Influence of Strategic Alliances on Product Diversification: Evidence from the U.S. Corporations*

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Abstract: During the last two decades, corporations have been combining resources through strategic alliances in record numbers. A firm's previous alliances may help the firm to create new products based on existing skills and resources. This research analyzes the effects of strategic alliances on the degree of product diversification by using a sample from the S&P 500. This study found that a firm's strategic alliances have a positive impact on product diversification. In addition, this study found that both exploration and equity-based alliances have a positive impact on a firm's product diversification levels. This work also found that specific learning effects from exploration and equity-based alliances are strong when firms require technology and knowledge transfers.

Key words: Strategic alliances; product diversification; organizational learning; mergers and acquisitions

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Ⅰ. Introduction

Forming and managing product portfolios is one of the most important decisions and strategies for a great many companies in the industrialized world (Hitt, Hoskisson & Kim, 1997). Product diversification affects the path of the product and market development and thus influences performance (Rosenkopf & Nerkar, 2001). Thus, a firm's success depends on the ability to develop new products consistently. Furthermore, research shows that an increase in the range of products leads to an overall reduction in production costs (Scazzieri, 1993). From the consumer's point of view, the majority of consumers appreciate being able to choose from a wide variety of products. Throughout the last few decades, as companies are operating in more technologically dynamic environments, they must utilize a different approach toward new product development.

Recently, strategic alliances have been used as a vehicle for companies to expand their product, geographic location, and customer base. The number of strategic alliances grew by more than 25 percent annually throughout the 1990s (Inkpen, 1998). Recently, strategic alliances have become substantial sources for a firm's resource growth. Fifty-five percent of America's fastest-growing companies are involved in an average of three alliances (Inkpen, 1998). Strategic alliances have grown in significance because they provide participants with credibility and legitimacy (Human & Provan, 2000). This is particularly true for entrepreneurial firms that form alliances with incumbent firms. In addition, strategic alliances help firms to gain market power and move more quickly into new markets and technologies (Hagedoorn, 1993). Most of all, the firms that can identify and exploit value-creating opportunities with alliance partners that possess complementary resources may be advantageous in terms of resource growth and

survival.

Because of rising R&D costs, increased global competition and need for innovation, a growing number of firms are conducting new product activities through strategic alliances rather than relying on internal development. To date, most literature on alliances has focused on a broad spectrum of issues such as organizational learning through alliances (Cohen & Levinthal, 1990; Kogut & Zander, 1992). While this work has enhanced our knowledge of strategic alliances and learning outcomes, it still leaves unanswered question of the specific outcome of alliance learning.

In addition to previous literature, we assume that linking strategic alliances with product diversification is worthy of both theoretical and empirical examination. Firms are increasingly using strategic alliances for developing new products since interfirm collaboration involves mutual learning and stimulates the creation of new knowledge (Tsai, 2001). We must learn how to implement product diversification strategies in alliances. Often, product diversification is associated with both high returns and high risks. Through strategic alliances, firms may share risks involving new product development and may find specific alliance modes that can be used for product diversification. For instance, significant heterogeneity still exists within the domain of alliance experience (e.g., exploration vs. exploitation, equity vs. non-equity). Overall, this paper analyzes the effects of strategic alliances on product diversification. In addition, the research explores how different types of inter-organizational co-operation affect product diversification.

Ⅱ. Literature Review and Hypotheses

Product diversification is the expansion into product markets new to the company. This is a highly popular strategy among large and growing companies. The literature explains the reasons

for product diversification strategy: based on the resource-based view, firms must continually enhance their resources and capabilities to take advantage of changing business environments (Barney, 1997). Firms grow to an optimal level when they exploit existing resources and explore new resources (Pettus, 2001). Penrose (1995) suggests that there are managerial limits to the rate of firm growth. Managerial resources need to be absorbed from the outside to adapt to changing environments. By acquiring new resources, a firm can benefit from long-term growth. Knowledge embedded within an organization has to be untangled, altered, and integrated with other knowledge resources to create future growth. In corporate diversification research, Amihud and Lev (1999) found that ownership structure may affect a firm's decision on diversification. Furthermore, a firm's top management team background has a significant influence on a firm's diversification strategy (Jensen & Zajac, 2004). Also, a firm's financial resources are positively related to a firm's diversification (Kochhar & Hitt, 1998).

With the increasing significance of technological change, researchers have noticed that the use of alliances has been more common in areas in which firms face continuous change (Hagedoorn, 1993). Alliances can be an efficient way for sourcing information because information is difficult to price and transfer in markets. According to research, firms grow by accumulating knowledge from inter-organizational cooperation (Penrose, 1995; Yli-Renko, Autio & Sapienza, 2001). Skills and tacit knowledge is best transferred by cooperative arrangements with other firms. In addition, alliances improve and sustain the strategic position of firms in competitive markets by sharing costs and risks (Das & Teng, 2000).

However, the previous literature on strategic alliances has focused on the benefits that alliances give to firms such as transaction cost reduction (Williamson, 1991), resource creation (Park,

Chen & Gallagher, 2002), and social network building (Gulati, 1995). Along with the benefits of strategic alliances, we also have to acknowledge that alliances may be used as an encroachment strategy for future product diversification. In other words, firms may apply their alliance experiences to make decisions on future production strategies. Alliance experiences are regarded as idiosyncratic, unique, and path-dependent (Gulati & Garguilo, 1999).

Organizational learning literature shows that firms engage in experiences and draw inferred material for future experiences (Levitt & March, 1988). Alliances help firms to learn and internalize resources, acquire collaboration skills and build the ability to identify the right direction for future expansion (Anand & Khanna, 2000; Kogut & Zander, 1992). Organizational complexity makes the whole product diversification processes and performances difficult. This is because product diversification processes are costly, timely, and dilute a firm's resources, which can lead to diversification failure. Firms may practice through trial and error with their inter-organizational relationships, which may reduce diversification failure later. This 'learning to learn' (Cohen & Levinthal, 1990) opportunity plays a role in building learning capabilities for many firms. Overall, we suppose that a firm's product diversification performance will be maximized when the firm has the capacity to transfer external knowledge to internal knowledge.

To summarize, we suggest that through alliance formation, technology transfers may help a firm to diversify into new areas. Technology transfers involve other motivations such as discovery, innovation, and experimentation (March, 1991). Also, the existence of alliance partners provides the firm with a large pool of resources facilitating its development and growth. Firms search for the right partners when they perceive a discrepancy between their current resources and their potential ones. Many firms form strategic alliances to reduce excessive R&D cost and risks related

to new products. Previous research has found that alliances provide the opportunity to transfer knowledge and enhance organizational learning (Lane & Lubakin, 1998; Anand & Khanna, 2000; Dussauge, Garrette & Mitchell, 2000; Hitt *et al*., 2000). Building relationships with other firms through alliance formation may facilitate the acquisition of specialized skills that provide a competitive advantage. Cooperation could progress across product development, manufacturing, and marketing. Product diversification requires the integration of R&D, marketing, and engineering. Organizations learn and create these resources through knowledge combination from external sources. Thus, new combinations of knowledge are created with existing knowledge.

1. Alliances — Product Diversification Relationship

Product diversification refers to the extent to which a firm operates in multiple lines of production. From product diversification, firms might be able to save on contractual costs and independent search costs from the internal coordination mechanism (Dewan, Michael & Min, 1998). So far, the literature on product diversification has focused on M&As prior to diversification strategy (Penrose, 1995; Yip, 1982; Peng & Heath, 1996). However, many M&As fail because of bureaucratic costs. As two or more firms merge into one, the amount of information increases and M&A becomes a complex organization. The problems from integration efforts inhibit knowledge transfers from the acquired company to the acquiring company (Ranft & Lord, 2002). Increases in bureaucratic costs from integration limit a firm's diversification capability.

Since the 1980s, the business environment has become more complicated. As a result, the network theory has attracted attention. The term *network* refers to 'formal contractual arrangements or alliances among a limited number of firms bound together in an

interrelated managerial framework' (Penrose, 1995: xix). The rapid change in modern technology creates greater connection among firms in research and development areas. Free trade and globalization make firms compete with each other in the global market. Therefore, a firm's independent identity has become less defined, and a firm's approach to growth has become more flexible. There were 5,200 strategic alliances formed in 1996, and by 2000, the number nearly doubled (Schifrin, 2001). Many firms found that in the 1990s, with the Dow at ten times the level of the early 1980s, M&As were often expensive and might hinder future growth. Many corporate giants are now adopting strategic alliances instead of M&As. Although Netscape/AOL, Exxon/Mobil, and Daimler/Chrysler tend to focus on outcomes, these integrations failed. Most of all, it is impossible to negotiate a merger or acquisition in a timely manner in a modern business environment. In this case, a strategic alliance, which can be quickly formed and disbanded if necessary, is a better approach. In the technology arena, the ability to capitalize on strategic alliances enables companies to rapidly penetrate new marketplaces through the capabilities of a partner or partners. In addition, strategic alliances allow companies to enter into a "trial period" before making a substantial commitment of resources.

For IBM, alliances are key to its product diversification strategy. Partners get access to IBM's 177,000-person global sales force and service providers. IBM gets the partners' promise to adapt their software to IBM's mainframe and middleware platforms. Strategic alliances are also prevalent in manufacturing industries. Coca-Cola uses strategic alliances as a mechanism for its expansion. Coca-Cola was interested in the noncarbonated drink sector and snack business. Instead of acquiring other firms, Coca-Cola formed a 50-50 joint venture with P&G, sharing its drink brands like Hi-C and Fruitopia. P&G shared with Coca-Cola a new GrowthPlus vitamin fortification technology and

1,300 other patents. In the future, Coca-Cola wants to expand their product line into ready-to-drink coffees and teas by forming alliances with Nestle.

However, firms cannot rely solely on strategic alliances. As transaction cost logic suggests, firms may be better able to protect the value of what it has learned by internalizing the activities of the alliance (Williamson, 1991). Most knowledge-based resources are protected by knowledge barriers, which are built based on tacit or ambiguous knowledge. Tacit knowledge is costly to exchange because some technology is hard to put on paper. One type of knowledge-based resource is new product development. New products are the output of many different areas of tacit knowledge such as design, production, and marketing. Collaborative skills from many different areas cannot be developed through programmed or routine activities (Miller & Shamsie, 1996). This involves a long-term project force, which interacts on a complex set of problems. In technologically intensive industries, the transfer of technology from one firm to the other is partially restricted within the form of a contractual relationship. Thus, firms need to utilize alliance formation constantly for future diversification purposes. When a firm has a strong motivation to search for new knowledge, it will be motivated to internalize the skills to avoid dependence on the other firm in the future. If a firm becomes too dependent on technological alliances, we assume that a firm's knowledge growth will be slower than the firms that actively internalize activities. Firms must learn how to transfer knowledge across alliances to keep pace with the most promising scientific and technological developments (Powell, Koput & Smith-Doerr, 1996). Firms need to transform collaborative experience into a form of competitive advantage by internalizing and routinizing lessons learned from those experiences. Therefore, we posit that product diversification can be achieved as a firm's accumulated alliance experiences evolve into technological internalization.

In summary, as firms build contractual relationships with alliance partners, it will maximize product diversification processes. First, strategic alliances are less risky because of their incremental processes. Second, alliances allow an opportunity to test the firm's capability to diversify without full commitment. In other words, decisions to discard unprofitable ventures can be made in the process of strategic alliances without full commitment to diversify. Such flexibility results in higher probability for firms using alliances prior to diversification.

Hypothesis 1: Alliance experience has a positive effect on product diversification.

2. Exploration vs. Exploitation Alliances — Product Diversification Relationship

Firms form alliances with other firms with "exploitation" or "exploration" objectives in order to enhance their resource conditions (Park, Chen, & Gallagher, 2002). According to Levinthal and March (1981), organizations search in two ways: intensive and extensive searches. Generally, intensive searches do not require an additional knowledge base. They require exploitation of a current knowledge base. In contrast, an extensive search requires a new knowledge dimension. If we interpret these terms in the context of alliance formation, intensive searches are related to the exploitation of the alliance, whereas an extensive search relates to the exploration alliance. Firms form exploitation alliances when they look for additional complementary resources by utilizing current resources. In addition, firms form exploitation alliances when they need to cooperate across different levels of value-added chains. Firms form exploration alliances to seek innovation, develop a new product, and access new resources and competencies. Usually exploitation alliances are distribution or outsourcing arrangements, while exploration alliances include

R&D consortia, technology transfers, and patent swaps. Thus, exploration alliances are more likely to improve a firm's strategic direction, while exploitation alliances tend to be more concerned with cost economizing and efficiency.

A firm's internal resource growth evolves with its external relationships. As a firm builds on relationships with other firms, its resources grow. This is mainly because resources move across organizational boundaries (Rosenkopf & Nerkar, 2001). Past research shows that resource complementarity is important for collaborative success (Harrigan, 1985), involving a mix of unique and valuable resources, thus enhancing the competitive viability of organizational integration. By pooling complementary resources, firms can complete projects that they could not have done on their own. Many firms often utilize strategic alliances as a vehicle to diversify into new areas when there is high uncertainty. However, the complementary resources of a partnering firm compensates for weakness in the existing resources.

When firms want access to complementary resources, they may use exploration alliances instead of exploitation alliances (Levinthal & March, 1981 Dussauge, Garrette & Mitchell, 2000). Exploration alliances involve discovering new ideas, innovation, basic research, building new capabilities, and the investments in firm's absorptive capacity (Koza & Lewin, 1998). For instance, radical innovation can even create fatal difficulties for many established firms. In fact, market expanding discontinuities and competence-destroying discontinuities almost always come from outside the industry (Utterback, 1994). Therefore, a discontinuous change in a product from outside the industry requires a firm to update old technology or gain access to new technology through external acquisition. This suggests that many firms are determined to develop more heterogeneous capabilities as they make efforts to grow. This involves acquiring new scientific principles, manufacturing processes, and marketing approaches

(Nagarajan & Mitchell, 1998). In addition, prior research explains that firms gain tacit knowledge more often from exploration alliances than from exploitation alliances (Khanna *et al.*, 1998). On the other hand, the partners in exploitation alliances possess similar skills and resources. This will result in a limited ability to transfer new knowledge from alliance partners for future diversification purposes. The primary incentive in exploitation alliances is building efficiency rather than building new capabilities.

Product diversification within the firm is often both slow and expensive. This is because product diversification involves a change in core resources. Product diversification represents deviations from the current capabilities in terms of R&D activities, marketing skills, and methods for conducting business. Thus, product diversification through internal R&D is often inefficient to develop complementary resources because the firm's capabilities focus on the core competencies and the activities defined by the existing technological system. Meanwhile, exploration alliances involve intensive teamwork, and they help partners get more involved in R&D activities. Exploration alliances often require close communication and interaction with a partner firm which may reduce information-processing costs and stimulate information exchange. Given the tacit nature of much of the knowledge that a firm needs to acquire in order to diversify into unrelated field, exploration alliances provide a structure for learning about new competences. As exploration alliances create greater learning opportunities, we predict that firms will face greater incentives to diversify into new areas from exploration alliances than from exploitation alliances.

Hypothesis 2: Exploration alliances have a stronger correlation with product diversification than exploitation alliances.

3. Equity vs. Nonequity Alliances — Product Diversification Relationship

Equity based alliances entail more control and coordination than other contractual relationships. Equity-based alliances are considered more hierarchical than other types of alliances. For instance, 50-50 joint ventures, which represent one type of equity alliance, require 50 percent of equity investment from both partners to set up a new organizational entity. On the other hand, non-equity alliances do not exchange equity, nor do they have any shared ownership structure. Non-equity alliances include licensing, outsourcing, distribution arrangements, and technology exchange arrangements.

Joint ventures result in strong controls, and this kind of structural rigidity can increase incentives and commitment from the partner companies to pass on tacit knowledge (Anand & Khanna, 2000). In equity alliances, through close communication and interaction, firms may learn about engineering and technological principals that are new to the firm (Nagarajan & Mitchell, 1998).

Moreover, monitoring and control mechanisms in equity alliances reduce asymmetric information problems, which often occur in contractual based alliance relationships (Reuer, 2002). Generally, non-equity based alliances entail less control and coordination. Lack of monitoring and control in non-equity alliances creates ambiguity problems when transferring technology between partner firms (Gulati & Singh, 1998). In this case, the bond between partners will grow weak and the learning effect will be less influential on a firm's diversification strategy. More precise definitions of control rights may lead to better incentives for cooperation. Equity alliances may build common skills and similar cognitive structures that can be transferred and internalized. Firms need to possess relevant knowledge in order to

recognize valuable external knowledge and figure out how to internalize it (Cohen & Levinthal, 1990). Accumulated knowledge can be applied to subsequent output, which results in product diversification later.

In addition, equity alliances are used as a vehicle for future acquisitions. In 1990, British computer maker, ICL, was acquired by a former alliance partner, Fujitsu. For a small firm like ICL, they faced financial burdens as they planned to expand in the system supply industry since the whole industry was growing. Fujitsu became a more active financial supporter as integration took place with ICL.

Firms use alliance mechanisms as evaluation tools for future acquisition partner selection. Evaluation through alliance partnerships can help firms avoid acquisition failure which happens to many companies. Previous research also shows that equity based alliances can be part of a takeover process (Reuer, 2002). Based on the above argument, we posit the following hypothesis:

Hypothesis 3: Equity alliances have a stronger relationship with product diversification than non-equity alliances.

Ⅲ. Methodology

1. Sample and Dependent Variable

The sample consists of strategic alliances formed between January 1, 1988 and December 31, 1998. The sample was compiled from two primary data sources. Data on strategic alliance activity were taken from the Securities Data Corporation's (SDC) database and diversification data came from Standard & Poor's Compustat Global database. The data for selecting the sample were taken from the top 500 companies in terms of average sales between 1988 and 1998. The top 500 cut-off helped ensure firms were adequate in size to participate in diversification activities.

The final sample consisted of 443 companies after the exclusion of 57 companies without sufficient data.

The corporate product diversification level was computed at two points in time — 1988 and 1998. We used the Jacquemin-Berry index, known as the entropy index, to measure the product diversification strategy. This entropy index has been the most widely used in industrial economics and strategic management (Jacquemin and Berry, 1979; Palepu, 1985). The entropy measure of total diversification is defined as:

$$DT = \sum_{i=1} P_i \ln \left(\frac{1}{P_i} \right)$$

where N is the number of industry segments in which the firm is active (four-digit SIC code) and Pi is the share of the ith segment in the total sales of the firm. This measure takes into account both the number of segments in which a firm operates and the relative importance of each segment total firm sales (Jacquemin and Berry, 1979; Palepu, 1985). Our dependent variable is

$$\text{DELTADT} = \text{DT(98)} - \text{DT(88)}.$$

This variable thus measures a longitudinal change in the degree of diversification between two points in time.

2. The Independent Variable

We calculated alliance formation according to alliance years, which is the cumulative sum of the alliance duration for an alliance. For example, if a firm has formed two alliances over the study period, with the first alliance being five years old and the second three years old, the firm's total cumulative alliance for-

mation would be eight years. Data alliance types are also included: exploration (R&D, technology transfer), exploitation (manufacturing, marketing, and licensing alliances), equity (if the alliance has capital investment), and non-equity (if the alliance has no capital investment) alliances. SDC provides information on the type of alliance and their variables were measured by the cumulative sum of the alliance duration.

3. Control Variables

The COMPUSTAT global data was used for the control variables. First, previous research has shown that firm size has an effect on firm diversification (Chatterjee & Wernerfelt, 1991; Hill & Snell, 1988). This variable was measured as an average logarithm of sales from 1988 to 1998. Second, to control firm effects, the firm R&D intensity was measured as expenditures in R&D expressed as a percentage of sales (Chatterjee & Wernerfelt, 1991). Third, earlier evidence suggests that liquidity affects diversification (Chatterjee & Wernerfelt, 1991). Thus, we used a standard measure of liquidity, the current ratio (current assets/current liabilities), as a control variable. Fourth, the firm performance, measured as the average return on assets (ROA) over the period 1988-1998, was controlled because earlier studies showed that diversification is affected by performance (Chatterjee & Wernerfelt, 1991). Fifth, the board's insider ratio was used as a control variable because studies have shown that the ratio of outsiders to insiders influence diversification strategies (Hill & Snell, 1988; Jensen & Zajac, 2004). The board's outsiders were operationalized as those directors with no professional ties to the firm. Insiders are those managers who are working for the firm (Johnson *et al*., 1993). Finally, the firms acquisition experience, measured the total number of acquisitions completed over the period of 1988-1998. Acquisition is the major corporate strategy

which directly affectscorporate product diversification (Haleblian & Finkelstein, 1999; Hayward, 2002),thus it is necessary to parse out effects from prior experience with acquisitions on product diversification.

Ⅳ. Empirical Results

Table 1 summarizes descriptive statistics and correlations among all the variables in this study. On average, the level of product diversification was 0.60 (p<0.01). The results of the regression analyses are presented in Table 2. Model 1 reports the results for the control variables. As expected, the coefficients for firm size, R&D intensity and acquisition experience are significant (p<0.01). They are positively associated with the level of productdiversification. The coefficient for liquidity is significant (p<0.10) and positively associated with the dependant variable. The coefficient for firm performance is significant (p<0.05) and negatively associated with product diversification level. In model

Table 1. Descriptive Statistics and Correlations

	Mean	s.d.	1	2	3	4	5	6	7	8.	9	10	11	12
1. Product diversification	0.60	0.52	1.00											
2. Alliance formation	7.5	1.32	0.01[a]	1.00										
3. Exploration alliance	5.5	4.15	0.11[a]	0.60[b]	1.00									
4. Exploitation alliance	3.5	2.11	0.01	0.24[b]	0.43[b]	1.00								
5. Equity alliance	4.5	5.10	0.22[b]	0.16[b]	0.55[b]	0.16[b]	1.00							
6. Non-equity alliance	6.0	8.08	-0.02	0.52[b]	0.04	0.02	0.37	1.00						
7. Firm size	7.4	1.31	0.33[a]	0.35	0.27	0.07	0.13	-0.36[a]	1.00					
8. R&D intensity	0.06	0.06	0.23[a]	0.26	0.39	0.04	0.47	0.78[a]	0.63[a]	1.00				
9. Liquidity	128.90	650.22	0.16[b]	0.33	0.11	0.35	0.39	-0.54	0.39[b]	-0.47	1.00			
10. Firm performance	8.52	5.95	-0.35[b]	0.21[a]	0.28[a]	0.22	0.35[b]	-0.14	0.51[b]	0.34[b]	0.87[a]	1.00		
11. Insider ratio	0.70	0.15	-0.23[b]	0.54	0.21	0.17	0.36	0.27	0.79[b]	0.12	0.31	0.72	1.00	1.00
12. Acquisition experience	0.92	1.43	0.01[b]	0.16[b]	0.16[b]	0.05	0.01[b]	0.06	0.02[a]	-0.00	0.02	0.04	0.03	

(a) p <0.01; (b) p<0.05

2, alliance formation was added to test hypothesis 1. As shown, the coefficient has a significantly positive relationship with the level of product diversification thereby supporting Hypothesis 1 (p<0.01). Models 3 through 6 include variables representing each of the different types of alliances. Each of these models tests the relationship of the type of alliance formation and the magnitude of its effect on product diversification level. The coefficients for exploration alliances (p<0.01) and equity alliances (p<0.05) are both positive and significant. The coefficients for exploitation alliances and non-equity alliances are not significant. The coefficient for exploration alliances is greater than the coefficient for exploitation alliances, and the difference was significant (p<0.001). Also, the difference in coefficients between equity alliances and non-equity alliances was significant (p<0.01), and the coefficient for equity alliance was greater than the coefficient for non-equity alliances.

Table 2. Results of generalized least squares regression analysis of strategic alliance formation on product diversification levels

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Alliance formation		0.03[b](0.01)				
Exploration alliances			0.53[b](0.08)			
Exploitation alliances				0.02(0.26)		
Equity alliances					0.23[c](0.12)	
Non-equity alliances						0.03(0.01)
Firm size	0.26[b](0.035)	0.24[b](0.032)	0.20[b](0.04)	0.24[b](0.032)	0.32[c](0.097)	0.21[b](0.028)
R&D intensity	0.03[b](0.452)	0.15[d](0.557)	0.13[d](0.554)	0.14[d](0.548)	0.12[d](0.052)	0.11[d](0.438)
Liquidity	0.06[d](0.025)	0.08[c](0.023)	0.07[d](0.180)	0.06[d](0.021)	0.09[d](0.024)	0.05[d](0.019)
Firm performance	-0.18[c](0.005)	-0.16[c](0.006)	-0.21[c](0.004)	-0.22[c](0.005)	-0.24[c](0.005)	-0.20[c](0.003)
Insider ratio	-0.07(0.125)	-0.08[d](0.182)	-0.09(0.180)	-0.08[d](0.182)	-0.06[d](0.178)	-0.07(0.132)
Acquisition experience	0.02[c](0.01)	0.03[d](0.12)	0.03[c](0.172)	-0.08(0.124)	0.02[d](0.28)	0.01(0.62)
Sample size	443	443	443	443	443	443
R^2	0.205	0.227	0.237	0.231	0.195	0.211
F	11.35[a]	12.11[a]	10.32[a]	10.25[a]	9.37[a]	10.17[a]

(a) p<0.001; (b) p<0.01; (c) p<0.05; (d) p<0.10 Standard error is in parentheses.

Ⅴ. Discussion and Conclusion

This study shows the positive influence of strategic alliances on a firm's product diversification. Learning through strategic alliances benefits and helps companies expand. This work also supports the idea that different types of alliances affect product diversification at different levels. For example, previous exploration and equity alliances benefit product diversification more than previous exploitation and non-equity alliances. This finding is consistent with alliance literature in that exploitation and non-equity alliances bring lower learning effects than other alliance types. The specific nature of exploitation and non-equity alliances reducesthe opportunity for partners to gain broad access to a partner's resources. Target specific learning effects are the strongest and the most beneficial to product diversification. The results show that firms learn from previous alliances by helping them diversify products.

This work builds on previous studies and explains how firms learning effect through alliances may lead to product diversification. The impact of alliance activity is a theoretical and empirical question for strategic management(Gulati, 1998), but curiously it is an underexplored and underdeveloped topic compared with other themes. The results of this study are consistent with current competitive landscape characterized by higher levels of firms' external relationships and innovation (Koza & Lewin, 1999).

This research has strong implications for theory building, management and public policy. Theoretically, in a world of hyper competition and uncertainty, innovation through strategic alliances is a feasible strategy for managers with higher levels of corporate diversification. This study found that there are statistically different learning effects for different types of strategic

alliances. Second, this study has important implications for practitioner sand managers. Nowadays, more managers are aware of the importance of both strategic networks with other firms and diversification because of less stable business environments. Third, these results are useful for public policy making because they provide an understanding of market power, large firm behavior, and incentives for organizational learning.

This study provides a basis for future research. First, it would be interesting to explore the moderating role of strategic alliances on a firm's diversification strategies and performance. Diversification research needs to pay close attention to other interaction effects on firm performance (Palich, Cardinal & Miller 2000). Second, diversification research must also consider other influences such as regulation, competitive forces, corporate entrepreneurship, globalization and the corporate governance mechanism. Finally, future research should focus on how to manage and implement diversification strategies through strategic alliances. More research based on this study and other studies would provide a better understanding of these relationships.

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