The Impact of Governance Mechanisms on Interfirm Learning and Relationship Performance

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Abstract

Over the past two decades, the formation of international and interfirm collaborations has increased substantially, especially for the high-tech firms. It is argued that collaborations provide a platform for organizational learning, giving partner firms access to each other’s knowledge. However, empirical validations on the relationships among governance mechanisms, interfirm learning and relationship performance are limited. Thus, the primary purpose of this study is to go one step further and empirically verify the inter-relationships among governance mechanisms, interfirm learning and relationship performance. This study selected firms of High-Tech Industry in Taiwan for our sample, including industries from information technology, optoelectronics technology, biotechnology, micro-electronics and IC technology to conduct a survey. And totally 153 valid and complete questionnaires were used for the quantitative analysis. The empirical data concluded that an appropriate selection of collaborative governance mechanisms will be essential to achieve better interfirm learning, which in turn contributes to the explanation of relationship performance.

1. Introduction

Over the past two decades, the formation of international and interfirm collaborations has increased substantially. According to Bleeke and Ernst [6], the number of domestic and international collaborations of the American firms has grown by more than 25 percent annually. Obviously, it seems to indicate that firms, especially international firms, have exercised more efforts on interfirm collaborations such as alliance, joint venture, technology collaboration agreements, and so on. An alliance is seen as a flexible organizational mode that allows firms to bring complementary strengths together in order to experiment with new technological and organizational ideas. Meanwhile, more and more researchers argue that learning is a strong motive for forming and sustaining alliances [22,23,25,34,68]. However, alliances have only weak incentives to prevent cheating or opportunistic behavior. Thus, alliances seem to trade off the acquisition of knowledge against...
potential losses due to cheating and opportunism.

Concerning the problem of opportunism, transaction cost economics (TCE) has emerged as a common framework for understanding how managers craft governance arrangements. It traditionally deals with economic organizations assumed to be in a position to choose and change their governance structures depending on the nature of their transactions, such as asset investments, difficult performance measurement, or uncertainty [70,71]. Governance structures are then compared in terms of their transaction cost-minimizing characteristics. However, the cost focus of the transaction cost framework puts a greater emphasis on short-term realized costs than on longer-term opportunity costs and benefits, such as learning effectiveness [9,16,31,72]. Further, although the learning capability of a relationship has been identified as an important avenue for creating competitive advantage and is consistent with current theories on strategic alliance, the lack of systematic attempts to examine how learning processes can be designed and promoted is notable. In this article, we explore interfirm learning as a characteristic of the relationship itself. The elements of interfirm learning include information sharing and coordination. It is proposed that the relationships of the strategic alliance vary in terms of their learning capabilities, and thus some relationships perform better because they have developed appropriate learning mechanisms. Thus, the main purpose we would like to address in this study is that: Could organizational learning perspective be lent to explain the design of governance mechanisms in the context of an alliance? More specific, we would like to explore the role of governance mechanisms in promote interfirm learning and relationship performance in the context of an alliance. The next section presents the conceptual framework and research hypotheses. The subsequent section presents the research design and describes the empirical tests. The final sections discuss the results and their implications.

2. Theoretical Development

2.1 Interfirm Learning

According to Slater and Narver [62], at its most basic level, the process of organizational learning is the development of new knowledge or insights that have the potential to influence behavior. They further comment that organizational learning is a function of a three-step process, including: (1) information acquisition, (2) information dissemination, and (3) shared interpretation [26,35,49]. Applying this concept into the context of interfirm learning, partners in alliances acquire knowledge and skills through a proc-
ess of knowledge management and creation. Through their involvement in the operation of the alliances, firms can learn from their partners and raise new knowledge. Then, this knowledge has the potential to be shared and distributed within the organization, and through processes of amplification and interpretation, the knowledge is given shared organizational meaning [51]. The translation of new knowledge into organizational action is the basis for creating new skills that underpin a firm’s competitive advantage. If this goal is achieved, drawing upon the relationship development paradigm [21], the transfer of knowledge within an exchange relationship can be viewed by each exchange partner as a relationship benefit. In other words, the receipt of desired knowledge by an exchange partner stimulates reciproc-ity and bonding [47].

Previous research has verified the above argument. Using a sample of 87 matched dyads from two-party IJVs formed in Kazakhstan, Griffith et al. [24] indicate that Kazakhstan-foreign IJVs with higher levels of knowledge transfer result in higher levels of firms’ commitment to and satisfaction with their relationships. In addition, in an empirical case study of Taiwanese firms, Wu & Hsu [74] find that under OEM sub-contracting, knowledge transfer takes place in a systematic fashion. The variety and quantity of knowledge exchanged contribute to the subject firms’ continuous improvement of their innovative capabilities which are crucial for manufacturing the equipment designated by the OEM buyers, and thus, crucial for maintaining an OEM relationship. Also, based on previous research [27, 28], learning that involves multiple members of a supply management system is verified to affect two supply management consequences — relationship commitment and customer orientation. Drawing from the above discussions, it could be highly expected that as the learning goal is achieved, so is the relationship performance satisfied.

H1: The higher effectiveness of interfirm learning, the better will be the relationship performance for a learning firm.

2.2 Collaboration Governance Mechanisms

Recently, a number of scholars have advanced explanations of relationship performance based on the partnering firms’ abilities to manage the postformation dynamics of their interaction [2,12]. In addition, a small but growing body of literature on transaction value is emphasizing the influence of governance on the value-creation initiatives of alliance partners [14,43,77]. Among these studies, governance is referred as a key role in the creation of relational rents because it influences transaction costs, as well as
the willingness of alliance partners to engage in value-creation initiatives. However, this research issue is subject to further empirical studies. In this section, governance mechanisms are defined firstly, then how governance mechanisms promote interfirm learning and relationship performance will be explored in next following sections.

The term governance traditionally has defined very broadly as “a mode of organizing transactions” [73]. A more precise delineation of the concept is offered by Palay [54], who defined it as “a shorthand expression for institutional framework in which contracts are initiated, negotiated, monitored, adopted, and terminated.” According to Sobrero and Schrader [63], there are two approaches to explain interfirm governance mechanisms: the strategic approach and the organizational approach. For a strategic approach, researchers propose the “contractual governance” which refers to the mutual exchange of rights between the parties involved in a relationship in order to govern the combination of agents or functions toward the production of results. The rights can encompass the definition of a command structure and an authority system used to govern the exchange, as well as some predetermined incentive systems. Thus, contractual governance mechanisms are used to define the legal boundaries of the relationships. They involve the choice of the legal form governing the agreement (e.g., joint venture or strategic alliance, equity and nonequity joint venture), the length of the agreement, the extent to which partners are bound to the agreement (e.g., exclusivity clauses, penalties) and the degree to which these choices are specific to the agreement or not (e.g., standardized versus personalized contracts). The more complex the contract, the greater is the specification of promises, obligations and processes for dispute resolution.

On the other hand, for an organizational approach, researchers propose the “procedural governance” which relates to the mutual exchange of information for the combination of agents or functions toward the production of results. Procedures dictate who does what tasks and in what manner they act to accomplish their objectives. The concept of procedures could be referred to the coordination mechanisms in the context of an alliance, which include partner-specific communication, routines, liaison and integration roles, interfirm authorities, group problem solving, planning, and various forms and degrees of property-right sharing [19].

The distinctions between governance mechanisms proposed here are reinforced by their congruence with the previous research [11,39,55]. Along similar lines, Luo and Yadong [39] suggest “contracts” and “cooperation”
are two interrelated governance mechanisms in IJV (International Joint Ventures) because a contractual arrangement serves as a framework within which cooperation proceeds. Das and Teng [11] propose that the confidence in partner cooperation in alliances comes from two distinct sources: “control” and “trust”, and their relationship is of a supplementary character in generating confidence. In addition, Poppo and Zenger [55] indicate that “formal contracts” and “relational governance” function as complements, while the latter is viewed as a composite factor with the following underlying norms and dimensions: open communication and sharing of information, trust, dependence, and cooperation.

Taken together, while “structure” and “process” of exchange are central concepts in relational contracts [70], the “structure” of the exchange is primarily governed by the “contract” that helps obviate moral hazards and attenuate the leeway for opportunism. In contrast, the “process” is an evolving mechanism for ensuring reciprocal dependency and strategic flexibility under uncertain conditions, and is largely manifested in interpartner cooperation that affects trust building and the success of the relationship [39,55,58]. Following the previous studies [63,64], this study defines interfirm governance mechanisms in terms of “contractual governance mechanisms” and “procedural governance mechanisms” to comprehend the dynamic nature of interfirm collaboration, rather than as the traditional known governance mode, namely joint equity venture, minor equity venture, or none equity venture.

2.3 The Role of Contractual Governance Mechanisms in Promote Interfirm Learning Effectiveness and Relationship Performance

Transaction cost economics (TCE) scholars commonly point to three categories of exchange hazards that necessitate contractual safeguards: asset specificity, measurement difficulty, and uncertainty. According to the logic of transaction cost economics, as exchange hazards rise so must contractual safeguards, which act to minimize the costs and performance losses arising from such hazards [70,72]. Since contractual governance mechanisms are verified as effective organizational arrangements to enhance the level of control, the relationship between contractual governance mechanisms and relationship performance seems to be quite evident. The basic argument here is that, because contractual governance mechanisms provide a “track record” for those who perform well, trust between the parties may eventually be nurtured and strengthened. The argument has been verified in many empirical studies. Sitkin [61] suggests that legalization, in terms of reliance on
formal rules and standardized procedures, can facilitate the development, diffusion, and constructive institutionalization of trust in organizational settings, which has been verified as an important way to induced desirable behavior in alliances, including more efficiency with conflict resolution [45]. Shenkar and Zeira [59] demonstrate that contractual completeness reduces role conflict and role ambiguity for IJV managers, which then enhances IJV performance. Killing [33] suggests that term specificity protects a partner’s strategic resources and reduces operational and financial uncertainties through controlling opportunism and spurring information flow within and IJV.

In line with the previous studies [39, 42, 55], it is suggested that crafting complex contracts as an efficient response to hazardous exchange settings should enhance relationship performance because it provides a binding structure within which cooperation performs.

H2: Organizational collaboration that makes more emphasis on contractual governance mechanisms will achieve better relationship performance.

While the relationship between contractual governance mechanisms and relationship performance is quite evident, the relationship between contractual governance mechanisms and interfirm learning effectiveness is far from clear in the literature. In essence, the dispute is about whether the development on contractual governance mechanisms damages learning among alliance members. The results in the literature seem to some extent mixed. For example, Doz and Hamel [12] indicate that relying strictly on contracts may stifle creativity and interfirm problem-solving in the relationship when there is persistent, significant interaction. Additionally, as what Macauley [41] stated, in a contractually governed relationship, “one gets performance only to the letter of the contract”. Learning may be a positive “side effect” of cooperation, the result of some extra effort by the exchange partners or a reaction to an unexpected market or technological opportunity. As such, learning cannot be specified in the contract.

In contrast, Luo [39] argues that the contract is not unidimensional. Instead, it contains term specificity and contingency adaptability. While the former concerns how specific and detailed the terms are, the latter involves how to contractually respond to future problems, conflicts, and contingencies. Referring these two dimensions, it is argued here that overly codified terms may not necessarily be conducive to interfirm learning effectiveness because they are likely to impede organizational adaptation and strategic flexibility in response to long-range dynamic environments. However, a
contract’s contingency adaptability may trigger future adaptation that is conducive to interpartner learning. Further, the problems of the appropriation and sharing of benefits derived from innovations concluded in the context of alliances have been pointed out repeatedly [65]. Andersen [1] suggests that formal contracting which formalizes ground rules for collaboration between organizations may serve as a means for developing mutual consent and commitment. Hence, it could reduce risk perception, and in turn enhance knowledge extraction. In addition, Dyer and Singh [14] argue that the ability of alliance partners to generate rents through knowledge sharing is dependent on an alignment of incentives that encourages the partners to be transparent, to transfer knowledge, and not to free ride on the knowledge acquired from the partner. Thus, it is argued that contractual governance mechanisms, such as equity arrangements, could be employed as an effective way at aligning partner incentives and, therefore, they could promote greater interfirm knowledge transfers. According, H3 is proposed.

H3: Organizational collaboration that makes more emphasis on contractual governance mechanisms will achieve better interfirm learning effectiveness.

2.4 The Role of Procedural Governance Mechanisms in Promote Interfirm Learning Effectiveness and Relationship Performance

Just as contractual governance mechanisms are meant to enhance the probability of having the desired behaviors; procedural governance mechanisms also are useful in enhancing the perceived probability of desired behaviors in the relationship of strategic alliance. As discussed above, the formal definition of a governance structure is based on the distribution of rights. However, ultimately the information exchange occurs between individuals. Apparently, contractual governance underscores the role played by the actual implementation of the relationship through the mutual exchange of information among the partners. In contrast, procedural coordination mechanisms defining how, when, by which means, and to what extent information is shared by the partners represent another important area of direct managerial influence, whose discretionary enactment can sensibly affect the outcome of the relationship [64].

Moreover, due to bounded rationality and uncertainty, the TCA framework admits that interfirm exchanges fraught with unforeseen contingencies cannot be governed with complete contracts. The parties can resort to incomplete contracts that enable them to adapt better changing circumstances by aligning supportive governance arrangement [71]. Drawing on relation-
ship perspective, previous research has seen procedural governance mechanisms as one such supportive mechanism. It is found that in an embedded network, the exchange partners often use relational norms and expectations of continuity to regulate opportunism [40]. According, it is proposed here that procedural governance mechanisms reflect significant aspects of the coordinated adaptation, which takes place to support the cooperation between participants, which in turn results in higher relationship performance.

**H4**: Organizational collaboration that makes more emphasis on procedural governance will achieve better relationship performance.

Drawing upon the perspective of information processing, it is argued that while contractual coordination mechanisms can be used to define the legal boundaries within which joint problem-solving activities will occur, procedural coordination mechanisms are targeted toward the structuring of the corresponding information flows. More the frequency, timing, and directionality of information flows, as well as the means through which these flows occur, more opportunities for learning will be. Since procedural governance mechanisms may promote interfirm interactions within the alliance partners well, the individuals will have the chances to get to know each other well enough to know who knows what and where critical expertise resides within each firm. It could be expected that useful knowledge develops informally over time through interfirm interactions.

Further, drawing from relationship viewpoint, procedural governance mechanisms may enhance pro-relationship norms and expectation of relationship continuity which will influence partner’s behavior toward increased flexibility. For example, the expectation of relationship continuity motivates supplier investment in new technologies and behaviors, as the supplier expects these to be recovered over time [48]. Thus, it is expected that the greater procedural governance mechanisms employed, the greater level of embeddedment is, which may motive partners to learn the requisite new technologies and procedures that facilitate their responsiveness to environment dynamism. It is this flexibility-enabling feature of procedural governance mechanisms suggests that procedural governance mechanisms may be an effective means by which to enhance knowledge exchange in the context of an alliance [31].

According to the above discussions, because interfirm technology collaboration usually underlines the interactive and iterative features of development processes, it is proposed that procedural governance mechanisms
could be employed not only as reducing ex post transaction costs, but also as enhancing transaction value, in terms of interfirm learning effectiveness.

H5: Organizational collaboration that makes more emphasis on procedural governance mechanism will achieve higher interfirm learning effectiveness.

3. Research Design

3.1 Measurement

Following Sobrero and Schrader [63], this study refers contractual governance and procedural governance as two of the collaboration governance mechanisms. The construct of contractual governance is operationalized as the extent to which each one of the multiple interactions activated within the collaboration process is governed by a set of contractual governance rules explicitly articulated for that specific relationship. Procedural governance is operationalized by determining how early the firms were involved in the learning, the extent to which the student firm and the teacher firms worked sequentially or in overlap during the collaborative learning, how often they exchanged information, and what kind of information media they used to exchange information. Totally, eight variables are selected for governance mechanisms (G) in which 4 for contractual governance (CG) and 4 for procedural governance (PG). With respect to interfirm learning, learning effectiveness is increasingly linked to the firms’ ability to leverage their knowledge through collaboration. Depending on Mohr & Sengupta [44], the effectiveness of interfirm learning includes two major factors: (1) “General Learning Effectiveness” that refers to the degree to which the firm has gained the access to new knowledge. (2) “Additional Learning Effectiveness” that refers to the degree to which a partner accesses to sensitive information under carefully controlled and monitored. Five variables are selected for interfirm learning effectiveness (ILE) in which 3 for general learning effectiveness (GLE), and 2 for additional learning effectiveness (ALE). Respondents are asked to indicate the level of execution in their firm on each of the above items. Seven-point scales were developed to measure the opinion of the respondents. The anchor points are that 1 represents that the extent of execution in this item is “very low”, and 7 represents “very high”. A detailed questionnaire items is shown in Table 1.

In addition, the operational concept of relationship performance in this study includes satisfaction, commitment, and coordination [37, 46, 47]. Satisfaction was measured with two items that tapped the learning firm's level
of satisfaction with specific aspects of the relationship, including assistance in learning process, cooperative communicating, and so forth. Commitment was measured through the degree to which the student firms felt committed to the teacher firms and wanted to continue the relationship. Coordination was measured with a scale assessing the degree to which the activities of the student firm and those of the teacher firm were well-organized and synchronized. Six variables are selected for relationship performance (RP). Respondents are asked to indicate the real situation of their firm on each of the above six items. Semantic Differential scales were developed to measure the opinion of the respondents.

3.2 Sampling Plan and Data Collection

A sampling plan was developed to ensure that certain types of firms were included in this study. This study selected firms of High-Tech Industry in Taiwan for our sample. The High-Tech industry in this study includes information technology, optoelectronics technology, biotechnology, micro-electronics and IC technology [4]. The sampling frames were obtained from “C.W. database (2002)” published by Common Wealth, and “The largest corporations in Taiwan (2002)” published by China Credit Information Service, Ltd.. Firms that had collaboration announcement from 2000 to 2002 were included in the sample of this study. Then the survey questionnaires were sent to obtain the responses from top level manager, collaboration negotiator, R&D project manager, and strategic planning staff who have engaged in one or more collaboration activities in the last 3 years. In total, six hundred questionnaires were mailed to the High-Tech industry in Taiwan. Follow-up letters, emails and phone calls were done after two weeks. Of the 600 questionnaires mailed, 153 were valid and complete questionnaires, providing a useable response rate of 25.5%.

Among the sample, more than 55% of the sample firms exercise their collaborations through research contracts or licensing agreement; about 34.6% of the sample firms engaged in interfirm collaboration through minority investment or joint venture; about 9.9% of the sample firms engaged in collaboration through equity acquisition. For the industry categories, about 26.8% of the sample firms belong to IT, 24.2% to micro-electric, 23.5% to IC, 13.7% to biotech, and 11.8% to Optoelectric. For the sales volume, more than 21.6% of the sample firm have an annual sales volume exceeds 3 million USD, more than 45.1% of the sample firms have an annual sales volume exceeds 1.5 million USD. For R&D expenditure, more than 52.5% of the sample firms have an R&D/sales ratio exceeds 10%.
3.3 Factor Analysis and Reliability Test of the Research Constructs

The data collected from the questionnaires were analyzed by using SPSS10.0 package and AMOS 4. Factor analysis was utilized to examine the patterns or dimensions underlying the research construct. Its main purpose is to condense the key features of a large number of variables for further analysis. A principal component analysis associated with varimax rotation was used in the procedure. It is shown that there appears to have two factors (contractual governance and procedural governance) to characterize the construct of governance mechanisms, and two factors (general learning effectiveness and additional learning effectiveness) to identity the construct of interfirm learning effectiveness. It is indicated that all variables within a factor tend to have very high factor loadings (>0.686), and Cronbach’s Alpha coefficients (>0.6865). These results suggest a high degree of consistency for each factor of the research constructs. Since the factor loadings, and Cronbach’s alpha coefficients all show that the factors for each constructs are reliable, this study thus uses the factors as the unit of analysis to proceed with the following hypothesis testing process.

4. Research Results

Five multiple regression models were employed in this study to examine the relationships among governance mechanisms, interfirm learning, and relationship performance. These regression models were designed to verify whether higher interfirm learning effectiveness will lead to higher relationship performance (H1) and whether the higher emphasis on governance mechanisms will lead to better interfirm learning effectiveness and relationship performance (from H2 to H5). To verify these research hypotheses, the following eight regression models were constructed:

Model 1 : \( ILE = \beta_{11} + \beta_{12}CG \)  
Model 2 : \( ILE = \beta_{21} + \beta_{22}PG \)  
Model 3 : \( ILE = \beta_{31} + \beta_{32}CG + \beta_{33}PG \)
Model 4 : \( RP = \beta_{71} + \beta_{72}GLE + \beta_{73}ALE \)  
Model 5 : \( RP = \beta_{81} + \beta_{82}G \)

\( RP \): Relationship performance; \( CG \): Contractual Governance; \( PG \): Procedural Governance; \( G \): Governance Mechanisms; \( GLE \): General Learning Effectiveness; \( ALE \): Additional Learning Effectiveness
The results of the above five regression models are shown in Table 1. It is suggested that firms with greater emphasis on contractual governance and procedural governance tend to have significantly better overall interfirm learning effectiveness. Thus, in an interfirm collaboration, the interfirm learning effectiveness is positively related to the level of emphasis on governance mechanisms. Firms need to elaborate their best effort to identify appropriate governance mechanisms before the collaboration is carrying out. In addition, the research results also indicate that firms having higher interfirm learning effectiveness tend to have significantly better overall relationship performance. In other words, the entire relationship performance is positively related to the interfirm learning effectiveness, as shown in Table 1.

For measuring the goodness of fit of this research model, the psychometric properties of the constructs were evaluated in one overall analysis through the use of LISREL [30]. And the path analysis was used to test the hypotheses, again. The overall analysis of the research model helps to estimate the relative importance of alternative paths of influence and enable to

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<tr>
<th>Independent Variable</th>
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<td>Effectiveness of Interfirm Learning</td>
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<td>CG</td>
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* : P<0.1 ; ** : P<0.05 ; *** : P<0.01

RP = Relationship performance, CG = Contractual Governance, G = Governance Mechanism, PG = Procedural Governance, ALE = Additional Learning Effectiveness, GLE = General Learning Effectiveness
measure the direct and indirect effects that one variable has on another. Maximum likelihood method was used to derive parameter estimates for the model.

As shown in Figure 1, RMR equals to 0.070, GFI equals to 0.939, AGFI equals to 0.900 and Chi-square equals to 66.695 with a p-value of 0.155, which all present that the entire model of this study has very good fitness. 

And, according to path analysis, the hypotheses H1, H2, H3, H4, and H5 are solidly supported.

5. Conclusions

This study tried to assess governance mechanisms from the learning perspective, and our research points to two important theoretical aspects for the management of interfirm relationships. First, it develops a link between the employment of governance mechanisms and the interfirm learning effectiveness, as well as relationship outcome. Drawing from the empirical results of this study, it is shown that the different emphasizing levels of governance do impact on interfirm learning effectiveness and relationship performance.

![Figure 1 The Conceptual Model in LISREL](image)

Notes:
CG1, CG2, CP3, CG4—items of contracture governance
PG1, PG2, PG3, PG4—items of procedural governance
GLE, ALE—factors of effectiveness of interfirm learning
SMP, COM, COO—factors of relationship performance

$\chi^2_{(56)} = 66.695$

p-value = 0.155

RMR = 0.070

GFI = 0.939

AGFI = 0.900
of high-tech firms in collaboration relationships. In line with what Doz and Hamel [12] contend, our results support the notion that managing the alliance relationship over time is usually more important than crafting the initial formal design. It is suggested that the greater level of governance mechanisms is employed, namely contractual governance and procedural governance, the greater likelihood to exploit relational capabilities [14]. These results are not surprising, since “strategic alliance” has been characterized as a “hybrid governance model” in the prior research, which would utilize both “market” and “hierarchy” methods of coordinating and controlling the entity’s activities to a significant degree [5,18,36,78]. Williamson [71] suggests that while the parties contract and those contracts provide incentives that direct their behavior, rules and cooperation also are necessary to allow for the greater levels of uncertainty that makes the writing of a complete contract inappropriate. Consistent with the previous research [39,55], this complements notion, rather than substitution position between contractual and procedural governance is verified in our empirical study again. It is suggested that contractual governance and procedural governance appear to function as complements in influencing interfirm learning effectiveness and relationship performance. Within an alliance, with contractual governance, cooperation will have an institutional framework to proceed. Such devices represent guidelines regulating the exchange and flow of information and resources, which in turn results in interfirm learning effectiveness and relationship performance. With procedural governance, closer interactions will facilitate adaptation and encourage long-term evolutions of cooperation, thus tacit knowledge could be exploited smoothly. This study suggests managers should highlight the roles of governance mechanisms in raising relational capabilities, rather than just focus on their roles in reducing transaction cost.

The second conclusion that can be drawn from the results of this study is that firms with higher interfirm learning effectiveness in collaboration will lead to better relationship performance. In other words, the results of this study indicate that high-tech firms with better general learning effectiveness and additional learning effectiveness tend to perform significantly greater relationship performance including satisfaction, commitment and coordination. Besides, it also verifies Mohr and Nevin’s finding [43] which argue that when collaborative governance matches the increased needs for knowledge sharing in more closely linked relationships, the combination of governance and organizational learning enhances relationship performance.

These evidences reveal two managerial implications. First, drawing from the empirical results of this study, it is verified that the more interfirm
learning will enhance more relationship performance. In line with the suggestion of Ghoshal [15], we propose that to exploit the learning potential arising from an interfirm alignment, the organization must consider learning as an explicit objective. The process of interfirm knowledge transfer requires incentives for the parties to negotiate, enforce and maintain or sustain such interfirm relationships. One such incentive should be longer-term learning. Learning which results in improvements in process methods, product quality or technical skills, can help participants create a sustainable competitive advantage [53]. Thus, the managerial challenge is to find ways to facilitate effective interfirm learning.

Second, since contractual governance and procedural governance are the two contributory factors of learning effectiveness and relationship performance in strategic alliance, either one by itself is insufficient to explain success in strategic alliance. In line with the previous studies [11,55], it is suggested that these two kinds of governance mechanisms should be considered in parallel so that they may supplement each other in special ways, not merely in the restricted sense of being complementary to each other. In essence, in order to achieve generative and evolutionary processes that make cooperation adaptive, contracts and coordination should be coupled such that the former provides a framework within which the latter proceeds, while the latter redresses the deficiencies of the former. Thus, how to build more deliberate contractual and procedural governance mechanisms as two distinct avenues that can be pursued simultaneously for generating success in strategic alliance will be an important challenge.

[References are available upon request]