Structuring the Organizational Form of Interfirm Cooperation: Two-Stage Contingency Approach*

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논 문 요 약

기업간 협력 시 지배구조결정에 관한 개념연구: 2단계 상황론적 접근

본 논문은 기업간 협력을 증진시키고 갈등을 최소화하기 위해 취해야 할 지배구조의 형태를 결정함에 있어 그 결정요소를 규명하는 데 그 목적이 있다. 구체적으로 본 연구는 기업간 전략적 제휴의 다양한 형태를 고찰해 보고 이 들 중 각 기업이 처한 상황에 따라 최선의 지배구조형태를 선택하기 위한 합리적 의사결정 방식이 무엇인가를 개념 제시하는 데 초점을 두고 있다. 이와 관련, 본 연구는 다섯 가지 관련 주요이론 및 실증연구를 검토한 후 두 단계 상황론적 의사결정방법론을 제시하였다. 이를 바탕으로 추가적인 실증연구를 통해 기업간 협력을 더욱 증진시키기 위한 효과적인 지배구조결정모델을 제시할 수 있는 토대를 마련하고자 한다.

주제어 : 기업간 협력, 전략적 제휴, 2단계 상황론적 접근법, 내재화, 지배구조결정

Key words : Interfirm Cooperation, Two-Stage Contingency Framework, Internalization, Strategic Alliance, Governance Decision

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I. Introduction

The purpose of this study is twofold. First, this study is to suggest a conceptual but practical guideline to decision-makers who are facing the difficulty of how to identify the optimal conditions for choosing inter firm cooperation, so that they can build better opportunities to maintain its market position and remain viable. Based on the integrative approach from the various theoretical recommendations and empirical findings, the proposed framework will suggest vivid and practical implication to the practitioners.

Second, this study intends to provide the educational guideline to the students who are taking strategic management courses. How to choose optimal governance mode of organizational activity has been very popular topic in many texts and academic articles in strategic management. However, the author has found that students are very perplexed by the mixed suggestions of numerous writing about the governance choice issue. The proposed framework, albeit idealized, will provide step by step and simplified decision-making process of optimal governance choice, within the context of interfirm cooperation.

There are several governance structures of interfirm cooperation, but they can be classified largely into two distinctive types: internalization vs. collaboration with other firms. The former may include pursuing organizational activities independently or acquiring other firms. The latter may include strategic alliance such as joint venture or joint research agreement to complement critical and special capabilities that the firm may be lacking. Although no particular governance structure is inherently superior; selecting the right one is never an easy task; poor decision will lead to higher costs, wasting of resources, and lost opportunities.

Recently, many firms are increasingly turning to external modes of governance form(i.e., interfirm cooperation such as joint venture and R&D agreement)(Hagedoorn 1993; Stuart 1998; Powell 1998; Stuart and Podolny 1999; Young-Ybarra and Wiersma 1999). Forming alliance enables pooling of resources, sharing of facilities, equipment and personnel, enhancing the market position and, most of all, sharing risks(Brush and Chaganti 1996; Lee et al. 1999). With great optimism, scholars point out that strategic alliance is no longer a strategic tool confined to a particular group of companies, and they heavily stress the importance of pursuing the cooperative methods for improving organizational capabilities(Contractor and Lorange 1988; Mowery et al. 1996; Das et al. 1998).

In practice, however, the interfirm cooperation does not guarantee the success of a company; the success rate of it is disappointingly low(see, Kotabe and Swan 1995; Deed and Hill 1996; Whippie and Frankel 2000). These disappointing outcomes are a cause of confusion and concern about why such kind of cooperative ventures fails and why there is such a gap between the scholarly recommendations and the real outcomes. Many authors including Alvarez and Barney(2001) and Dyer, et al.(2001) view interfirm cooperation as "inevitable". However, if this is the case, it remains unclear why there is such a gap between the reality and academic recommendations. Clearly, a more systematic analysis of this issue is required.

This study argues that better prescription for firms seeking advice for their governance decisions is not to simply stress the power of cooperative strategy but to suggest the optimal conditions ex-ante for selecting appropriate mode including cooperative one so that the company has a better opportunity of winning in the market. Given the limitation of the existing studies and aforementioned purposes of this research, we will begin with description of current academic disciplines from the literature of

strategic management. Based on the theoretical arguments and several key empirical findings, this study will suggest a two stage contingency framework. It is a two stage of nested and sequential decision-making process that assists rational governance choice of organizational activities including interfirm cooperation. The rest of the paper will explain relevant decision-making criteria for each stage. Finally, the conclusion and future direction of research will be provided.

II. THEORETICAL PERSPECTIVES

1. Transaction cost perspective

The basic assumption of the transaction costs(TC) perspective is that a firm should considers two types of governance structure: arm's length market exchange(buy from outside suppliers or merchants) and centralized controlled hierarchy system(make internally or through acquisition). The governance choice of either of them is influenced by the transaction characteristics in terms of uncertainty, frequency and specificity(Williamson 1985, 1991). When the level of these transaction attributes is higher or greater whereby forming a complete contract is not possible due to increased hold-up hazards and opportunistic behavior between the potential partners, it is better to choose the hierarchical system(Williamson 1991; Gerette and Quelin 1994).

In dealing with the choice between in-house development and interfirm cooperation, the TC perspective argues that decision-makers should compare the relative transaction costs between them. According to the TC perspective, the transaction costs associated with in-house development are

management costs(shirking costs) while those associated with interfirm collaboration are cheating costs(Madhok 1996). Comparing the two transaction costs and choosing the efficient one is rational decision-making in structuring governance mode of organizational activity.

For instance, developing a new technology through interfirm cooperation is inefficient when it is characterized by high level of transaction specific assets, outcome uncertainty and complexity, while in-house development would be inefficient when management costs associated with internally governing and coordinating the in-house activities are high due to shirking and monitoring costs(Demsetz 1988; Croiser 1998; Poppo and Zenger 1998). Therefore, by comparing the in-house management costs and the external transaction costs, the more efficient one should be chosen.

2. Resource based perspective

The resource based(RB) theorists argue that a firm' s competitive strategy should focus on how to utilize the existing resources best and how to develop additional unique resources that the firm may lack(Barney 1991; Conner 1991; Rouse and Urs 1999). In this respect, access to external resources through strategic alliance is becoming more essential because no firm is perfectly equipped with everything (Barney 1991; Lei 1996; Rothaermel 2001).

According to the RB perspective, interfirm cooperation emerges because of hierarchy failure; idiosyncratic firms' resources and capabilities required for competitive advantage are not always available within the individual firms. Further, they cannot always be developed internally at an acceptable level of quality because of inadequate capability within the organization whereby diminishing returns to scale of production(Mahoney and Pandian

1992; Madhok 1996; Barney 1999). Therefore, in choosing the governance mode of economic activities, the RB perspective argues that the firm should choose the external governance mode, if the company wants to access necessary resources but lacks sufficient internal capability.

3. Resource dependence perspective

The resource dependence(RD) perspective contends that firms are not internally self-sufficient thus, they have to depend on others to complement necessary resources(Pfeffer and Salancik 1978; Kotter, 1979). As the dependence on key resource providers increases, however, so does the likelihood that the firm will accommodate the focal organization's demand(Zinn and Rosko, 1997). In such interdependent situation, a firm tries to change its organizational structure and behavior to reduce the dependence on other firms to maintain a steady flow of resources from them(Oliver 1990; Gray and Wood 1991).

An interdependent relationship between firms tends to be accompanied with various relational problems because of the unpredictability of the relationship and difficulty in ensuring mutual advantages(Zeithaml and Zeithaml 1984; Carroll 1993). The greatest solution to such relational problems is to rely on social mechanisms or normative coordination rather than making an explicit contract; norms of reciprocity and normative restrictions govern conflicts and overly competitive behaviors(Pfeffer and Salancik 1978).

However, from the practitioner's point of view, such social mechanisms are not always useful for dealing with relational problems because it is not possible to mandate a normative environment to suit all of the organization's needs(Pfeffer and Salancik 1978). More direct methods of

achieving inter-organizational coordination should be established. In this respect, interfirm cooperation, especially joint venture, plays a prominent role in managing organizational interdependence. By taking an equity position from each interdependent firm, it helps manage stability in environment where the interdependent relationship is most problematic.

4. Market power perspective

The free flow of capital and internationalization of many multinational firms expand the global market at faster rates. Faster market growth attracts many new opportunity-seeking entrants, leading to severe competition in the market. Severe competition drives firms to continuously reinvest to develop new technologies ahead of the competitors, whereby new technology rapidly replaces existing ones and shortens the life cycle of technologies(Harrigan 1988). As many firms' existing markets are rapidly squeezed and made competitive by new entrants, the firms' strategic focus should be on how to protect their existing market and, at the same time, to expand or develop new markets(Porter 1985).

In this regard, forming interfirm cooperation allows numerous benefits; it can help firms adjust their strategic posture or defend their current strategic position in the fast growing and severely competitive market(Burger et al. 1993; Faulkner and De Rond 2000). For instance, in the fast growing demand of the market, firms have plenty of opportunities to develop new technologies or products and exploit existing resources and capability.

Interfirm cooperation enables the firms to enter the new market or fill the niche market with new products/technologies at a faster speed and at lower entry costs. In a severely competitive market, firms never know in advance whether its competitive action will invite retaliation or whether its rivals

will initiate a competitive move directly impacting its market share(Harrigan 1988). Interfirm cooperation can reduce the competition, for instance, by forming alliance with competitors, and achieve a stronger market position than it would in isolation. In this respect, forming alliance is purely strategic, and the market condition is the critical antecedents of the alliance formation.

5. Social network perspective

The key concept of social network(SN) perspective is embeddedness. Embeddedness goes beyond the immediate ties of firms. It includes consideration of how many participants interact indirectly with each other, how likely future interactions are among participants and how likely participants are to talk about these interactions(Granovetter 1985; Jone, Hesterly, and Borgatti 1997). The SN perspective argues that firms enter into interfirm cooperation to obtain better contents and quality of information that they cannot obtain from their existing social network (Borys and Jemison 1989).

It pays particular concern on the level of the embeddedness of a firm as a facilitator of interfirm cooperation(Mizruchi and Galaskiewichz 1993). The level of the embeddedness refers to the centrality of a firm denoted by the firm's reputation and status within its social network(Podolny and Stuart 1995). Higher status and reputation of a firm signals the firm's product quality and market acceptance, attracting other firms who want to associate with them(Eisenhardt and Schoonhoven 1996; Stuart 1998). Also, the centrally located firms within its social network take the information-rich position to be assessed trustworthy by other actors who might be potential partners in the near future(Power et al. 1996). In this respect, social

properties such as status, reputation and trust play key roles in facilitating interfirm cooperation.

In summary, the antecedents of choosing interfirm cooperation can be identified as follows. The TC perspective maintains that interfirm cooperation should be chosen when the transaction costs in cooperative mode are smaller than the management costs of internalization. The RB perspective stresses that the need for acquiring necessary resources is the driver for interfirm cooperation. The RD perspective points out that interfirm cooperation is preferred when there needs to reduce high level of situational uncertainty and to promote relational stability. From the MP perspective, interfirm cooperation is an optimal governance choice when the market condition is volatile and severely competitive. Finally, centrally located firms in their social networks are more likely to be involved in interfirm cooperation, according to the SN perspective.

III. PRIOR EMPIRICAL RESEARCHES

1. Overview

The aforementioned five theoretical perspectives have been widely applied in empirical studies. Dominant empirical studies examined the optimal governance choice by simultaneously considering various governance methods such as in-house development, acquisition, strategic alliance(notably, joint venture) and contract agreement(Croisier 1998; Robertson and Gatignon 1998; Steensma and Fairbank 1999; Cho and Yu 2000; Reuer and Arino 2003).

On the other hand, some studies have taken rather dichotomous approach

among various governance choices. For instance, Desyllas and Hughes(2008), Mayer and Salomon(2006), Dyer et al.(2004) and Hoffmann and Schaper-Rinkel(2001) have investigated governance choice for technology acquisitions between strategic alliance and acquisition in global companies during the past 20 years. In another approach, Teng and Das(2008), Globerman and Nielsen(2007) and Chen and Chen(2003) examined determinants on governance choice between equity and non-equity alliance when firms were about to launch new technology development projects.

Drawing on the analysis of these relevant studies, this study has found that five perspectives are characterized as following elements. First, drawing on RB and SN perspectives, capability-related factors are raised as key determinants in this research. Capability-related factors consist of two key elements: the firm' s internal capability and previous experience. Internal capability indicates the firm' s technological competencies(Narula 2001; Mayer and Salomon 2006), collaborating capabilities(Dyer et al. 2004), existing know-how and social capital(Desyllas and Hughes, 2008), status within the firms social network(Stuart 1998) and absorptive capacities(Hoffman and Schaper-Rinkel 2001). Previous experience implies the firms' previous pattern of modal choice(Cho and Yu 2000; Vanhaverbeke, Duysters and Noorderhaven 2002) and particular sourcing history and its outcomes(Robertson and Gatignon 1998; Steensma and Fairbank 1999).

Second, drawing on TC, RD and MK perspectives, environment-related factors are suggested as key determinants for the concern of this research. Environmental related factors mostly concern exogenous conditions surrounding the firms such as competition level within the industry(Hennart and Reddy 1997; Vrande et al. 2006), market position of the firm(Zhao et al. 2005), strategic uncertainty due to lack of the knowledge of legal and

technical constraints(Hoffmann and Schaper-Rinkel 2001), maturity level of the industry(Cho and Yu 2000; Narula 2001) and uncertainty of customers' demand and competitors' behavior(Robertson and Gatignon 1998).

Third, drawing on TC and RB perspectives, task-related factors are frequently examined as key determinants for the concern of this research. Task-related factors indicate endogenous uncertainty of the economic activity or the task itself. It includes expected costs of undertaking the activity(i.e., expected costs of in-house development for new technology)(Cho and Yu 2000), commercial uncertainty of activity when it is materialized(Steensma and Fairbank 1999), level of assets dedicated to the task(Robertson and Gatignon 1998; Hoffmann and Schaper-Rinkel 2001) and the life cycle stage of the task(i.e., technology) in the entire R&D process(Croisier 1998).

The impact of the task-related factors is more critically examined in deciding the governance mode of high-tech development. In this case, the task-related factors indicate whether the cooperative task has fair regime of appropriation(Gulati and Sighn 1998), duration and scope(Croisier 1998; Folta 1998), technical uncertainty(Kale and Puranam 2004), the amount of financial investment(Robertson and Gatignon 1998) and strategic importance(Reuer and Arino 2003).

Lastly, drawing on the RB, RD and SN perspectives, the partner-related characteristics are also suggested as key determinants for concern of this research. The partner-related factors contain cultural and geographic distance with the partner(Globerman and Nielsen 2007; Teng and Das 2008), resource complimentarity(Chen and Chen 2003), prior tie with the partner(Vanhaverbeke, Duysters and Noorderhaven 2002; Reuer and Arino 2003; Tizianna 2003), interdependence level(Globerman and Nielsen 2007) and the partner's reputation and trustworthiness(Gulati 1995; Gulati and Singh 1998).

2. Implication

Review of the previous literature suggests several implications. First, although there are numerous theoretical scopes and implications, there is no one dominant and ready-to-use theoretical framework appropriate to this study. In this case, scholars recommend integrated approach as a best way to understand the complicated phenomenon at hand, as far as no single theoretical perspective is fully adequate and they do not fully contradict each other(Gersony and Peter 1997; Osborn and Hagedoorn 1997).

Drawing on the Burgen and Murray(2000) and Jemison(1981)' s contentions, this study attempts to take the integrative approach by isolating key elements of various theories as separate and independent sets of variables. This proposed integrative approach presents a ready-to-use framework for those who are facing the difficulty of identifying the antecedents of interfirm cooperation.

Second, after reviewing the previous studies, we found that the impact of the several key antecedents on the choice for the interfirm cooperation is still rather elusive. That is because they tend to be examined in different contexts. For instance, identifying the impact of key antecedents has taken dichotomizing approaches in empirical tests: their impacts on the ownership structure(i.e., governance choice between internalization and interfirm cooperation) or their impact on the interfirm cooperative structure(i.e., governance choice between equity alliance and non-equity alliance). Such a dichotomizing approach, however, is far less helpful for real decision-makers. This is because the two seemingly separate and independent decisions are not actually independent in real cases, For instance, choosing between internalization and interfirm-cooperation logically precedes the decision between equity-alliance and non-equity alliance. Put differently, choosing the mode between equity and non-equity

alliance is not a prerequisite step for those who do not desire to choose the cooperative structure from the beginning.

Of course, decision-makers may examine various independent governance options(i.e., internalization, equity alliance and non-equity alliance) simultaneously to select the optimal one(Croisier 1998; Cho and Yu 2000). However, such single stage or all-in-one decision-making process is criticized as less robust and too simplistic from a rationalists' perspective, because too much significant information is likely to be missing in a simplified decision-making model(Tallman and Shenkar 1994; Vanhaverbeke, Duysters and Noorderhaven 2002). Alternatively, it is better to use hierarchical model to elaborate decision structure, if obtaining reliable and accurate information is necessary for rational decision-making(Ruiz-Moreno et al. 2007).

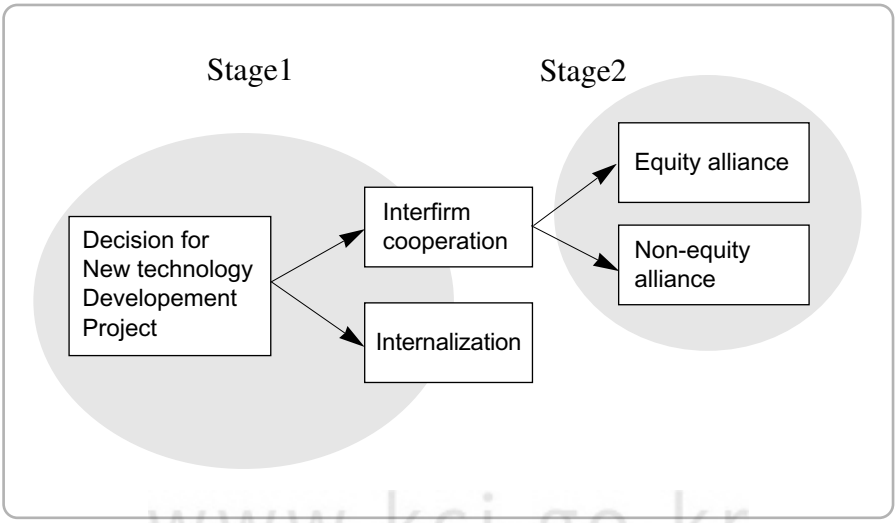
Having mentioned this, this study proposes a two stage decision process, which allows us to construct a two-stage sequential decision-making framework. Unlike single decision-making process, two separate but nested and sequential decision-making process offers several advantages. Above all, the stepwise and hierarchical approach improves clarity. The decision-makers are able to increase their comprehension by eliminating the variety and uncertainty inherent in the decision problems and focus on only small set of critical variables through a sequential process(Ruiz-Moreno, Mas-Ruiz, and Nicolaus-Gonzalbez 2007) that the decision-makers would get closer to the optimal choice among the multiple governance options.

It is well established that a two-stage decision process is less robust as well, but still generally more superior to(Tallman and Shenkar 1994). The next section will explain about the two-stage decision model and relatively important determinants in each stage more specifically.

IV. MANAGERIAL DECISION FRAMEWORK FOR CHOOSING INTERFIRM COOPERATION: TOWARD THE TWO-STAGE CONTINGENCY APPROACH

The two-stage decision process employs a contingency framework. In this framework, the decision-makers take into account a variety of economic, institutional, structural and psychological factors of each decision stage(Beach and Mitchell 1978; Kumar and Subramaniam 1997). Figure 1 schematizes the framework. The first stage of decision making is about deciding whether the firm should choose "internalization" or "interfirm cooperation" to undertake their economic activities. The second stage of decision making is applied for those who have chosen "interfirm cooperation" in the first stage. In the second stage, they have to decide how to structure the interfirm relationship.

<Figure 1> Two-stage contingency framework



1. Stage 1: Cooperate or not to cooperate?

The initial stage of decision-making is either undertaking economic activity internally or cooperatively with another company. A comprehensive model of the initial stage would of course include how the idea of economic activity emerged or whether the firm pursues the activity or not. This study, however, will not explicitly probe such initial stage since it would be too complicated to identify them in this limited space.

"Undertaken internally" means that the firm carries out economic activity completely independently by relying on its own departments, acquisition of other firms or establishing wholly-owned subsidiaries. "Cooperatively with other company" is where carrying out the economic activity throughout joint venture, technology cooperation, R&D agreement, licensing, or others occurs. This study proposes that the following five determinants critical to the first stage of decision-making.

Strategic orientation

Drawing on RB, MP and SN perspectives, scholars point out that decision-makers with different types of strategic orientation are likely to pursue different types of strategy or strategic priorities(Lee and Tsang 2001; Yu 2001). Strategic orientation reflects the firm's overall strategic posture, that is, the extent to which the founder or decision-maker is inclined to take business-related risks, to favor change and innovation and to compete with other firms aggressively(Covin, Slevin and Covin 1990).

Among various types of strategic orientation, entrepreneurial strategic orientation is the particular concern of this study(Lee, Lee and Pennings 2001). An entrepreneurially-oriented decision-maker is more likely to take an innovative, risk-taking and proactive approach to the decision-making;

he or she is willing to commit resources to uncertain and novel businesses, and engage in first-mover actions in introducing new product/services(Lee, Lee and Pennings 2001; Miller and Friesen 1982).

Empirical results show that entrepreneurially oriented decision-makers are more likely to enter into a greater number and variety of inter-firm relationships than those less entrepreneurially oriented. That is because, first, their risk taking propensity naturally makes them hedge against risks by forming multiple networks in which potential alliance partners may be included(Podolny and Stuart 1995; Eisenhardt and Schoonhoven 1996). Second, they are highly externally embedded; they are involved in multiple network relationships through which they are better able to identify and exploit cooperative value-creating opportunities in existing interstices of the various other players(Gulati 1995). Therefore, this study proposes that

P1: More entrepreneurially-oriented decision-makers are more likely to select collaborative mode for their company' s economic activity

Routine response

According to the TC perspective, familiarity reduces the transaction costs of carrying out economic activities. Firms may be reliant on certain types of governance choices that may not always be best suited to them. The firm' s previous governance pattern of economic activity can affect its present and future methods. For instance, continuous dependence on joint development may deter decision-makers from developing their own firm' s capabilities, allowing the partners to appropriate competitive skills together(Hamel, Doz, and Prahalad 1989). Other firms may insist on internalization or acquisition because the decision-makers feel uncomfortable with giving up total control to the potential partner(Steensma and Fairbank 1999). The decision-makers may generate their own mode of technology development

projects that has been successfully exploited either internally or cooperatively, therefore dismissing alternative choices.

According to the RB perspective, firms rely on the same governance modes repeatedly due to the 'learning effect' (Collis 1991). The firm's own experiences accumulate the relevant information about how to manufacture/design related technical components of a new project and how to organize the project team efficiently(Brockhoff 1992). Also, accumulated expertise helps the firm reduce time and investment costs required to make a profit.

Moreover, the decision-makers tend to process decision-making through a pre-existing knowledge system, known as a 'schema', which is a belief developed thorough previous experiences(Prahalad and Bettis 1986). This schema enables managers to scan various strategic choices and environments selectively, helping them make timely and efficient decisions, although such schema is not always an infallible guide to the firm.

Therefore, they develop a particular mind-set and repertoire of preferred tools and processes, which determine the approach likely to be used in structuring the governance of the new technology development project. Therefore, this study proposes that

P2: Decision-makers are more likely to select the same governance mode repeatedly, either internalization or collaboration, that has been previously adopted.

Specificity of invested assets

Undertaking various organizational activity necessitates specialized investment or involvement of physical(plants and equipments), technological(know-how) and human assets. Specificity of invested assets refers to the transferability of the invested assets from one use to another.

The specific assets are those whose value is less if they are switched to alternative transactions and consequently whose value is not fully salvageable(Young-Yabarra and Wiersema 1999).

In the knowledge intensive industries, for instance, the invested assets for the new technology development projects are most likely to be knowledge-specific assets such as specialized human assets and technological experiences. Since these types of investment are specifically tailored to a particular technology project, they may be considered less valuable if applied or redeployed outside the project(Heide and John 1990).

According to the TC perspective, the decision-makers should select internalization rather than collaboration when the firm has to make an investment-specific transaction. That is because an investment-specific transaction is characterized by a small number of bargaining hazards(Williamson 1985; Robertson and Gatignon 1998). A small number of bargaining hazards refers to the situation where a partner with limited exchange alternatives is required to invest in transaction-specific assets, and is, therefore, locked into this relationship. This may subject them to the exploitation of the partner behaving opportunistically, demanding excessive rents and stringing out the contract and monitoring(Schilling and Steensma 2002). Therefore, other partner has few alternatives but to lock-in the relationship and to accommodate the special needs of the partner. Therefore, this study proposes that

P3: Decision-makers are more likely to select internalization over interfirm cooperation when the firm has to make specialized asset investment to the economic activity.

Technology uncertainty

Carrying out new organizational activity faces various uncertainties. This

is more acute in, for example, new technology development project or innovation activity due to their uncertain future of venturing activity. Technology uncertainty refers to the technical and commercial uncertainty: whether the technology, product or innovation will work as it is intended to throughout the project and whether they will satisfy the customers' expectation and succeed commercially.

According to the TC perspective, the internalization may be preferable to the interfirm cooperation under a higher level of technology uncertainty. Technology uncertainty is a source of inefficiency in the market contract such as technological collaboration because it makes the contract difficult to write, execute and monitor contractual arrangement(Teece 1986; Schilling and Steensma 2002).

In such case, establishing a complete contract covering all possible contingencies is problematic, leading to a series of renegotiations and contingency clauses to cope with likely disputes(Pisano 1990). Such renegotiations increase the opportunity that the collaborating parties will indulge in self-serving behavior and opportunism, thereby creating excess transaction costs. Therefore, this study proposes that

P4: Decision-makers are more likely to select internalization when the economic activity is characterized by a higher level of technology uncertainty.

Environmental uncertainty

A firm must adapt to its environment if it is to remain viable. However, it is extremely difficult for the decision-maker to predict how macro- and micro-levels of the environmental condition might change. Two types of environmental uncertainty have the most impact: competitors' reaction and rapid shifts of the consumer preferences by new products and price

changes(Jones, Hesterly and Borgatti 1997). Under this turbulent environmental shift, it is obvious that the decision-makers will opt for less risky methods to carry out the projects that help avoid project failure and, at the same time, react in response to changes in the uncertain technological environment.

According to the MP perspective, internalization is ill-suited for ensuring the profitability of new organizational activity under environmental uncertainty. The global business environment is characterized by penetration of new firms in every industrial sector, increasingly fickle customer demands and sudden market shrink and shift(Harrigan 1988). In this circumstance, committing prematurely to a new organizational activity may impose tremendous risk upon such shocks(Jones, Hesterly and Borgatti 1997). Similarly, as RB theorists put, the firm' s resource advantage may be neutralized or dissipated if it fails to modify its resources in response to changes in the technological environment(Barney 1991; Peteref 1993). As a result, a capability or resource that once was a strategic asset of the firm becomes the firm' s core rigidity and liability as the firm' s environment changes. Therefore, this study proposes that

P5: Decision-makers are more likely to seek interfirm cooperation instead of internalization when the level of environmental uncertainty surrounding the economic activity is high.

2. Stage 2: Equity alliance or non-equity alliance?

The second stage of decision-making is applicable for those who select the interfirm cooperation mode in the first stage of decision-making. Although there are various types of interfirm cooperative modes, we can classify them largely into two distinctive types: equity alliance (such as

joint venture and minority equity sharing) vs. non-equity alliance(such as R&D contract, licensing or research agreement). This study considers only these two alternatives because they are inherently unique and fundamental in terms of required management skills and governance structure. The distinctive features between equity- and non-equity alliances are summarized in <Table 1>.

<Table 1> Equity vs. Non-equity alliance

	Alliance structure	
	Equity alliance	Non-equity alliance
Ownership structure	Joint ownership	No shared ownership
Degree of integration	Substantial	Moderate to light
Control mechanism	Hierarchical through equity stake	Contract law
Duration	Long to medium term	Short to moderate term
Termination	Difficult	Relatively easy

As in the first phase of decision-making, the decision-makers should consider several economic, environmental, strategic and organizational behavior aspects to establish appropriate structure of interfirm cooperation. Unlike in the first phase of decision-making, however, the decision-makers should critically consider two hazards that may occur very often during the interfirm-relationship. These are considered to be shirking and misappropriation hazards. Shirking hazard occurs when the partner deliberately contributes less to joint activities that were initially agreed upon, while the misappropriation hazard occurs when there is a transfer of knowledge between the partners without compensation(Singh and Gulati, 1998).

This study argues that appropriation regime of the cooperative activity, scale and scope of the cooperative activity, partner trust level and

organizational capability gap are critical factors influencing the potential hazard level of the interfirm cooperation. Thus, choosing the correct cooperative structure of interfirm cooperation depends on the level of the these four factors. In fact, equity- and non-equity alliances have different capacities to deal with such hazards.

Appropriation regime

Interfirm cooperation simply means that two firms intend to share knowledge. The pitfall of sharing knowledge, however, is the leakage or transferring of knowledge unintentionally or deliberately by the partner, which may cause diminishing competitiveness or attractiveness of the firm from the partner. Therefore, it is important to balance knowledge protection and sharing prior to structuring interfirm cooperation(Norman 2002).

Appropriation regime refers to the firm' s ability to seize returns from its innovation and to capture a fair share of rents from the collaboration(Gulati and Singh 1998). Although the patent or intellectual property right may protect the partner' s knowledge property and appropriability, they are not perfect; they are especially less effective in protecting tacit knowledge such as process innovation, applications level know-how and R&D capabilities(Teece 1986). For instance, a new technology development or innovation project normally requires a lot of tacit knowledge. Tacit knowledge cannot be easily articulated or codified within the patent or intellectual property right, so the competitors may have a trouble in imitating them when observing from a distance(Zander and Kogut 1995).

However, when firms enter into a closer interfirm relationship with intimate personal contract, participation and demonstration, it is highly likely that the tacit knowledge will be unconsciously observed, transmitted and internalized by the partner(Dodgson 1993). Therefore, the cooperative

agreement should incorporate restrictions, ownership, and property right to prevent the partner's unobserved violation(Pisano 1990). Unfortunately, it is difficult to clearly specify them in a written agreement when they are, for instance, related to a high level of tacit knowledge. That is because it is difficult to assess what is actually exchanged or leaked unless the partner reveals the complete information(Gulati and Singh 1998).

The TC perspective argues that, under the condition of high level of misappropriation hazard, the hierarchical controls such as equity alliance are an effective response to minimize knowledge leakage(Williamson 1985; Oxley 1997). Equity alliance can impose control by applying fiat, providing closer monitoring, aligning incentives, and managing misappropriation hazard by creating mutual hostage situation in the form of shared equity and aligning interests of all partners(Oxley 1997). Therefore, this study proposes that

P6: Decision-makers are more likely to select equity alliance when they perceive that the intellectual property regime(appropriation regime) within the cooperation activity is weaker.

Scale and scope of cooperative activity

It is very important to specify the contribution of input- or capability supplied by the partner firms and to monitor each partner's performance. However, specifying them in cooperative agreement is more difficult in certain case. For instance, it is almost impossible to anticipate and specify the contribution of input and capability and expected outcomes from the innovative activity in the technology cooperation agreements, as well as production agreements and marketing cooperation(Oxley 1997).

When the scale and scope of a interfirm cooperative activity are large, the specification in advance of the partner's contribution to the cooperative

activity will be much less straightforward and more imperfect. An example is a project that involves not only activities related to various activities including new technology development project, manufacturing, marketing and/or customer service. In this case, overseeing the behavior of the partner firms become harder as the alliance activities become more expanded and complicated(Folta 1998; Sampson 1999). In this case, there will be higher possibility of contract hazards by the partner's potential shirking and opportunistic behaviors

Therefore, the greater the number of technologies and products are involved due to the enlarged scale and scope of the interfirm cooperative activity, the greater the difficulty of specifying and monitoring the cooperative activities is. In this case, more hierarchical and closer governance structure is required to observe whether each partner is adequately undertaking the cooperative activities prescribed in the agreement. Therefore, this study proposes that

P7: Decision-makers are more likely to select hierarchical cooperative governance such as equity alliance when the scale and scope of the cooperative activity is larger.

Partner trust

Lack of trust is a major contributor to alliance failure. Myer et al.(1995: 712) put "Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party." The overwhelming role of trust has been widely recognized. For instance, a partner trust will reduce complexity and uncertainty far more effectively than authority or bargaining(Baughn et al. 1997).

According to the TC and SN perspectives, partners that trust each other do not require detailed contracts and hierarchical control to monitor each other; these even get in the way of creating good exchange relationship between their business units(Gulati 1995; Madhok 1995). A higher level of trust between the partners will result in trusting actions such as less reliance on a formal contract, less use of detailed contract agreements to account for contingencies and fewer safeguards to monitor the partner' s behavior; each partner will monitor themselves under trustful environment(Ring and Van de Ven 1992; Norman 2002). Therefore, this study proposes that

P8: Decision-makers are more likely to select the non-equity alliance, when they perceive the trust level with the potential partner to be strong.

Capability gap with the potential partner

The capability of the two partners may not be always equal in a cooperative relationship. Capability gap between the partners indicates the status similarity within their social network in terms of core competence, administrative system and learning capacity(Stuart 1998). It is better to form equity alliance for firms with similar status partners. That is because doing so gives signaling effects to the market that the two partner firms are strongly compatible in the administrative system and highly committed to share the costs and benefits, according to the MP perspective(Chung, Singh, and Lee 2000).

Contrarily, the SN perspective views that when a higher-status firm enters into alliance with a lower-status firm, strong commitment such as joint venture will be necessary because status dissimilarity is likely to discourage the participants from committing the same level of resources(Eisenhardt and Schoonhoven 1996). Instead, short-term, less committed and contract-based non-equity alliance will prevail under such

conditions.

Equity alliance formed by firms in similar status will greatly contribute to the ultimate purpose of interfirm cooperation: organizational learning. In fact, the aim of a interfirm cooperation is to complement and supplement the firm' s existing innovative assets and create further value potential(Lei 1997). When two partners possess roughly equal complementary skills, technological capability and absorptive capacity, the equity alliance will maximize the learning and value creation effects as it is accompanied with tighter coupling, richer communication, formalized regular meetings and higher level of mutual commitment between the partners(Mowery, Oxley, and Silverman 1996). Therefore, this study proposes that

P9: Decision-makers are more likely to select equity alliance when the status of the two partners is quite similar in terms of their organizational capability(i.e., core competence, administrative systems and learning capacity).

V. CONCLUSION

In times of increasing uncertainties, deciding appropriate governance structure for organizational activity is particularly important for the success of a firm. Underscoring the issues, many scholars have strongly recommended a interfirm cooperation as possibly increasing dramatically the likelihood of the organizational success. Nevertheless, empirical findings have displayed disappointing results of cooperation, which fail to convince the real decision-makers whether if they have to pursue the same scholarly recommendation.

In the educational field, on the other hand, teaching the importance of

interfirm cooperation as well as the academic interest of students is growing. However, existing texts and articles only illustrate the pros and cons of interfirm cooperation, failing to provide explanation of when it would be optimal to choose interfirm cooperation in more consistent way.

In this regard, the attempt of this study is quite applicable for both practitioners and academics. That is, the two stage contingency model is very simple and practical; it represents a novel approach to the decision-makers who are facing the difficulty of deciding 'ally' or 'avoid ally' in a strategically important area with a minimum risks of failure. At the same time, for lecturers, the model is an effective tool to teach the students what are the determinants for structuring the governance mode and how they are applied in the case of interfirm cooperation in more systematic way.

The model is multidisciplinary as well since it is built on the basis of combining five major theoretical arguments and the most commonly adopted factors from the empirical settings. Further, the model attempts to integrate, for the first time in relevant literature, two seemingly separated but closely related research questions, that is, 'how to decide the ownership structure' and 'how to decide the cooperative structure' into a single model. By following the guideline for each stepwise decision process using the suggested consideration criteria, the decision-makers will reach a more rational choice in a more simplified but systematic way.

However, this study does have its limitation. The two-stage contingency model is only a conceptual framework based on the deterministic and idealized approach. To advance it to a theoretical concept, further elaboration of the concepts and vigorous empirical tests across various industrial context are essential. Despite its limitation, however, the proposed model enables the discussion of preliminary avenue for the critical issue of "interfirm cooperation".

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<Abstract>

Structuring the Organizational Form of Interfirm Cooperation: Two-Stage Contingency Approach

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The purpose of this study is to suggest a conceptual and practical guideline to the decision-makers who are faced with the difficulty of structuring the organizational form of interfirm cooperation. Existing studies have three critical shortcomings regarding the research question: strong optimism toward interfirm cooperation, an oversimplified decision-making process and inconsistent recommendations to the practitioners. In order to overcome these limitations, this study reviews five major theoretical perspectives and relevant empirical studies. Based on this review, this study proposes a two-stage contingency framework. The rest of the paper will elaborate stepwise decision process and key consideration criteria in each decision-making stage.

Key words : Interfirm Cooperation, Two-Stage Contingency Framework, Internalization, Strategic Alliance, Governance Decision

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