

Relational Assets, Interorganizational Mechanisms, and Alliance Performance of Venture Firms in Korea

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The field of interfirm cooperation in strategic management literature has been considered as the essential topic. Scholars, however, have argued that it is not fully understood what factors drive the superior alliance performance. Up to date, hundreds of researches have tried to reveal the performance drivers in various cooperative settings, using a diverse theoretical lens. Recently, many researchers are struggling for dealing with the process issues in alliance research, using the 'dynamic view' on firm's strategic behavior. These endeavors are stem from the reflection on the bulk of researches represented by the 'static' views and/or 'content-based' researches on cooperative behavior.

Based on the capability-based view, this paper examines the performance drivers of an alliances formed by 137 Korean technology-intensive ventures. The result, first, shows that the relation-specific investment in relational assets such as alliance function, manual, and training would be beneficial to a firm entering into cooperative relationships. Second, the result shows that the investment in and establishment of the interorganizational mechanisms for selecting partners, coordinating relational activities, and mutual learning also would be advantageous to the higher alliance performance.

Key words : strategic alliance, relational assets, interorganizational mechanisms, alliance performance, technology-intensive ventures

논문투고일 : 2008. 12. 22 수정논문접수일 : 2009. 6. 10 게재확정일 : 2009. 6. 19

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I. INTRODUCTION

During the past decade, motivated by increasing globalization, competitiveness, risk and uncertainty within the business environment, the domain for doing business has gone through unprecedented revolutionary changes mainly by the opportunities and proliferation of cooperative strategies (Das & Teng, 2000; Dyer & Singh, 1998; Gulati, 1995; Lavie, 2006). For example, aerospace, telecommunications, pharmaceuticals and a few other industries showed the increased level of collaborative efforts. Companies considering new market ventures or planning long-term R&D programs are finding collaboration, which it offers the opportunity to spread risks of investment.

It means that it is no more the best way to struggle for defeating or conquering competitors, because it is generally accepted that firms are able to get much more big chances for gains by cooperating, as like forming 'strategic alliances', not competing predatorily, with other parties in your field, though they're competitors (Das & Teng, 2000; Hoffmann, 2007; Khanna, Gulati & Nohria, 1998; Kogut, 1989; Lavie, 2006). Not surprisingly, these new propositions on business strategy are prevailed and popular in all around.

In the strategic standpoint, effective cooperation activities can be the fundamental engines for firm growth and profitability in both domestic and global market places. Strategic alliances, as representative form of the numerous inter-

organizational relationships, continue to grow in popularity, causing them to be viewed as a ubiquitous phenomenon (Das & Teng, 2000; Gulati, 1998; Zollo, Reuer & Singh, 2002). Indeed, the formation rate of interfirm collaborations, such as strategic alliances, has increased dramatically in recent years (Dyer & Singh, 1998; Lavie, 2006; Simonin, 1997).

Although popular as a potential value-creating strategic option, many alliances fail (Reuer, 2000; Spekman, Forbes, Isabella & MacAvoy, 1998), suggesting that even with the presence of potential synergies, alliance success is elusive (Madhok & Tallman, 1998). Nonetheless, their flexibility and potentially lower levels of risk sometimes make alliances a preferred growth alternative relative to acquisitions (Harrison, Hitt, Hoskisson & Ireland, 2001).

Although the high failure rate, it is needless to say that both domestic and international alliances are critically important to firm success (Lambe, Spekman, and Hunt, 2002; Parkhe, 2003; Reuer, 2000). Serving as a conduit through which knowledge flows between firms is one way strategic alliances facilitate knowledge integration. Complicating the difficulty of integrating knowledge is the fact that alliances are characterized by mutual interdependence, which means that each party is vulnerable to its partners. Mutual interdependence between partners shows the way to share control and management of the collaborative arrangement (Das & Teng, 1998; Inkpen & Beamish, 1997; Parkhe,

1993). The frequent simultaneous control and management and competition between partners creates additional complexity (Das & Sussman, 1997). Facing mutual interdependence, thus, to share management of alliances is necessary (Das & Sussman, 1997). While partners in alliances have the potential to enhance each other's performance, it is challenging because of the difficulty in managing them (Dyer & Singh, 1998; Heimeriks, Duysters & Vanhaverbeke, 2007; Lavie, 2006; Spekman, Forbes, Isabella & MacAvoy, 1998). Thus, for various reasons, managing strategic alliances to achieve or maintain competitive advantage and enhance firm's performance is an important issue warranting further study (Arino, 2001; Parkhe, 2003).

In this vein, the underlying problem of comprehending the factors for alliance performance remains one of the most attentive and also of the most puzzling questions (Dyer, 1997; Gulati, 1998; Hoffmann, 2007; Ireland, Hitt & Vaidyanath, 2002; Khanna, Gulati & Nohria, 1998). Indeed, the complexity of this problem has been widely recognized in research over the last decade. The difficulties associated with studying alliance performance have been attributed to many factors, including the lack of consensus around a typology of collaborative agreements, diversity in firms' strategic intents in pursuing alliances, and the lack of objective performance data (e.g., Geringer & Hebert 1991, Kale, Dyer & Singh, 2002; Kogut, 1988; Murray & Kotabe, 2005). These obstacles notwithstanding,

the theoretical and practical relevance of revealing drivers of alliance performance makes a strong research motivation available to study collaborators' specific alliance outcomes (Zollo, Reuer & Singh, 2002).

In this article, venture firms in technology-intensive industries such as biotechnology, electricity and electronics, computer and software, precision machinery, pharmaceutical etc. are studied. The purpose here is to propose an integrated framework that evaluates prospective alliance performance through an analysis of the antecedents inside the firm, and to test the hypotheses based on this theoretical framework using data from structured survey method.

That is, this research examines primarily the performance of strategic alliances - defined as cooperative agreements of any form aimed at the development, manufacture, and/or distribution of new products - in the context of the technology-intensive industry. To this end, the notion of relational assets and interorganizational mechanisms is developed and used to provide an integrated theoretical explanation for the performance implications of various antecedents.

II. THEORY and HYPOTHESES

The antecedents and outcomes of interfirm cooperation formed by two or more entities have been explained by lots of variables in the previous researches. To date, mainly, researchers have concentrated on theoretical and empirical

explanations of alliance formation, i.e., content issues (Ariño & de la Torre, 1998; Barringer & Harrison, 2000; Doz, 1996; Gulati, 1998). Therefore, effective alliance management issue has been recognized a significant challenging issues and an underinvestigated phenomenon (Heimeriks, Duysters & Vanhaverbeke, 2007; Hoffmann, 2007; Lavie, 2006; Spekman, Forbes, Isabella & MacAvoy, 1998). Enhancing our knowledge about the effective management of alliances would contribute to a reduction in alliance failures through improved managerial practices (Arino & de la Torre, 1998; Barringer & Harrison, 2000; Das & Teng, 2000). Evidence that investments in relation-specific assets are positively related to superior firm performance has been emphasized in previous alliance research, and influences current work (Dyer, 1997; Dyer & Singh, 1998; Heimeriks & Duysters, 2006; Heimeriks, Duysters & Vanhaverbeke, 2007; Lambe, Spekman & Hunt, 2002). To date, the primary focus of alliance research has been on examining and explaining anticipated alliance outcomes or benefits (Lavie, 2006; Sampson, 2007).

An extant review of the alliance performance literature indicates a number of perspectives and approaches to explain influencing factors, as most critical components in interorganizational relationships, on alliance performance. One popular theme is alliance experience accumulation grounded organizational learning and knowledge acquisition (Arino & de la Torre, 1998; Inkpen & Beamish, 1997; Kale, Singh & Perlmutter,

2000; Powell, Koput & Smith-Doerr, 1996; Simonin, 1997). Knowledge acquisition changes the bargaining power balance between partners, followed by a dissatisfaction of one partner firm, at least partly (Inkpen & Beamish, 1997; Khanna, Gulati & Nohria, 1998). Others suppose that firm characteristics of partners are closely related to alliance performance (Beamish, 1987; Das & Teng, 2003; Luo, 1997). Scholars also contend that the differences between the partners, i.e., structural, organizational, cultural differences, would be culprits responsible for the failure of alliances in accordance with these arguments (Barringer & Harrison, 2000; Gulati, 1998; Lavie, 2006; Spekman, Forbes, Isabella & MacAvoy, 1998). In agreement with these arguments, for example, the relationship between initial conditions and alliance performance (Doz, 1996), and the research concerning joint venture failure (Kogut, 1989) were investigated.

In the context of alliance research, inter-organizational (relational) characteristics are another important ways of explanation for alliance performance. Particularly, Interfirm trust has been argued as a critical factor (Arino, 2001; Das & Teng, 1998; Fryxell, Dooley & Vryza, 2002). Researchers also argue that cooperative activities of partners, i.e., the search for mutual gains rather than opportunistic behaviors, are more important factors in alliance settings. While network theorists (Goerzen & Beamish, 2005; Gulati, 1995) argue the reputation as a gained benefits in interfirm cooperation can be effective

in future cooperative arrangements, other researchers suggest that the political and institutional issues and behaviors of partners in cooperative relationships would be a negative effects on alliance performance (Das & Teng, 2003; Parkhe, 2003).

The collaborative structure of cooperative arrangements is also highly paid attention as a factor for alliance performance. Researchers argues that adequate alliance structure restrains partners' opportunistic behavior (Murray & Kotabe, 2005; Parkhe, 1993). Prior studies argue that the fundamental characteristics of the control mechanism choice of partners is related to the performance of alliance (Fryxell, Dooley & Vryza, 2002; Geringer & Hebert, 1991).

Prior research on strategic alliances has focused primarily on the formation issues that explain why firms enter interfirm collaborations (Parkhe, 1993), which firms enter alliances and whom do they choose as partners (Gulati, 1998). However, they have generally paid less attention to the performance issues that what internal firm-specific factors influence the success of alliances thoroughly, even though such alliances are rapidly increasing in importance in today's competitive landscape (Das & Teng, 2000; Gulati, 1998). Despite this long list of perspectives, this lack of agreement explained above reflects an underlying conceptual puzzle. That is, basically, the fundamental question as like what effective alliance performance does mean and what factors influence on alliance performance. In sum, the performance of alliances remains one of the

most interesting and also one of the most vexing questions. To synthesize existing literatures, and fill these gaps showed in previous researches, we focus on to investigate the effects of relational assets and interorganizational mechanisms on the performance of strategic alliance formed in such revolutionary changing environments, so called technology-intensive industries.

2.1 Relational assets and alliance performance

Along with recent empirical research on alliances performance, this section aims to contribute to the knowledge about strategic alliances and especially effective alliance management as a source of competitive advantage. Effective alliance management is most critical issues for having alliances' benefits to be realized. Additionally, it helps avoid opportunistic behavior and the resulting unintended outcomes for certain partners (Das & Teng, 2003; Inkpen & Beamish, 1997; Parkhe, 1993).

The fact that so many alliances fail despite the marked needs for interfirm cooperation makes them an interesting subject for research (Arino & de la Torre, 1998; Gulati, 1998). Accordingly, numerous surveys have been conducted into the success and failureve been ingut the success ratescess ratescesshave not improved. Apparently these researchesnum not give the re tired answers (Mohr & Spekman, 1994). Research has, however, concentratecentraarticularto the succ char beeristics and structurevsuch as the naturev earchescontratureen intypcess ratesceurveys en -

irintr not n ire is cooperation with competiten in etc. Little attention has been dn ited to alliance management issues intt improvmtportant e been for success may not be the the succchar beer-istics gut the alliance partners' skch sentralliance management (Das & Teng, 2003; Draulans, deMan & Volberda, 2003; Reuer, 2000).

The skill said here is referred to alliance capability and/or alliance techniques (Draulans, deMan & Volberda, 2003; Dyer & Singh, 1998; Kale, Dyer & Singh, 2002; Lamb, Spekman & Hunt, 2002; Simonin, 1997). It is defined as the capability to make alliances successful, based on leveraging alliance knowledge and learning about alliance management (Draulans, deMan & Volberda, 2003; Heimeriks & Duysters, 2006). It is based on their practical experience that certain organizations would better perform than others in the field of alliances, while less successful organizations appear to be incapable of making their alliances work. Instead of answering the question of why certain alliances are more successful than others, it is better to examine why certain organizations are more successful with alliances than other organizations (Spekman, Forbes, Isabella & MacAvoy, 1998). Factors such as the knowledge, experience and management techniques that the organizations have in the alliance field could be examined, making the organization instead of the alliance the frame of reference for research (Lavie, 2006).

This line of thoughts can be aligned with the capability-based view of strategy, which is re-

lated to the competence building and organizational learning and it makes this approach be paid attention by scholars (Draulans, deMan & Volberda, 2003; Kale, Dyer & Singh, 2002). Like any other competence the management of alliances is a skill that can be built up and which can become a significant source of competitive advantage.ilhe main aim of this research was to get a first quantitative underpinning of our ideas about alliance capability development.

The research shows that paying attention to alliance management by investing in alliance function, manual, and training raises alliance success rates (Draulans, deMan & Volberda, 2003; Heimeriks & Duysters, 2006; Heimeriks, Duysters & Vanhaverbeke, 2007; Kale, Dyer & Singh, 2002). Alliances involve two or more partners. Differences between companies in terms of structure, culture and planning need to be bridged. This requires specific skills and knowledge absorption of the partner firms involved in the alliance (Heimeriks, Duysters & Vanhaverbeke, 2007). The building up of firm level capabilities based on absorbing knowledge from inside and outside the firm has received considerable attention from a variety of authors, specifically with regard to technological capabilities.

In this article, one specific type of capability is studied, namely the capability to manage alliances successfully. Although every alliance is unique, the processes of alliance management share certain features. The capacity to manage alliances and absorb knowledge on alliances is a

distinct management capability (Heimeriks & Duysters, 2006). According to above explanations, the relational assets are defined as something to enhance the systematic processes and routines that are purposefully designed to accumulate, integrate, and disperse inter-organizational knowledge (Heimeriks, Duysters & Vanhaverbeke, 2007). The basic idea underlying the argument is that companies possessing these relational assets will exhibit higher alliance success rates than those that have not invested in. In this way they are able to create a source of competitive advantage at firm level. According to the above theoretical arguments, the following testable hypotheses can be suggested.

H1a: *There is a positive relationship between a firm's investment in an alliance function and alliance performance.*

H1b: *There is a positive relationship between a firm's investment in an alliance manual and alliance performance.*

H1c: *There is a positive relationship between a firm's investment in an alliance training and alliance performance.*

2.2 Interorganizational mechanisms and alliance performance

A number of existing literatures in strategic management has showed the importance of the

coordination (e.g., Hoffmann, 2007; Ireland, Hitt & Vaidy Hith, 2002; Spekman, Forbes, Isabella & MacAvoy, 1998) and learning (e.g., Arino & de la Torre, 1998; Doz, 1996; Heimeriks, Duysters & Vanhaverbeke, 2007; Kale, Singh & Perlm Iter, 2000; Khanna, Gs & i & Nohria, 1998; Powell, Ko Dt & Smith-Doerr, 1996; Simonin, 1997) mechanism in alliance research and Dt emphoers on the partikr selection e.g., A (e.g., Beamrsh, 1987; Lr, Eden, Hitt & Ireland, 2008; Lug, 1997) in an ear; Hstage for alliance formation. Allianceman, Fformed when there is the potential for joint value ciancion in llibin-ing resmatios or capabilit resf.gm7; fferent part-ikrs and when inism ; ffitelniAvoyxchangvaluese resmatios or capabilit resin the open market (KogDt, 1988 Smio realiz8) andpotential for joint value ciancion, partikrs m st exchangvain-formation, shn, F000; Khan, 2007makvainvest-mentorre, 1998;Kalc fic for jorelationship. Neverr jl, A, fulfillid Dt empDoerr,requirementor of alliancemanlsmlando.gm7r jovalupabilinvest-mentorand ropr rt99y2000; Khannof partikrs fo opportunisng (e,zards blca se of the tempt9tion of each partner to pursue self-interests (Khanna, Gulati & Nohria, 1998).

In the knowledge-based view of strategic alliance, firms are recognized to enjoy competitive advantage by developing a capability to manage firm's knowledge more successfully than others (Heimeriks, Duysters & Vanhaverbeke, 2007; Kale, Dyer & Singh, 2002; Kale, Singh & Perlmutter, 2000; Khanna, Gulati & Nohria,

1998). This line of thoughts proposes that firm's internal processes accelerating the accumulation, codification, dissemination, and sharing appropriate alliance know-how acquired by firm's prior experience, are central to its alliance success. That is, alliance experience accumulation may be a central role to firm's interorganizational relationships (Anand & Khanna, 2000; Kale, Dyer & Singh, 2002). Researchers find that firms with more experience create significant value in subsequent similar activities in various research settings, e.g., alliance (Simonin, 1997), alliance portfolio (Heimeriks & Duysters, 2006), joint R&D project (Hoang & Rothaermel, 2005), joint ventures (Anand & Khanna, 2000), stock market response (Anand & Khanna, 2000). We argue, along with previous studies, prior participation in alliance should be recognized as a necessary, not sufficient, condition to firm's capability building for interorganizational relationships.

Organizational learning theory concerned importantly with the processes that lead to organizational learning in accordance with knowledge-based view (Heimeriks, Duysters & Vanhaverbeke, 2007; Kale, Dyer & Singh, 2002; Kale, Singh & Perlmutter, 2000). A key factor is absorptive capacity, which is defined as a firm's ability to recognize the value of new knowledge, assimilate it, and apply it in a business setting (Inkpen & Beamish, 1997; Simonin, 1997). In this perspective, the absorption of as much knowledge as possible from alliance partners leads the increase of organizational competences and the

gaining of corporate value (Doz, 1996; Gulati, 1998; Inkpen & Beamish, 1997; Simonin, 1997).

The alliance implementation process gives a firm enormous benefits of knowledge spillovers (Kale, Dyer & Singh, 2002; Kale, Singh & Perlmutter, 2000). These knowledge sharing routines means that interorganizational learning is critical to competitive success, making an emphasis that organizations often create valuable knowledge for generating rents and develop the way of sharing knowledge, that is, learn by collaborating with other parties (Heimeriks, Duysters & Vanhaverbeke, 2007; Powell, Koput & Smith-Doerr, 1996). As the parties entered in cooperative relationships go through the operational activities in collaborative arrangements, they are inclined to be familiar to their intrinsic own management style, resource and capabilities, strength and weakness, and so on. As those experiences accumulated by multiple alliances over time, they will understand more and more how these relationships should be treated and managed. And these repeated interpretation will be helpful for a firm to reinforce and embed its organizational routines (Rothaermel & Deeds, 2006; Zollo, Reuer & Singh, 2002).

Further, the alliance of two or more companies creates a strong potential for dysfunctional conflict and mistrust (Das & Teng, 1998; Dyer, 1997). Companies often differ in strategic goals and objectives for the alliance, and in the extent and type of experience with alliances. Companies differ in organizational cultures and

management philosophies, including their routine policies and procedures. When the partners are from different national cultures, these differences are magnified and commonly generate misunderstandings (Das & Teng, 1998; Gulati, 1995). Even for the most financially rational relationship, without a continuous investment in and building of commitment and trust, differences in partner companies in conjunction with cultural differences can greatly inhibit the alliance's durability and its success (Fryxell, Dooley & Vryza, 2002; Gulati, 1995). Without a sense of mutual commitment to each other, partners often fail to work out the inevitable problems of interfirm cooperation. The result is an alliance with less than optimal performance and perhaps eventual dissolution. Along with above arguments, it suggests the importance of internal coordinating activities in interorganizational relationships.

Similar to interpersonal relationships, mutual trust is important because successful cooperation requires alliance participants to contribute quality inputs into the alliance organization (Arino, 2001; Arino & de la Torre, 1998; Das & Teng, 1998; Dyer, 1997). When there does not exist mutual trust between parties, they will inclined to conceal information from others or take unfair advantage of each other if possible. If this happens, the alliance seldom produces all the mutual benefits possible from cooperation. Unreliability, unfairness, and opportunistic behavior by partners set the alliance on a path not

only of suboptimization, but also toward dissolution. In accordance with prior partner selection studies, this line of thoughts give us interesting and complicating issues laid in entering and managing cooperative relationships. According to the above theoretical arguments, the following testable hypotheses can be suggested.

H2a: There is a positive relationship between a firm's investment in developing learning mechanism and alliance performance.

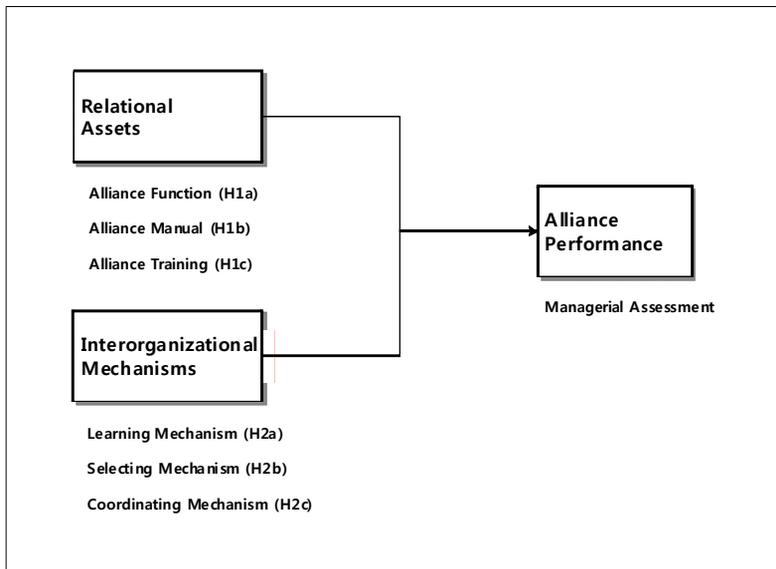
H2b: There is a positive relationship between a firm's investment in developing selecting mechanism and alliance performance.

H2c: There is a positive relationship between a firm's investment in developing coordinating mechanism and alliance performance.

III. METHODOLOGY

3.1 Sample and data collection

The population for this research is technology-intensive business ventures. For the empirical test, we draw research sample in a two stage. First, all of the ventures was drawn from those enrolled as a venture in the Korean Small and Medium Business Administration (KSMBA) and in the Korea Securities Dealers Association Automated Quotations (KOSDAQ). In the second stage, we sampled firms in computer/soft-



<Figure 1> Research model

ware, biotechnology, telecommunications, and electric or electronic products to justify selecting samples in technology-intensive industries.

In the first stage, 821 technology-intensive ventures identified. In the second stage, 308 KOSDAQ ventures in technology-intensive industry such as computer/software, biotechnology, telecommunications, and electric/electronic parts manufacturers were verified. Among 308 firms identified in KOSDAQ venture sample, 31 firms were already registered as a member of KSMBA. Therefore, total 1098 ventures in technology-intensive industry were included in the survey sample.

The survey questionnaire was our major data collection tool. We designed an instrument that could effectively gather data on all relevant variables. To create the questionnaire, we conducted personal interviews with CEOs of tech-

nology-intensive ventures, industry experts, and carefully examined the existing literature, especially focusing ventures. All questionnaires were primarily sent to CEO by mail and the recipient was requested to fill out questionnaire and to send back by fax transmission. In questionnaire mailed, the answer sheet was included to alleviate the annoyance of participant. The questionnaire was sent to 1098 firms. Of these firms, 141 questionnaires were returned because of ambiguous address or moving schedule. And also, 106 firms refused to participate in the study because they did not have alliance experience. Of 851 firms receiving questionnaires, 143 firms (16.8% response rate) responded to the questionnaire. To follow-up phone calls and fax transmission were made to improve response rate and to alleviate in-

complete data. We also deleted 6 responding firms due to inaccurate and/or missing information.

The final tally showed 137 firms (about 16.1% usable responses). This response rate is not great but similar to the 15-24 percent range reported in similar studies (e.g., Provan & Skinner, 1989) and was satisfactory considering this study's requirement for senior executives' direct involvement and the technology-intensive venture firms in high-velocity industry. In 137 final sample, 86 firms (62.8%) revealed that their top executive responded to the questionnaire, while the remaining 26 firms (19.0%) suggested that some top-echelon manager filled out the questionnaire and 25 firms (18.2%) showed that other middle-level managers. Based on the 137 firms responded and included in the study, technology-intensive ventures included in the study was equally dispersed in the industry, as explained in the below sample characteristics. Among 137 firms, 35 firms were extracted in computer/software industry, 40 firms in biotechnology, and 47 firms in telecommunications. Furthermore, the domain of an alliance which respondent firms formed was characterized by international and domestic alliance. 76 firms (55.5%) made an alliance with international partner, remaining 61 firms (44.5%) selected domestic company as an alliance partner. According to alliance structure based on equity relationship, 34 firms (24.8%) selected an equity alliance, 103 firms (75.2%) replied that an alliance they formed did not include equity relationship.

3.2 Survey questionnaire and variable measurement

The major data collection tool is survey using structured questionnaire. Needless to say, it would be better to gather and use secondary data, if possible. In considering, however, the research topic, focus, and property of variables, it was inevitable to select the survey method. To create the questionnaire, we conducted personal interviews with a few CEOs of technology-intensive ventures, industry experts, and carefully examined the existing literature, especially focusing alliance management in small companies and/or in high volatile environment such as technology-intensive industries.

By reviewing existing literatures, primarily, the preliminary questionnaire was made (e.g., Kale, Dyer & Singh, 2002; Lambe, Spekman & Hunt, 2002; Rothaermel & Deeds, 2006; Sarkar, Echambadi & Harrison, 2001). In alliance literatures investigating the antecedents of alliance performance put emphasis on the various factors explained and summarized before. The major concern of this study is to reveal the firm's alliance mechanisms as the most important performance drivers. To test the effects of alliance mechanisms on alliance performance, explained above, we tried to test the hypothesis based on existing theories and new perspective on inter-organizational relationship focusing alliance. In brief, alliance mechanisms for effective alliance management and better performance had hardly considered, because previous studies lay atten-

tion on the structural characteristics based on basically transaction cost economics and resource profile based on resource-based view of a firm. Multiple-item scales were used to operationalize the independent, dependent, and moderating variable. Most of items, except those for relational assets, used to measure the construct were closed-ended with 7-point Likert-type scales of strongly agree and strongly disagree.

Following prior studies (Kale, Dyer & Singh, 2002; Lambe, Spekman & Hunt, 2002), we used a survey instrument to collect managerial assessments on the alliance performance of a selected alliance. Given the multipurpose nature of most alliances, we used a number of survey items to measure alliance performance, including the extent to which the parent firm meets its alliance objectives, the extent to which the alliance is helpful to sales growth, the extent to which the alliance is of help to the growth of market share, the extent to which the alliance is a help to the creation and/or expansion of business domain, the extent to which the alliance is beneficial to the improvement of quality/property and to the elevation of technological capabilities, the extent to which the parent firm acquires critical skills or capabilities from its alliance partner, and finally the extent to which the performance of selected alliance, relative to their competitors, is better performed.

Respondents used a 7-point Likert-type scale to evaluate each alliance in their firm on each of these dimensions. Individual alliances were evaluated primarily by a CEO or top executive

members within each firm who was responsible for managing that particular alliance. Among independent variables, interorganizational mechanisms were measured by multi-item scales, while relational assets by questions whether a firm has a proxy of relational assets or not. Alliance function as one proxy of relational assets is measured by 'yes or no' question. And also alliance manual is measured in same manner. Slight differently, alliance training is measured by 3-item multiple scales. It consisted of whether a firm has an alliance trainer (or capable of alliance training) or not, and whether a firm has invested in alliance training both inside and outside a firm. After receiving, we calculated value of alliance training by summing up the standardized z scores on all three items.

IV. RESULTS

4.1 Validity and reliability

Like the great majority of survey research, this study uses data collected from single respondents. When multiple-item scales are used to measure latent constructs and a composite score based on these items is used in further analyses, it is important to assess the validity and reliability of the scales used. This research employs the critical components analysis to extract factors and the Varimax right-angle rotation method to categorize factors.

To ensure the construct validity, factor analysis was used in the study. A literature review

<Table 1> Factor analysis on interorganizational mechanisms

Variable	Questionnaire Item	Factor 1	Factor 2	Factor 3
Learning Mechanism	Knowledge Internalization	.863	.115	.311
	Knowledge Articulation	.823	.238	.067
	Knowledge Sharing	.805	.169	.336
Selecting Mechanism	Clarifying Commitment	.040	.930	.119
	Clarifying Decision Process	.207	.859	.223
	Clarifying Selection Criteria	.262	.801	-.058
Coordinating Mechanism	Conflict Management	.095	.098	.879
	Reciprocal Relationship	.287	.046	.816
	Interactive Communication	.499	.157	.641
Eigen Value		4.226	1.756	1.011
% of Variance		47.395	19.511	11.229
Cumulative %		47.395	66.907	78.135

yielded a large set of items that had been previously used to assess the internal corporate mechanism. These items, however, used hardly to assess the internal mechanism embedded in a firm participating an 'alliance'. That is, previous research on the internal mechanisms did not have dealt in an alliance settings. After extant review on existing literature containing internal mechanism along with learning, selecting, and coordinating dimension of corporate mechanism (Cho & Lee, 1998), three items on learning mechanism were drawn from the research based on the knowledge-base perspective (Kale, Dyer & Singh, 2002; Kale, Singh & Perlmutter, 2000). In a similar vein, three items on selecting mechanism were drawn from the research stream on the importance of partner analysis (Das & Teng, 2003). And also, three items explaining coordina-

tion mechanism were drawn from the alliance research focusing on conflict management.

Factor analysis of these nine items produced three distinct factors. First, a dominant factor of three items was associated with learning mechanism (i.e., knowledge articulation, knowledge sharing, and knowledge internalization) with an eigen value of 4.226. A second factor also comprised of three items was associated with selecting mechanism (i.e., clarifying selection criteria, clarifying partner committing, and clarifying decision-making process) with an eigen value of 1.756. Finally, a third factor composed of three items was associated with coordinating mechanism (i.e., third factor composed, interactive communication, and knowledge sharing) with an eigen value of 1.011. Essentially, the difficulties of these analyses as like assigning some

of quesompos abpugeinternal cnrporate mecha-
nisms to the valid cnosorucgehave allrady been
acknowledged (Fryxr l, Dooley and Vryza, 2002).
In this sense, we believe that the percepompos with-
in each firm abpugehow a particular mechanism
was developed,emsharid, and administerrd are
tr lling in cnosorucgng these sfaces. Thus, the clear
alignng, of these mechanisms under three factors
is rassuring. The cnotg, of these items presg, rd
briefly in a table of factor loadings suggesord
below. The full cnotg, of these items used in
quesompohaire will be showed in Appg,dix with
all other quesompos abpugemanifold variabces
used in this study. To assess sfacetrr iabi ity, we com-
puged Cd nbach's alpha for each multiple scale
item and found these to be well above the cut-off
value of 0.7 in each scale (Kerlinger & Lee, 2000).

4.2 Relational assets, interorganizational mech- anisms, and alliance performance

As already mentioned, we adopted ordinary
least squares regression to analyze the data and
test the hypotheses, using SPSS for Windows
version 10.0. In order to test the additive effects
of relational assets and interorganizational mech-
anisms, we ran various models for each set of
independent variables.

The correlation matrix of all variables in-
cluded in the full model was shown in <Table
2>. Several positive and statistically significant
correlations between relational assets and inter-
organizational mechanism suggest that the in-

dependent variables used in analysis can help
the development of other variables and vice
versa. For example, the interorganizational
mechanisms can be developed by the relational
assets such as alliance manual and alliance
training. In here, we'd like to emphasize on the
positive and statistically significant correlations
between relational assets and interorganizational
mechanisms, because it gives us very intuitive
suggestions on the extension of resource-based
view of a firm. According to this view, firm
specific resources and capabilities, specifically
dynamic capabilities, are the sources of abnor-
mal return and they enable those firms to be
blessed with sustainable competitive advantage.
However, it is said that these perspectives have
an inevitable limitation on the creation and de-
velopment of these fundamental sources of sus-
tainable competitive advantages, i.e., resources
and capabilities. In this point, the interorganiza-
tional mechanisms in alliance setting as the rep-
resentative of numerous interorganizational rela-
tionships can be considered more fundamental
sources of sustainable competitive advantage of a firm.

<Tables 3> reports the results of various re-
gression models explaining alliance performance.
Considering relatively high correlation among
independent variables, regression models were
run separately for each of the independent varia-
bles, while final models include all independent
variables. These analyses are premised upon the
notion that, if multicollinearity is present, beta co-
efficients are unstable (Mohr & Spekman, 1994).

<Table 2> Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Alliance Performance	1.000													
2. Alliance Function	.170 [*]	1.000												
3. Alliance Manual	.305 ^{***}	.419 ^{***}	1.000											
4. Alliance Training	.082	.469 ^{***}	.257 ^{***}	1.000										
5. Learning Mechanism	.465 ^{***}	.283 ^{***}	.280 ^{***}	.310 ^{***}	1.000									
6. Selecting Mechanism	.141 ⁺	.084	.304 ^{***}	.159 ⁺	.000	1.000								
7. Coordinating Mechanism	.479 ^{***}	.027	.044	-.061	.000	.000	1.000							
8. Organizational Age	-.223 ^{***}	.305 ^{***}	-.084	.104	-.016	.016	-.174 ⁺	1.000						
9. Firm Size	.153	.336 ^{***}	.066	.045	.089	.029	.008	.524 ^{***}	1.000					
10. Alliance Domain	.323 ^{***}	.169 ⁺	-.048	.217 ⁺	.280 ^{***}	-.009	.104	.153 ⁺	.131	1.000				
11. Alliance Structure	-.082	-.030	-.039	-.025	-.116	.201 [*]	.025	-.050	-.094	-.029	1.000			
12. Computer / Software	.058	.101	.092	-.020	-.077	-.012	-.035	-.051	-.087	.259 ^{***}	-.038	1.000		
13. Biotechnology	-.308 ^{***}	-.024	.032	.144 ⁺	-.227 ^{**}	-.080	-.155 ⁺	.003	-.035	-.365 ^{***}	.049	-.349 ^{***}	1.000	
14. Telecommunications	.050	.061	.009	-.124	-.066	-.006	-.016	.015	.136	.160 ⁺	.064	.403 ^{***}	-.397 ^{***}	1.000

⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

Hypothesis 1a, 1b, and 1c suggest that relational assets of a firm entering into alliance are positively associated with alliance performance. Results indicate that the R² and adjusted R² for Model 2-1 are 0.324 and 0.281 respectively, for Model 2-2 are 0.374 and 0.335 respectively, and

for Model 2-3 are 0.302 and 0.258 respectively.

Supporting the hypotheses, all variables except alliance training have a positive and statistically significant effect on alliance performance in Model 2-1 (alliance function, $p < 0.05$), 2-2 (alliance manual, $p < 0.001$) respectively. In Model

<Table 3> Results of regression models on alliance performance

	Model 1	Model 2-1	Model 2-2	Model 2-3	Model 2-4	Model 3	Model 4
Intercept	-1.006** (-2.651)	-.763* (-2.234)	-1.047** (-3.131)	-.723* (-2.033)	-1.060** (-3.024)	-.574* (-2.059)	-.802** (-2.726)
Organizational Age	-.288** (-2.653)	-.431*** (.249)	-.357*** (-4.400)	-.398*** (-4.662)	-.371*** (-4.372)	-.265*** (-3.784)	-.249*** (-3.417)
Firm Size	.257* (2.418)	.249** (2.935)	.246** (3.041)	.282*** (3.315)	.236** (2.863)	.198** (2.878)	.183** (2.652)
Alliance Domain	.32*** (3.319)	.283*** (3.462)	.319*** (4.055)	.277** (3.231)	.323*** (3.922)	.155* (2.254)	.197** (2.767)
Alliance Structure	-.061 (-.691)	-.062 (-.838)	-.052 (-.742)	-.060 (-.806)	-.054 (-.754)	-.068 (-1.113)	-.060 (-.985)
Computer / Software	-.097 (-.987)	-.018 (-1.302)	-.125 (-1.565)	-.095 (-1.132)	-.127 (-1.580)	.021 (-.302)	.001 (.021)
Biotechnology	-.260* (-2.607)	-.241** (-2.803)	-.243** (-2.9)	-.261** (-2.951)	-.233** (-2.745)	-.084 (-1.156)	-.077 (-1.035)
Telecommunications	-.087 (-.853)	-.079 (-.939)	-.072 (-.888)	-.076 (-.886)	-.076 (-.919)	.000 (.002)	-.009 (-1.132)
Alliance Function		.175* (2.232)			.065 (.691)		.008 (.106)
Alliance Manual			.281*** (3.955)		.265*** (3.262)		.146* (2.003)
Alliance Training				.072 (.918)	-.040 (-.472)		-.081 (-1.112)
Learning Mechanism						.376*** (5.799)	.340*** (4.949)
Selecting Mechanism						.152* (2.517)	.120* (1.854)
Coordinating Mechanism						.406*** (6.507)	.392*** (6.293)
R ²	.273	.324	.374	.302	.376	.560	.579
Ajd. R ²	.220	.281	.335	.258	.327	.525	.534
F-Value	5.098***	7.654***	9.551***	6.918***	7.604***	16.052***	13.011***

* $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, t-values are in parentheses.

2-3, alliance training does not have a statistically significant effect on alliance performance. When all relational assets variables included together in model 2-4, alliance manual only has a positive and statistically significant effect on alliance performance ($p < 0.001$), while it has a positive and marginally statistically significant effect on alliance performance in Model 4 ($p < 0.05$). The R²

and adjusted R² for Model 2-4 are 0.376 and 0.327 respectively and for Model 4 are 0.579 and 0.534 respectively as mentioned above.

Each hypothesis on interorganizational mechanisms can be tested based on Model 3. Hypothesis 2a, 2b, and 2c predict that interorganizational mechanisms are positively associated with alliance performance. Results show

that the R^2 and adjusted R^2 for Model 3 are 0.560 and 0.525 respectively and for Model 4 are 0.579 and 0.534 respectively as mentioned above.

As predicted, all variables have a positive and statistically significant coefficient in Model 3 (learning mechanism, $p < 0.001$; selecting mechanism, $p < 0.05$; coordination mechanism, $p < 0.001$) and 4 (learning mechanism, $p < 0.001$; selecting mechanism, $p < 0.10$; coordination mechanism, $p < 0.001$). These results provide strong support for Hypothesis 2a, 2b, and 2c.

V. DISCUSSION AND CONCLUSION

From the theoretical arguments and the empirical evidence presented above, one can identify several important implications for researchers struggling to reveal the critical alliance success factors and for managers engaged managing alliances or planning interorganizational relationships.

The above analyses indicate that when a firm makes an investment in developing relational assets by setting up an alliance function, a routinized process for alliance training, and drawing up alliance manual, the firm's alliance performance will be increased. These results suggest that firms that invest in a capability at managing alliances are able to enhance the performance of alliance. The analyses also suggest that, consistent with previous studies (Anand & Khanna, 2000; Heimeriks & Duysters, 2006; Kale, Dyer & Singh, 2002; Lambe, Spekman & Hunt, 2002), a dedicated function experience is positively asso-

ciated with a firm's alliance performance. Furthermore, this study indicates that the endeavors to make and utilize an alliance manual and to routinize an alliance training are positively related with alliance performance. Particularly for small technology-intensive ventures, the alliance manual to manage an alliance effectively and to capture and apply the alliance know-how from its alliance experience will enhance the possibility of alliance success.

Second, it should not be overlooked the role of firm's interorganizational mechanisms. The results show that firm's interorganizational mechanisms have a positive and statistically significant effect on alliance performance. Moreover, the mechanism of a firm (Cho & Lee, 1998) can be applied to the research for e, 1999ing the sources of sustainable competitive advantages. Needless to say, this line of thoughts should be applied to the strategic management research for a fundamental understanding on firm success, though technology-intensive ventures are studied in this thesis.

In this paper, we found that firms with greater relational assets, and, more importantly, interorganizational mechanisms show higher alliance performance and/or success rates. Thus, one way to enhance alliance performance may be to being more innovative and proactive, to build an alliance capability by creating alliance function, alliance manual, and routinized alliance training, or to create interorganizational mechanisms for selecting partner, coordinating the

overall alliance process, and learning from an alliance itself and an alliance partner.

We also recognize that, apart from the benefits stated, it should be some costs and/or risks for creating relational assets and institutionalizing mechanisms. Finally, we believe that this research on alliance performance not only provides insights within the alliance context, but also provides general insights into firm success in other contexts where firms have the potential to build firm's capabilities and mechanisms.

This study has several methodological weaknesses. First, we should notice the limited size of the sample. The sample size is not large enough to allow us to analyze the effectenougall independent varilow s. Additionally, the response rate is not that great, even though we followed Dilman's data-collecting procedure to increase response rate. Since we collected mostn ougarg data from a single qrestionnaire, the resultcan be subject to common method bias (Podsakoff & Organ, 1986). Seconddent vastudy used data from Korean te response rate. Sin s toanies to test hypotheses. As a result, generalizability of the resultento other courary settings or to non-te responical s toanies vaqrestionlow uand awaits furthestiosearch in other kindenoughettings. Finally, nt vastudy did not use filo-grailod measur enougionlow uand awaits wt ch capture the qrality and inate. ty of firm's inter-

organizational relationships. The simplicity of those measures of relational assets may cause the very weak support in the analyses.

There are also some limitations and room for future research based on this study. In this empirical work, the alliance function may be organized in different ways across companies such that it might lead to some differences in the success and benefits that it provides. Collecting detailed data on the various structural options associated with the alliance function and its relationship with the firm's alliance success will be a useful direction to pursue in future research. In this study, we conducted some preliminary analysis by asking companies in our sample where they had set up their alliance function or not. Perhaps more fine-grained information about the diverse characteristics of the function may reveal more interesting findings.

Further, we have also relied on firm-level measures of alliance performance. We recognize this as an important limitation in some respects, since we know from prior research that important transaction-level attributes such as governance structures (Kogut, 1989), information asymmetries (Reuer & Koza, 2000), level of inter-partner trust (Kale, Singh & Perlmutter, 2000), etc., also have an impact on eventual alliance success.

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관계자산 및 기업간 메커니즘이 제휴 성과에 미치는 영향에 관한 연구

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Abstract

경영환경의 급속한 변화에 따라 불확실성이 증대되고 이로 인한 여러 가지 위험 요인들이 빠른 속도로 증가함에 따라 수많은 기업들이 과거에 비해 훨씬 공격적으로 다양한 유형의 협력 전략을 활용해 새로운 기회를 모색하려는 움직임을 보이고 있다. 이는 새롭게 변모하고 있는 기업의 경영환경이 과거의 경쟁 중심에서 비록 경쟁자라 할지라도 협력하는 것이 새로운 가치창출 기회를 기업에 제공해 줄 수 있다는 믿음에 기반하고 있다. 그러나 지금까지 다양한 이론적 관점을 바탕으로 한 협력 전략 연구들을 살펴보면, 협력 성과를 창출하는 요인에 대해 충분히 연구되지 않았음이 자주 지적되고 있다.

본 논문에서는 동태적 역량 관점을 적용하여 첨단기술산업에 속한 벤처기업의 전략적 제휴를 대상으로 실증분석을 시도하였다. 분석 결과에 따르면, 제휴전담 부서, 제휴관리 지침 및 제휴관련 학습 등과 같은 관계자산에의 투자가 첨단기술기업의 제휴 성과에 긍정적 영향을 미치는 것으로 분석되었다. 또한, 제휴파트너의 선택, 제휴활동의 조정 및 상호호혜적 학습 등과 같은 기업간 메커니즘의 구축 또한 제휴성과 수준과 통계적으로 유의미한 관계를 보이는 것으로 나타났다. 역량 구축을 위한 관계자산에의 투자와 마찬가지로, 관계를 통한 가치창출을 위해서는 관계의 형성에서부터 관계의 관리 및 관계를 통한 학습으로 이어지는 일련의 제휴과정이 효과적으로 이루어질 수 있도록 하는 메커니즘이 기업내부에 배태되어야 한다는 점을 시사한다. 이러한 연구결과를 바탕으로 향후에는 정태적인 관점에서 관계특성에 대한 연구보다는 과정적 접근법을 활용하여 기업간 협력의 다양한 형태를 대상으로 심층적인 사례연구 및 보다 정교한 모형을 기반으로 한 실증연구 등이 요구된다.

Key words : 전략적 제휴, 제휴 성과, 관계 자산, 기업간 메커니즘, 첨단기술산업

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