance of the same Act. TS2000 material was collected based on TS2000.
- Among the 568 corporations collected for this research, only corporations making continuous research and development investment from 2000 to 2016 were extracted, and 2,516 samples from 148 corporations were collected ultimately.

#### 3.2. Measurement of Variables

##### 3.2.1. Family Share Ratio

In prior research regarding family share ratio, it was defined as the share ratio adding up the share ratio of family members including founders and their offsprings. In the research of Kim Hyeon Seob and Song Jae Yong (2011), the shares of stockholders who have family relationships with managers or corporate owners were added to calculate the family share ratio. Also, in the research of Chu (2009), the share of stockholders who are in family relationships with corporation owners were used as family share ratio. Therefore, in this research, as the method of Chu (2009), the share ratios of stockholders who are in family relationships with corporate owners are added to calculate the family share ratio

##### 3.2.2. Corporation Performance

Corporation performance was measured as the net profit during the term divided by total assets, or return on assets (ROA). This is used as a useful index showing the overall management performance because corporation profit is created by not only pure sales activities but investment activities and financial activities (Hwang Dong Seob, 2006), ROA in technological management field has been traditionally used as a variable measuring corporate performance (Shin Young Soo, Jang Seong Geun, Jeong Hae Hyuk, 2009).

##### 3.2.3. Investment in Research and Development

Investment in research and development has been widely utilized as a tool measuring the innovative activities of corporations (Balkin, Markman, and Gomez-Mejia, 2000; O'Brien, 2003), and as an index representing this, Kochhar and David (1996), Lee and O-neill (2003) and Kim Gyeong Mook (2003), concentration on research and development was used to measure investment on research and development (Kim Gyeong Mook, 2003). In this research, in the same method as prior research, investment in research and development (concentration on research and development) was measured.

##### 3.2.4. Performance Hazard

As for performance hazard, in the same method as that used in the prior research of Gomez-Mejia et al., (2007), average ROA value of the same field of business was used to make measurement of low corporate ROA value compared to field average meaning high performance hazard and corporate ROA higher than field average meaning low performance hazard.

##### 3.2.5. Control Variables

Based on prior research, the following variables were controlled, and the measurement method of the following variables is as follows.

Management Performance (ROAt-1) Based on the research results of Nunes et al., (2012) in which electric research and development investment of high-tech SME had a positive influence on corporate performance, ROA minus t-1 was selected as control variable.

Advertisement Intensity. Because advertisement cost has the effect of maximizing sales, it is used as an explanatory variable in researches analyzing the effectiveness of research and development effectiveness, a prior researches of Blubitz & Ettredge (1989) and Lee Sang Man (1994), advertisement cost was added as a control variable to carry out research (Jeong Gyu Eon, Kim Seon Gu, 2001). Therefore, this research chose advertising cost as a control variable. The following formula was used to calculate advertisement cost as advertisement intensity:  $[(\text{Advertisement cost} / \text{Sales}) \times 100]$  Debt Ratio Because corporations with much debt have less capability for long-term investments as research and development (Kim Hyeon Seob, Song Jae Yong, 2011), it is likely that it would work as a factor influencing research and development investment. Therefore, in this research, the proportion of debt was measured the following formula:  $[(\text{Total asset} / \text{Total debt}) \times 100]$ . The measured debt ratio was used as a control variable.

Business Scale. Large business scale means that resources owned by corporations are likely to be utilized well in research and development activity that it is anticipated that business scale would work as an important variable in research and development activity (Hwang Gyoung Young and Cho Dae Woo (2013). Therefore, in this research, business scale is defined as the number of employees in the same method as prior research, and the natural log value of the number of employees was used to measure the business scale.

Age of Business. If the period of a business's establishment is long, it is likely that investment decisions for the corporation is likely to be long-term (Kim Hyeon Seob and Song Jae Yong, 2011). Therefore, this research chose the age of business as a variable, and like in the prior research of Kim Hyeon Seob and Song Jae Yong, the value deducting the year of establishment from the final sample year was used to apply natural log to measure the age of the business.

Higher share owned by institutions leads to surveillance of managers that the share owned by institutions may influence the decisions of managers in decisions in which the decision-making of managers is important. Therefore, in this research, variable was measured by share ratio owned by financial institutions without special relationships with owners, based on ordinary shares.

According to agency theory, for share owned by managers, if managers have stocks of companies, their tendencies of avoiding danger declines, and they are likely to face danger and more eager to make long term investments (Kim Hyeon Seob and Song Jae Yong, 2011). Because this signifies that share ratio of managers influence research and development investment, share owned by managers was selected as a controlling variable, and based on ordinary shares, the proportion of stock owned by managers except for the family members of corporation owner was measured as the share owned by managers.

Year Dummy and Industry Dummy. In case of industry dummy, the characteristic of dummy influences the ownership structure or research and development structure. Singh & Davidson (2003) controlled year dummy and industry dummy as control variables based on prior research.

### 3.3. Analysis Method

This research is a research utilizing panel data and analyzed data through fixed effect model used in panel data analysis. Before analysis, Hausman test was conducted to evaluate the fixed effects model.

## 4. Result

This research assumed that higher family share ratio would cause an increase of corporate performance, and hoped to analyze the mediating effect of research and development investment on corporate performance. It was verified through fixed regression model, and the result is in <Table 2>.

In <Table 2>, family share ratio has a significant negative relationship with corporate performance ( $p < .01$ ), and this shows the opposite results from Hypothesis 1, which assumes that family share ratio would have a positive influence on corporate performance. Therefore, Hypothesis 1 was rejected. Also, mediating effect was verified through the following 4 steps, in the same method as the analysis analyzing mediating effect according to the mediating effect verification process of Baron and Kenny (1986). First step. The influence of independent variables on dependent variables is significant. Second step. The influence of dependent variables on mediating variables is significant. Third step. The influence of mediating variables on dependent variables is significant. Fourth step. When mediating variables are controlled, the influence of independent variables must disappear or become weaker.

In analysis of mediating effects of research and development investment in the relationship between family share ratio and corporate performance, like in <Table 2>, the influence of family share ratio on corporate performance was significant ( $p < .01$ ), the influence of family share ratio on research and development investment was significant ( $p < .05$ ), and the influence of research and development on corporate performance was significant ( $p < .01$ ). When research and development investment, a mediating variable is controlled, it is verified that the influence of family share ratio on corporate performance diminishes ( $p < .01$ ). Through this, that investment in research and development is partially mediating the relationship between family share ratio and corporate performance was verified, but unlike hypothesis 2, which assumes that investment in research and development would have a positively mediating effect on the relationship between family share ratio and corporate performance, it has a negative influence. Therefore, Hypothesis 2 was rejected.

<Table 3> shows the results of regression analysis on the effects of the reciprocal variable of family share ratio and performance hazard on corporate performance, a dependent variable. From this, it is seen that the reciprocal effect of family share ratio and performance hazard on research and development investment is significant ( $p < .1$ ), and this is in line with Hypothesis 3 assuming that higher performance hazard would influence more research and development investment compared to when it is low. Therefore, Hypothesis 3 was supported.

<Table 3> shows that the reciprocal variables of family share ratio and performance hazard has significant influence on research and development investment ( $p < .1$ ), and that in results having performance hazard as a dependent variable, it has partial mediating effect. However, it had negative influence, not positive influence suggested in Hypothesis 4. Thus, Hypothesis 4 was rejected.

## 5. Conclusion and Discussion

This research sought to identify the relationship between family share ratio and corporate performance and the mediating effect of research and development investment with the subject of 148 SME manufacturers. A summary of the research results is as follows. Firstly, the relationship between family share ratio and corporate performance has a negative influence. Secondly, though investment in research and development has mediating effects between family share ratio and corporate performance, it has a negative effect unlike the hypothesis. Thirdly, like the hypothesis that research and development investment is controlled from performance hazard, higher performance hazard leads to more research and development investment.

Based on the results of this research, the following theoretical implications are suggested. Firstly, this research measured share ratio through the number of stocks owned by family members to examine corporate performance from share ratio held by family members and identified hypothesis from this. As the result of hypothesis, share ratio held by families and corporate performance had significant negative influence. This signifies that corporations operated by families are operated more efficiently compared to corporations operated by management specialists, the costs for management surveillance is reduced (Fama & Jensen 1983), and as a result, shows results contrary to the results of Anderson & Reeb (2003) suggesting that family corporations have higher performance compared to non-family corporations. However, in the process of data collection for research, it was verified that many corporations do not control corporations by directly owning stocks, but control corporations through related corporations. Only a small number of shares is sufficient to control the corporation, and through indirect ownership, containment against outside director and outside stockholders could be prevented through indirect ownership. Also, there is the possibility that indirect ownership, not direct ownership, has caused a decline for the affection of the corporation, causing concentration of management to lead to the results of this research.

Secondly, this research examined the influence of research and development investment of a year on the corporate performance after 1 year, for SMEs listed on the Korean stock market from 2000 to 2016, and verified that it had a negative relationship. This is a result contrary to the study of Heo Ho Young and Seo Young Taek (2014) showing that the research and development activities of venture corporations having a positive relationship to the patent acquisition and management performance. Unlike venture corporations, research and development investment in SMEs had a negative influence on corporate performance.

Thirdly, it was verified that the relationship between family share ratio and research and development investment was in a positive relationship, and this is in line with the research of Gmmez-Mejia et al., who contended that family corporations had higher tendencies to invest in research and development compared to non-family corporations, and showed that the performance hazard suggested in the research of Chrisman & Patel (2012) increased research and development investment.

Through this research, the following practical implications could be deduced. Firstly, as seen in the relationship between family share ratio and corporate performance, the relationship between the two variables was negative. This signifies that corporations could be controlled through small number of stocks through related corporations, and through this structure of ownership, managers who both own and manage have powerful authority to make decisions, deterring the effects of policies of institutional investment and outside directors, and ultimately, deterring the proper decision-making of corporations. Therefore, corporate operation through the balance of direct ownership structure would be needed.

Secondly, this research implies that the research and development investment of the same year has a negative influence on the corporate performance after a year. This result could be interpreted as research and development investment not having influence on the performance of the same year, and this causes concern that the timing for market change in the rapidly changing Fourth Industrial Revolution may be missed. Therefore, it implies that corporations need to carry out research and development investment for short-term performance in this rapidly changing era.

astly, the research and development investment of corporations have tendencies of being controlled by performance hazard. Hasty decision-making due to performance hazard may cause side effects for corporate performance. Therefore, only when research and development investment for the vision and the goals of corporations are made, not from performance hazard, will performance goals from research and development will be achieved.

However, there are various limitations to this research, and for better research, the following future research is suggested. Firstly, in measuring family share ratio for this research, measurement method not applying the structural changes of the corporation was used. A characteristic seen in many corporations is that owners of corporations are not directly owning corporation stocks, but control corporations through indirect ownership through related corporations. There is the limitation

of family share ratio from changes of ownership structure not being differentiated. Therefore, there is the necessity of future research categorizing direct corporate ownership and indirect corporate ownership.

Secondly, in this research, in explaining the relationship between family share ratio and research and development investment, it did not investigate the degree of research and development investment according to the degree of ownership, and there is the need to investigate research and development through future research.

Thirdly, in this research, research and development investment was measured through research and development intensity used in the researches of Kochhar and David (1996), Lee and O'neill (2003) and Kim Gyoung Mook (2003), with the limitation of not being able to identify the form of research and development. This has the limitation of not being able to consider that there are different influences for corporate performance according to research form, and that the time for performance may be different. Therefore, in future research, there is the need to more specifically identify the relationship between research and development investment and corporate performance through measurement method categorizing the forms of research and development investment.

Fourthly, there is the need to add variables not included in this research. This research used institution share ratio, management share ratio, advertisement intensity, age of corporation, business scale and debt ratio as control variables. This has the limitation of not having included all variables influencing corporate performance, and future research needs to add various variables in its analysis.

Lastly, because this research had the subject of manufacturers among the SMEs listed on the Korean financial market, the result of this research may be problematic to generalize the relationship between family share ratio and corporate performance and research and development investment and corporate performance in negative relationships. Therefore, there is the need to increase the effectiveness of this research through future research with the subject of not only manufacturers but various industries.

## 6. References

- i. Al-Horani, A., Pope, P. F., & Stark, A. W. (2003). Research and development activity and expected returns in the United Kingdom. *European Finance Review*, 7(1), 27-46.
- ii. Anderson, R. C., Mansi, S. A., & Reeb, D. M. (2003). Founding family ownership and the agency cost of debt. *Journal of Financial economics*, 68(2), 263-285.
- iii. Balkin, D. B., Markman, G. D., & Gomez-Mejia, L. R. (2000). Is CEO pay in high-technology firms related to innovation?. *Academy of management journal*, 1118-1129.
- iv. Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.
- v. Bo-Yeon Min and Min-Ho Kim, 2009, "Export Performance and Corporate Characteristics of the Korean IT Born-globals," *Asia-Pacific Journal of Business & Commerce*, Vol. 1, No. 2, pp. 85~105.
- vi. Casson, M. (1999). The economics of the family firm. *Scandinavian Economic History Review*, 47(1), 10-23.
- vii. Chauvin, K. W., & Hirschey, M. (1993). Advertising, R&D expenditures and the market value of the firm. *Financial management*, 128-140.
- viii. Chen, H. L., & Hsu, W. T. (2009). Family ownership, board independence, and R&D investment. *Family business review*, 22(4), 347-362.
- ix. 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.
- x. Chu, W. (2011). Family ownership and firm performance: Influence of family management, family control, and firm size. *Asia Pacific Journal of Management*, 28(4), 833-851.
- xi. Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, 128-152.
- xii. Coombs, J. E., & Bierly, P. E. (2006). Measuring technological capability and performance. *R&D Management*, 36(4), 421-438.
- xiii. Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management review*, 22(1), 20-47.
- xiv. Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of political economy*, 93(6), 1155-1177.
- xv. Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The journal of law and Economics*, 26(2), 301-325.
- xvi. Fernandez, Z., & Nieto, M. J. (2006). Impact of ownership on the international involvement of SMEs. *Journal of International Business*.
- xvii. Ghosh, A., Moon, D., & Tandon, K. (2007). CEO ownership and discretionary investments. *Journal of Business Finance & Accounting*, 34(5-6), 819-839.
- xviii. Gómez-Mejía, L. R., Haynes, K. T., Núñez-Nickel, M., Jacobson, K. J., & Moyano-Fuentes, J. (2007). Socioemotional wealth and business risks in family-controlled firms: Evidence from Spanish olive oil mills. *Administrative science quarterly*, 52(1), 106-13.

- xix. Gomez-Mejia, L. R., Campbell, J. T., Martin, G., Hoskisson, R. E., Makri, M., & Sirmon, D. G. (2014). Socioemotional wealth as a mixed gamble: Revisiting family firm R&D investments with the behavioral agency model. *Entrepreneurship Theory and Practice*, 38(6), 1351-1374.
- xx. Gomez-Mejia, L. R., Makri, M., & Kintana, M. L. (2010). Diversification decisions in family-controlled firms. *Journal of management studies*, 47(2), 223-252.
- xxi. Hyunseob Kim and Jaeyong Song, 2011, "The impact of corporate ownership structure on R&D investment in Korea," *Journal of Strategic Management*, Vol. 14, No. 2, pp. 93~112.
- xxii. James, H. S. (1999). Owner as manager, extended horizons and the family firm. *International journal of the economics of business*, 6(1), 41-55.
- xxiii. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.
- xxiv. Kim Byung Jae, Lee Chong Hyun and Kwon Ki-Hwan, 2008, "An Empirical Study on Degree of Venture Internationalization: Determinants and Implications," *INTERNATIONAL BUSINESS REVIEW*, Vol. 12, No. 2, pp. 157~177.
- xxv. Kochhar, R., & David, P. (1996). Institutional investors and firm innovation: A test of competing hypotheses. *Strategic management journal*, 73-84.
- xxvi. Kothari, S. P., Laguerre, T. E., & Leone, A. J. (2002). Capitalization versus expensing: Evidence on the uncertainty of future earnings from capital expenditures versus R&D outlays. *Review of accounting Studies*, 7(4), 355-382.
- xxvii. Kyungyun Hwang and Daewoo Cho, 2013, "The Influence of R&D Investment on Export Performance of Manufacturing Firms Listed on the KOSDAQ Market," *INTERNATIONAL BUSINESS REVIEW*, Vol. 17, No. 2, pp. 31~58.
- xxviii. Lee, P. M., & O'neill, H. M. (2003). Ownership structures and R&D investments of US and Japanese firms: Agency and stewardship perspectives. *Academy of Management Journal*, 46(2), 212-225.
- xxix. Madison, K., Holt, D. T., Kellermanns, F. W., & Ranft, A. L. (2016). Viewing family firm behavior and governance through the lens of agency and stewardship theories. *Family Business Review*, 29(1), 65-93.
- xxx. Miller, D., & Breton-Miller, L. (2006). Family governance and firm performance: Agency, stewardship, and capabilities. *Family business review*, 19(1), 73-87.
- xxxi. Miller, D., & Le Breton-Miller, I. (2005). *Managing for the long run: Lessons in competitive advantage from great family businesses*. Harvard Business Press.
- xxxii. Miller, D., Lee, J., Chang, S., & Le Breton-Miller, I. (2009). Filling the institutional void: The social behavior and performance of family vs non-family technology firms in emerging markets. *Journal of International Business Studies*, 40(5), 802-817.
- xxxiii. Monreal-Pérez, J., Aragón-Sánchez, A., & Sánchez-Marín, G. (2012). A longitudinal study of the relationship between export activity and innovation in the Spanish firm: The moderating role of productivity. *International Business Review*, 21(5), 862-877.
- xxxiv. Nam, Young-Ho and Moon, Seong-Ju, 2007, "Long-Run IPO Performance Analysis of KOSDAQ Family Business," *Korean Journal of Business Administration*, Vol. 20, No. 5, pp. 2121~2139.
- xxxv. Nunes, P. M., Serrasqueiro, Z., & Leitão, J. (2012). Is there a linear relationship between R&D intensity and growth? Empirical evidence of non-high-tech vs. high-tech SMEs. *Research Policy*, 41(1), 36-53.
- xxxvi. O'brien, J. P. (2003). The capital structure implications of pursuing a strategy of innovation. *Strategic management journal*, 24(5), 415-431.
- xxxvii. Phan, P. H., & Hill, C. W. (1995). Organizational restructuring and economic performance in leveraged buyouts: An ex post study. *Academy of Management Journal*, 38(3), 704-739.
- xxxviii. Randøy, T., & Goel, S. (2003). Ownership structure, founder leadership, and performance in Norwegian SMEs: implications for financing entrepreneurial opportunities. *Journal of business venturing*, 18(5), 619-637.
- xxxix. Schilling, M. A., & Hill, C. W. (1998). Managing the new product development process: Strategic imperatives. *The Academy of Management Executive*, 12(3), 67-81.
- xl. Seo, Dae-Seog, Park, Jong-Kook and Hong, Young-Eun, 2009, "The Differential Properties of Firm Performance by Family Ownership," *Korean Journal of Business Administration*, Vol. 22, No. 6, pp. 3379~3407.
- xli. Shleifer, A., La Porta, R., & Lopez-De-Silanes, F. (1999). Corporate ownership around the world. *Journal of Finance*, 54(2), 471-517.
- xlii. Singh, M., & Davidson III, W. N. (2003). Agency costs, ownership structure and corporate governance mechanisms. *Journal of Banking & Finance*, 27(5), 793-816.
- xliii. Steensma, H. K., & Corley, K. G. (2001). Organizational context as a moderator of theories on firm boundaries for technology sourcing. *Academy of Management Journal*, 44(2), 271-291.
- xliv. Yammeesri, J., & Lodh, S. C. (2004). Is family ownership a pain or gain to firm performance. *Journal of American Academy of Business*, 4(1/2), 263-270.
- xlvi. Yoon junh Baek, & Bo young Kim. (2014). Job-Related Negative Affective States and Surface Acting: A Moderated Mediation Model of Emotional Exhaustion and Self-Emotion Appraisal. *Korean Journal of Management*, 22, 71-101.

xlvi. Young Soo Shin, Seong Keun Jang and Hae Hyeog Jung, 2009, "Relationship between R&D Investment, Technology Management Capability, and Firm Performance," korean management review, Vol. 38, No. 1, pp. 105~132.

Appendix

	SD	Mean	1	2	3	4	5	6	7	8	9	10	11	12
1.ROA	.0162	.1228	1											
2.ROAt-1	.0168	.1215	.1586***	1										
3. Advertisement intensity t-1	.0107	.0251	.0611***	.0679***	1									
4. Leverage t-1	.0345	.0445	.0014	.0117*	-.0642***	1								
5. Firm size t-1	6.1722	1.4261	.1174***	.1675***	.1110***	-.0478***	1							
6. Firm age t-1	3.6884	.3271	.0495***	.0506***	-.0688***	-.0300*	.2012***	1						
7. ROEt-1	-.5212	24.6300	-.0032	.4014***	.0099	.0074	.0376	.0213	1					
8. Institutional ownership t-1	.0291	.0662	.0269*	.0169	.0050	.0373*	.0315*	.0941***	.0097	1				
9. Management ownership t-1	.0055	.0207	.0347*	.0255	-.0060	.0331*	.1232***	.1209***	.0059	.0550***	1			
10. Family ownership t-1	.2694	.1957	-.0256	-.0066	.0585***	.0431**	.0488***	.0011	-.0107	.0449**	.0876***	1		
11. R&D investment t-1	.0193	.0348	-.0706***	-.1088***	.0908***	.0040	-.0539***	-.2582***	.0076	-.0069	-.0135	-.0132*	1	
12. Performance Hazard t-1	-.0020	.1128	.1454***	.9443***	.0627***	.0001	.1657***	.0412**	.3977***	.0001	.0112	-.0242	.0848***	1

Table 1: Mean, Standard Deviation and Correlation of Variables  
Observations, 2,516, P<0.01\*\*\*, P<0.05\*\*, P<0.1\*

Control variable t-1	Mediation variable t-1 R&D investment		dependent variable ROA		
	Model 1	Model 2	Model 1	Model 2	Model 3
ROAt-1	-0.0060 (0.0051)	-0.0056 (0.0051)	0.0238 (0.0207)	0.0219 (0.0207)	0.0193 (0.0206)
Advertisement intensity t-1	-0.0404 (0.0338)	-0.0405 (0.0338)	0.206 (0.136)	0.206 (0.1360)	0.191 (0.1350)

	Mediation variablet-1 R&D investment		dependent variable ROA		
	Leaveraget-1	0.0121 (0.0180)	0.0109 (0.0179)	0.0244 (0.0722)	0.0301 (0.0721)
Firm sizet-1	0.0006 (0.0006)	0.0006 (0.0006)	0.0058** (0.0027)	0.0061** (0.0027)	0.0064** (0.0027)
Firm aget-1	-0.0117* (0.0062)	-0.0115* (0.0062)	0.0508** (0.0251)	0.0496** (0.0250)	0.0446* (0.0249)
Institutional ownership t-1	0.00360 (0.0106)	0.0039 (0.0106)	0.0042 (0.0425)	0.0025 (0.0424)	0.0047 (0.0423)
Management ownership t-1	0.0639 (0.0409)	0.0683* (0.0409)	0.0348 (0.165)	0.0134 (0.1640)	0.0455 (0.1640)
Year dummies	Incl	Incl	Incl	Incl	Incl
Institutional dummies	Incl	Incl	Incl	Incl	Incl
Family ownership t-1		0.0152** (0.0060)		-0.0733*** (0.0242)	-0.0845*** (0.0241)
R&D investment t-1					-0.4420*** (0.0828)
Constant	0.0602*** (0.0230)	0.0562** (0.0231)	-0.200** (0.0927)	-0.181* (0.0928)	-0.156* (0.0924)
Observations	2,516	2,516	2,516	2,516	2,516
R-squared	0.011	0.014	0.011	0.015	0.027
Hausman test	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***

Table 2: Results of Regression Analysis of Research and Development Investment

Note: Standard Errors Are Reported In Parentheses below Regression Coefficients, \*\*\* P < 0.01, \*\* P < 0.05, \* P < 0.10.

	Mediation variablet-1 R&D investment			dependent variable ROA			
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 4
Control variablest-1							
ROAt-1	-0.006 (0.0051)	-0.0073 (0.0161)	-0.0075 (0.0161)	0.0238 (0.0207)	-0.022 (0.0648)	-0.0233 (0.0647)	-0.0395 (0.0649)
Advertisement intensityt-1	-0.0404 (0.0338)	-0.0404 (0.0338)	-0.0416 (0.0338)	0.206 (0.136)	0.209 (0.136)	0.200 (0.136)	0.220 (0.136)
Leaveraget-1	0.0121 (0.018)	0.0110 (0.0179)	0.0111 (0.0179)	0.0244 (0.0722)	0.0317 (0.0722)	0.0326 (0.0721)	0.0331 (0.0720)
Firm sizet-1	0.0006	0.0006	0.0006	0.0058**	0.0061**	0.0062**	0.0064**

	Mediation variable-1 R&D investment			dependent variable ROA			
	(0.0006)	(0.0006)	(0.0006)	(0.0027)	(0.0027)	(0.0027)	(0.0027)
Firm age t-1	-0.0117*	-0.0115*	-0.0116*	0.0508**	0.0497**	0.0487*	0.0418*
	(0.0062)	(0.0062)	(0.0062)	(0.0251)	(0.025)	(0.025)	(0.0251)
Institutional ownership t-1	0.0036	0.0039	0.0044	0.0042	0.0029	0.0063	0.0064
	(0.0106)	(0.0106)	(0.0106)	(0.0425)	(0.0424)	(0.0424)	(0.0423)
Management ownership t-1	0.0639	0.0683*	0.0654	0.0348	0.0142	-0.0065	-0.0018
	(0.0409)	(0.0409)	(0.0409)	(0.165)	(0.164)	(0.164)	(0.164)
Year dummies	Incl	Incl	Incl	Incl	Incl	Incl	Incl
Institutional dummies	Incl	Incl	Incl	Incl	Incl	Incl	Incl
Family ownership t-1		0.0152**	0.0151**		-	-	-
		(0.006)	(0.006)		0.0734***	0.0745***	0.0782***
					(0.0242)	(0.0242)	(0.0241)
Performance hazard t-1		0.0019	0.0021		0.0493	0.0501	0.0611
		(0.0172)	(0.0171)		(0.069)	(0.0689)	(0.0689)
Family ownership t-1* Performance hazard			-0.0729*			-0.506***	-0.571***
			(0.0429)			(0.172)	(0.172)
R&D investment t-1							-0.228***
							(0.0827)
Constant	0.0602***	0.0562**	0.0567**	-0.200**	-0.180*	-0.177*	-0.149
	(0.0230)	(0.0231)	(0.0231)	(0.0927)	(0.0928)	(0.0926)	(0.0931)
Observations	2,516	2,516	2,516	2,516	2,516	2,516	2,516
R-squared	0.011	0.014	0.015	0.011	0.015	0.018	0.022
Hausman test	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***

Table 3: Results of Regression Analysis of Controlled Mediating Effect for Corporate Performance  
Note: Standard Errors Are Reported In Parentheses below Regression Coefficients, \*\*\* P < 0.01, \*\* P < 0.05, \* P < 0.10.