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The Influence of Structural and Process Factors on Partnership Satisfaction in Interfirm Cooperation

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In this study, the authors investigate the relationship of structure and process with partnership satisfaction in interfirm cooperation. In particular, they focus on the less-researched aspect of process. *Structure* refers to the ex-ante transaction cost-based and partner characteristics of the partnership, whereas *process* refers to the action pattern that unfolds during the cooperation. Two structural factors, asset specificity and partner reputation, are first examined. Informed by an action approach, they further identify three important aspects of the cooperation process, namely, action acquiescence, action simplicity, and action reciprocity. Their relationships with partnership satisfaction are tested on a sample of 230 architect-contractor partnerships in Hong Kong. The results revealed that action acquiescence and action simplicity explained significant variance in partnership satisfaction above and beyond those explained by the two structural factors.

Keywords: cooperation process; partner interaction; action pattern; alliance outcomes

Since the growing intensity of alliance activities in the late 1980s, factors affecting alliance outcomes have been subjected to extensive investigation. Despite this, empirical results have remained ambiguous as to which factors are related to positive alliance outcomes, and no consensus has yet been reached with regard to the relative contribution of various factors (Gulati & Zajac, 2000; Mohr & Spekman, 1994; Robson, Leonidou, & Katsikeas, 2002). This partly reflects the complexity of the alliance phenomenon.

Two main streams of research on alliance outcomes can be identified. The first stream has focused on the ex ante structural factors as explanatory

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variables. Structural factors refer to the various initial factors that partners bring into the cooperation and include (a) the relatively stable partnering firm characteristics, such as firm size, firm resources, partner similarity, and prior relationship, and (b) the informal and formal transaction cost-based features of the cooperation, including governance form, equity control, contractual safeguards, and specific asset commitment. It has been argued that alliance outcomes can be enhanced by identifying and constructing an optimal alliance design based on an alliance's structural characteristics (e.g., Inkpen & Li, 1999; Parkhe, 1993; Saxton, 1997).

Apart from this, another stream of research focuses on how the alliance is implemented, and how the cooperation process unfolds may affect alliance outcomes (Doz, 1996; Khanna, Gulati, & Nohria, 1998). The cooperation process has been operationalized by various variables such as communication (Anderson & Narus, 1990; Young-Ybarra & Wiersema, 1999), conflict handling and negotiation (Mohr & Spekman, 1994; Zaheer, McEvily, & Perrone, 1998), information exchange (Aulakh, Kotabe, & Sahay, 1996; Mohr & Spekman, 1994; Sarkar, Echambadi, Cavusgil, & Aulakh, 2001), and shared decision making (Sarkar, Aulakh, & Cavusgil, 1998).

Undoubtedly, both approaches have added to our understanding of interfirm cooperation. It is important to compare and contrast the effect of both sets of factors on alliance outcomes. Moreover, relatively few research works have investigated the interaction between partners during the cooperation process. This article attempts to fill the above gaps by viewing alliance outcomes as affected by both the structure and the process of a partnership. Analyzing a data set of interfirm partnership in the construction industry of Hong Kong, we first examine the extent to which two structural factors, namely asset specificity and partner reputation, are related to partnership satisfaction. We then examine the role of process as measured by three action pattern variables developed for this study. The relative effects of structural and process variables on partnership satisfaction are evaluated and compared.

THEORETICAL DEVELOPMENT

Alliance outcome is a controversial concept in the research of alliances and cooperation. The concept is difficult to measure, as it connotes different performance criteria from multiple viewpoints at different times (Glaister & Buckley, 1998; Mohr & Spekman, 1994). In this article, we use partnership satisfaction toward the fulfillment of goals as the dependent variable to

represent an important aspect of alliance outcome. As goal fulfillment usually involves long-term and qualitative considerations, objective financial and operational measures such as profitability may not reflect our concerns (Ariño, 2003). Instead, we collect information on the subjective evaluation of goal achievement and overall satisfaction of the relationship.

STRUCTURAL FACTORS

Different theories have deliberated on the various partner characteristics and transaction cost-based features that firms should carefully consider when they select their alliance partner and decide the alliance form. Two such characteristics, asset specificity and partner reputation, are particularly salient and worth close scrutiny. Below, we examine their effects on partnership satisfaction.

Asset specificity. Asset specificity refers to the nonrecoverable and idiosyncratic investment firms invest in a relationship (Parkhe, 1993). At a postformation stage of a partnership, investing in relation-specific assets adds value to the partnership and is conducive to positive alliance outcomes, especially when the investment is mutual. As firms invest in relation-specific assets, they can specialize in their own core competencies. This specialization increases transaction value and becomes a source of competitive advantage for firms (Bensaou & Anderson, 1999; Dyer, 1997). Moreover, high asset specificity signals to partners the intention and commitment to cooperate and thereby reduces perceived opportunistic behavior (Gulati, Khanna, & Nohria, 1994; Parkhe, 1993; Skarneas, Katsikeas, & Schlegelmilch, 2002). As asset specificity locks firms into the relationship, it creates an exit barrier. Under such circumstances, firms would tend to solve problems through negotiation, tolerate a partner's unfavorable actions as short-term turbulence, and evaluate each other according to a longer term horizon (Ganesan, 1994).

Whereas unilateral asset specificity would pose a potential problem of power dependence and increased opportunism (Buvik & Reve, 2001), high asset specificity of both parties would favor alliance outcomes by enhancing partnership value and inducing commitment, as discussed above. Dyer (1996) finds that Japanese automakers and their suppliers with more asset specific investment in each other have higher performances than their U.S. counterparts. Thus, we propose the following hypothesis:

Hypothesis 1: The higher the asset specificity in an alliance, the higher the partnership satisfaction.

Partner reputation. Partner reputation is the evaluation of a partner in terms of its affect, esteem, and knowledge (Deephouse, 2000). At a postalliance formation stage, firms could expend less effort to monitor a reputable partner. This is because partners with a high reputation have high visibility in the industry, and they have stronger incentives not to act opportunistically to protect their names (Houston & Johnson, 2000). Sparse critical resources otherwise used in monitoring partners can now be spared for other uses, thus contributing to positive alliance outcomes (Dollinger, Golden, & Saxton, 1997; Saxton, 1997).

Moreover, reputation can function as a unique resource of a firm. It can act as a psychological contract between the firm and its stakeholders (Barney, 1991) and enable the firm to secure external resources (Deephouse, 2000). To a firm's cooperating partners, high reputation signals its credibility and facilitates a more committed exchange process. Saxton (1997) finds that a partner's reputation in management is positively related to a satisfactory relationship. Assuming that information about reputation is generally available in the construction industry, we expect partner reputation to have a positive effect on partnership satisfaction.

Hypothesis 2: The higher the partner reputation in an alliance, the higher the partnership satisfaction.

PROCESS FACTORS

Extant literature has largely focused on the structural aspect of alliances and the process aspect has been less researched. Informed by an action approach, we argue that cooperation process can be depicted by a series of actions and reactions taking place between partnering firms when disturbances to their cooperation arise. The action approach has been explicitly applied to alliance research, notably by Madhavan, Koka, and Prescott (1998) and Ariño and de la Torre (1998). Madhavan et al. (1998) examine how two specific industry events (i.e., regulatory shock and technology shock) affected the evolution of the global steel industry networks from 1977 to 1993. Although they do not study firm-level interactions, they examine the cross-level effect of industry-level actions and clearly demonstrate that discrete actions affect the cooperation process measured as changes in the network structure.

In another case study, Ariño and de la Torre (1998) code the interactions between two cooperating partners in a joint venture. They trace the significant events that had an effect on the joint venture of two firms and discuss how the two firms acted and reacted over a period of 4 years. They fit the

events into an integrated model and show how these events led to the irreversible outcome of the dissolution of the joint venture. However, they admit that their codification is too simple and is based solely on one case study, and they call for a more systematic quantitative study. Hitherto, the use of the action approach in cooperation has been limited, beside the study of Ariño (2001) in which noncooperative behavior of cooperative venture is codified as commission actions and omission actions. Otherwise, there is no formal coding scheme for cooperative actions.

In this study, we adopt Oliver's (1991) typology of strategic response to codify the actions of two cooperating firms. Oliver proposes a typology made up of five strategic responses to the institutional process that differ in terms of their resistance, passivity, control, and opportunism to external institutional pressure. These five strategies are acquiesce, compromise, avoid, defy, and manipulate. Oliver emphasizes that firms can adopt any of these five strategies to actively respond to external pressure.

Similar situations of responding to external pressure are found when firms react to the actions of their cooperating partners, as their actions also vary from conforming to resistance. Indeed, Ring and Van de Ven (1994) argue that a firm perceives the actions of other partners as external control. By conceptualizing other firms' action as external pressure on a firm, we extend Oliver's typology to construct our repertoire of actions in cooperation.

One approach to understand the cooperation process would be to examine the sequence of these actions, as in the studies of Madhavan et al. (1998) and Ariño and de la Torre (1998). Another approach is to examine the pattern of these actions. Employing Peterson's (1998) analogy to physics, the former approach focuses on the particle-like property of these actions, whereas the latter approach focuses on the wave-like property of them. The wave-like property highlights the way an action occurs in relation to other actions preceding and following it. An action pattern thus represents the regularities in and the recurrence of actions. The pattern of these actions also falls into what Van de Ven (1992) identifies as a "specific category of concepts" that depicts a process. Based on the types, numbers, and sequences of the above five types of action, we identify three constructs that characterize the cooperation process: action acquiescence, action simplicity, and action reciprocity. Below, we define these three constructs before going on to discuss their possible relationships with partnership satisfaction.

Action acquiescence. Action acquiescence reflects the degree of cooperative interaction between partnering firms. In this study, it is represented by the proportion of acquiesce action relative to all the actions of Oliver's (1991) five categories. Higher action acquiescence increases communication

flow, enables conflict resolution, reduces opportunistic behavior perception, and develops trust between partners. It is worthy to note that an exchange process based on trust is crucial for alliance success. This is because trust increases the confidence in partners and consequently reduces the vulnerability of firms in an alliance (Das & Teng, 1998).

Past research has documented that cooperative actions enhance alliance outcomes. For example, Mohr and Spekman (1994) argue that the behavioral characteristics of dyadic partners exhibited during cooperation affect the success of the partnership. They identify three groups of cooperative actions (i.e., attributes of the partnership, communication behavior, and conflict resolution techniques) that have a positive effect on partnership success. Similarly, Malhotra and Murnighan (2002) argue that cooperative interaction that is noncontractually mandated provides an informed basis on the trustworthiness and possible behavior of partners and breeds interpersonal trust as well.

However, always acquiescing with a partner may not be the best strategy for building up partnership satisfaction. Full acquiescence denotes less conflict in a partnership, but task conflict benefits the partnership as partners try to bring together their divergent views and experience to solve problems together (Hambrick, Li, Xin, & Tsui, 2001). Full acquiescence may result in fewer operation alternatives being considered and lower quality decision making, leading to lower goal attainment and satisfaction. As Hamel, Doz, and Prahalad (1989) note, occasional conflict in an alliance may create conditions for mutual benefit. Following this line of argument, we hypothesize a nonlinear relationship between action acquiescence and partnership satisfaction.

Hypothesis 3: There is an inverted U-shaped relationship between action acquiescence in an alliance and partnership satisfaction, with moderate levels of action acquiescence most positively associated with partnership satisfaction.

Action simplicity. Action simplicity reflects the extent to which allying firms adopt a dominant strategy to guide the interactions with their partners. It is represented by how diversified the actions are in terms of Oliver's (1991) five categories. Action simplicity has two crucial effects on cooperation outcomes. First, firms only specialize in particular actions when these actions have proved to be useful (Miller, 1993; Miller & Chen, 1996). Action simplicity thus helps firms develop specific organizational assets and routines that can be reused and reduces the resources that need to be expanded when taking diversified actions. Second, when firms specialize in specific actions based on their strength and expertise, their behaviors become more predictable to their partner firms. Their partners thus come to know how they would

act in a particular situation. Effective and consistent interactions lead to more positive alliance outcomes. Accordingly, we expect that firms interacting with higher action simplicity would have higher partnership satisfaction.

Hypothesis 4: The higher the action simplicity in an alliance, the higher the partnership satisfaction.

Action reciprocity. Action reciprocity describes the extent to which firms reciprocate their partners' actions. It is measured by how often firms reciprocate the other's actions with the same category of action at every turn of their action. High action reciprocity reflects that firms try to closely reciprocate the action of their partners: If their partners acquiesce, they will acquiesce; if their partners defy, they will defy. Cooperation showing high action reciprocity resembles a "tit for tat" strategy (Axelrod, 1984). Essentially, this strategy involves cooperating on the first move, and then following whatever the other player did on the previous move. High action reciprocity is provocative and may achieve equity and fairness in an alliance. Kale, Singh, and Perlmutter (2000) include high reciprocity as part of the relational capital between partners and find that it is positively related to learning outcomes. We thus predict that action reciprocity induces partnership satisfaction:

Hypothesis 5: The higher the action reciprocity in an alliance, the higher the partnership satisfaction.

METHOD

SAMPLE AND DATA COLLECTION

We tested the above hypotheses on the architect-contractor partnership using questionnaire data collected from a survey of architects in Hong Kong. The unit of analysis is the architect-contractor partnership. Hong Kong represents a suitable research site for our study because construction here involves considerable complexity, such as limited space, stringent building regulations, and tight construction time frames. We expect great concern from the building team toward partnership performance. Moreover, the cultural context of Hong Kong as a collective society favors the cultivation of long-term business relationships. Research has consistently pointed to the influence of culture in shaping informal ties as *guanxi* in the Chinese business setting (e.g., Bond & Hwang, 1986; Child & Möllering, 2003; Tsui & Farh, 1997). Thus, we assume the salience of relationship management in this study.

The cooperative relationship in the construction industry takes the form of trilateral governance (Williamson, 1985, p. 74). The contractor and the architect enter into a separate contractual agreement with the property developer to complete a construction project. The architect agrees to design and manage the construction on behalf of the developer, and the contractor agrees to source materials and to provide labor for the construction. Williamson uses the construction contract as an example of an occasional transaction involving mixed asset characteristics. For this kind of transaction, neither a market nor a hierarchy arrangement is efficient. Hierarchical controls are low as the partnership involves no equity being exchanged, but there is considerable coordination and negotiation as the architect and the contractor interact frequently during construction. The architect gives advice on choosing the contractor, represents the developer on the construction site, and safeguards the developer's interests. Thus, although the architect and the contractor do not have a direct contractual relationship with each other, the architect-contractor dyad falls into the broad domain of interorganizational cooperation that Parkhe (1991) has defined as the "relatively enduring interfirm cooperative arrangements, involving flows and linkages that utilize resources and/or governance structures from autonomous organizations, for the joint accomplishment of individual goals from different organizations" (p. 581).

To lay the groundwork for our survey, we conducted semistructured interviews with 12 architects (Lui & Lu, 2002). From the interviews, we developed our basic understanding of the action pattern of the cooperative relationship and designed the questionnaire accordingly. The questionnaire was then checked by four architects and two survey researchers from a social research center. Ambiguous items were corrected and appropriate professional terms were adopted in the questions. The questionnaires were then mailed to 866 respondents from a comprehensive list of local architects.

The questionnaire was in English. We asked the respondents to provide information on any recently completed construction project of which they had acted as project manager. As there is only one project manager on a construction project, each response corresponds to one architect-contractor partnership. We received 265 responses from architects. Excluding cases with incomplete information, 230 cases were used in data analysis, amounting to an effective response rate of 26.5%.

We tested for nonresponse bias by comparing the respondents and the nonrespondents in terms of their gender and organizational rank, as well as the size of their affiliated firms. We also compared early and late respondents on the major variables examined. The *t* tests for all variables were not significant at the 95% confidence level, suggesting that nonresponse bias did not pose a threat.

Several measures were attempted to address the issue of common method variance. First, we used method triangulation to verify the measurement of the variables (Avolio, Yammarino, & Bass, 1991). We were able to obtain archival documents to codify the action pattern of architects and contractors for three projects (Lui & Lu, 2002). The archival coding was consistent and comparable with the survey results of the questionnaire. Moreover, to reduce the threat of social desirability, quantitative information was asked for wherever possible, and two action pattern variables (i.e., action acquiescence and action simplicity) required summing and dividing the raw scores on five questionnaire items. It was difficult for the respondents to guess the intention of the questions and give socially desirable answers (Podsakoff & Organ, 1986). Finally, we tested for common method variance using Harman's post-hoc single-factor test. The test yielded seven factors accounting for 66.12% of the variance, and factor one accounted for 23.10% of the variance. As no single factor accounted for the majority of the variance in the variables, we believe that common method variance did not pose a major threat for the data.

MEASURES

In this study, all variables were measured using a 7-point Likert-type scale. The details of the measurement scales and the items used to measure the variables in this study are listed in the Appendix.

Dependent variable. The dependent variable, partnership satisfaction, measured the satisfaction of partnership goal fulfillment as perceived by the architect. We adapted Saxton's (1997) three-item scale to measure overall satisfaction and added two items that were specific to the construction industry (i.e., "This project has been completed to high professional standards," and "Our firm is proud of the project").

Structural variables. Asset specificity was measured by a three-item scale that taps the transaction-specific commitment of both the architect firm and the contractor firm. These items measure the level of investment and the extent to which such investment is redeployable to other relationships. Partner reputation was measured by a four-item scale that shows the reputation of the contractor in terms of the aspects of fairness, concern, and honesty. Both scales were adapted from Ganesan (1994).

Process variables. As no existing scale measures alliance process as specific actions taken against partners, new items were developed for the three

action pattern variables. Based on in-depth interviews with architects, we first developed five items corresponding to the five types of strategic action responding to disruptive events as discussed earlier. Respondents were asked to report how often each type of action occurred when problems arose in the project. We then used the score on the item to represent the extent of each type of action.

Action acquiescence was measured as the score on acquiesce action divided by the total score on all actions. To measure action simplicity, we used a variant of the Herfindahl index, which is used to measure the concentration of product categories in diversification research (Ferrier, 1995; Ferrier, Smith, & Grimm, 1999). Based on the five items measuring the extent of each action type, action simplicity is measured by aggregating the squared terms of the proportion of each specific action in relation to all actions. Finally, action reciprocity was measured by a three-item scale. Two items measured the variability of actions, and one item asked respondents directly whether they reciprocate their partners' actions.

Control variables. We included four potentially influential variables on partnership satisfaction that are outside our theoretical model. We controlled for project size and project duration, measured as the log form of the total contract sum and the months of construction, respectively, as the construction dyad may be more satisfied simply by engaging in larger projects. We also controlled for architect experience, measured as the total number of working years of the architects, as architects with more experience were expected to handle a construction project more skillfully, resulting in higher satisfaction. Last, we controlled for prior relationship with the partner as a dummy. It was coded 1 if the architect and the contractor had previously worked with each other and coded 0 otherwise. Prior relationship reflects a partner-specific experience and reduces perception of opportunism, and it has been shown to relate to positive alliance outcomes (Saxton, 1997).

RESULTS

We used hierarchical regression analysis to evaluate the relationships of the two sets of variables on partnership satisfaction. Table 1 reports the means, standard deviations, and correlations for the variables in this study. Except for the negative relationship between action reciprocity and partnership satisfaction, the bivariate relationships basically confirmed the general direction of the hypothesized relationships.

TABLE 1
Means, Standard Deviations, and Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Partnership satisfaction	4.82	1.07									
2. Asset specificity	4.19	1.05	.19**								
3. Partner reputation	4.21	0.95	.45***	.12*							
4. Action acquiescence	0.28	0.09	.24***	.06	.34***						
5. Action simplicity	0.24	0.04	.22***	-.05	.19***	.66***					
6. Action reciprocity	3.24	1.07	-.19**	.08	-.16**	-.38***	-.41***				
7. Project size (ln)	5.16	1.59	.22***	.22***	.06	.06	.04	.03			
8. Project duration (month)	22.9	8.62	-.04	.17**	-.12*	.04	.09	-.02	.49***		
9. Architect experience (yr)	12.07	7.27	.13*	-.10	.02	.08	.09	-.08	.11	.10	
10. Prior relationship	0.66	0.47	.09	-.00	.26***	.10	.05	-.07	.08	.04	-.01

NOTE: $N = 230$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 2
Regression Results for Partnership Satisfaction

Variable	1	2	3
Control			
Project size	.31***	.22***	.22***
Project duration	-.21**	-.13*	-.15*
Architect experience	.11	.12*	.10
Prior relationship	.08	-.02	-.02
Structure			
Asset specificity		.12*	.13*
Partner reputation		.40***	.37***
Process			
Action acquiescence			.53*
(Action acquiescence) ²			-.70**
Action simplicity			.28**
Action reciprocity			-.10
ΔR^2		.17	.05
ΔF value		27.28***	3.98**
Adjusted R^2	.08	.25	.30
R^2	.10	.28	.33
F value	6.37***	14.33***	10.65***

NOTE: $N = 230$; standardized coefficients (betas) are reported.

* $p < .05$. ** $p < .01$. *** $p < .001$.

To provide a more conservative test for the net effect of process variables on partnership satisfaction, we first entered the control variables, then the structural variables, and finally the process variables in the regression models. The additional variance explained by the process variables in the last step would be above and beyond that explained by the control and the structural variables. Table 2 shows the results of the hierarchical regression analyses. Model 1, made up of the control variables, was the base model with which other models were compared. In this model, both project size and project duration were significantly related to partnership satisfaction.

To test Hypotheses 1 and 2, we regressed partnership satisfaction on asset specificity and partner reputation. As can be seen in Model 2, the two structural factors explained a significant variance in partnership satisfaction ($\Delta R^2 = .17$, $\Delta F = 27.28$, $p < .001$). Both asset specificity ($\beta = .12$, $p < .05$) and partner reputation ($\beta = .40$, $p < .001$) were positively related to partnership satisfaction. The results supported Hypotheses 1 and 2.

We tested Hypotheses 3 through 5 by regressing partnership satisfaction on the three action pattern variables, while controlling for structural factors.

The results were shown in Model 3. As a group, action pattern variables explained an additional 5% of the variance in partnership satisfaction ($\Delta R^2 = .05$, $\Delta F = 3.98$, $p < .01$). Specifically, action acquiescence ($\beta = .53$, $p < .05$) and its quadratic term ($\beta = -.70$, $p < .01$) were significant. This result indicated an inverted U-shaped relationship between action acquiescence and partnership satisfaction. Thus, Hypothesis 3 was supported. Action simplicity ($\beta = .28$, $p < .01$) was also positively related to partnership satisfaction, supporting Hypothesis 4. On the other hand, the effect of action reciprocity ($\beta = -.10$, $p > .05$) was not significant. Hypothesis 5 was not supported.

DISCUSSION AND CONCLUSION

Alliance outcome is an important area of strategic alliance research. Extant research has emphasized the effect of initial conditions of alliances on their outcomes. The structural line of research postulates that if a cooperative relationship begins with the right mix of strategic and organizational variables, alliance outcomes would become more favorable (e.g., Dacin, Hitt, & Levitas, 1997; Daussage & Garrette, 1995; Luo, 1998; Parkhe, 1993). This approach implies that selecting the right partners and straightening out the goals at the outset determine the success of alliance. It stresses the importance of ex-ante design factors that may affect the extent of opportunistic behavior and the monitoring cost of a cooperative relationship. Consistent with the structural argument, in this study we reaffirmed that both asset specificity and partner reputation were positively related to partnership satisfaction in the architect-contractor partnership.

Above and beyond the effect of the structural attributes of a cooperative relationship, the action pattern approach taken here predicts that the ex-post factors of how the cooperation process unfolded affect alliance outcomes. A central premise of this approach is that the cooperation process can be discerned from its action pattern. In this study, we identified three important aspects of the action pattern and found that two of them were related to partnership satisfaction. Specifically, if both architects and contractors acquiesced more, the architects would be more satisfied with the partnership. However, this holds true only below a threshold level of action acquiescence. Beyond this level, if they acquiesced further, the architects reported less satisfaction. We also found that when both architects and contractors adopted simple actions, the architects would be more satisfied with the partnership.

Action reciprocity, however, was not significant in the regression. One likely reason is that negative reciprocity may exist. Although negative reciprocity may achieve short-term equity and fairness, punishment and negative

incentives will also emerge at the same time. If firms have to act less cooperatively in certain situations, action reciprocity could lead to a spiraling effect of negative actions and reactions (Anderson & Pearson, 1999).

An increased understanding of the cooperation process in terms of the action pattern has both important theoretical and practical implications. Informed by an action approach, our study identifies three important aspects of the action pattern. We incorporate the perspective of process into variance research by investigating the regularity and recurrence of actions within a bracketed segment of the cooperation process (Peterson, 1998). In doing so, we attempt to answer the call to include process into research on cooperative outcomes (Ariño, de la Torre, & Ring, 2001; Spekman, Forbes, Isabella, & MacAvoy, 1998) and also to address the difficulties in combining process and variance theories in organization studies (Mohr, 1982).

Our results showed that the cooperation process, as represented by the action pattern variables, explained a unique variance of partnership satisfaction above and beyond structural variables. This provides an interesting counterpoint to Doz's (1996) contention that process mediates the effect of partner relationships on alliance outcomes. Or perhaps, process has both mediating and independent effects on alliance outcomes at the same time.

It is also likely that initial structural factors of an alliance may affect the way partners interact. We ran several additional regression analyses to examine the possible relationship between structural and process factors (results not shown) and found a significant relationship of partner reputation with action pattern variables. Cooperating with a highly reputed partner was associated with higher action acquiescence and action simplicity and lower action reciprocity. Additional research to examine the structure-process relationships and performance implication is warranted.

This study has certain practical managerial implications. It enhances the idea that bringing two perfectly matched partners together into an alliance is only a first step in building up a successful partnership. The cooperation process still needs to be carefully managed. Conversely, it also suggests that alliances with less favorable initial conditions such as poor partner reputation or low asset specificity could improve their chance of success through careful and deliberately planned interactions between partners. A close monitoring of the various action patterns may improve satisfaction between partners.

Several limitations of this study should be borne in mind when interpreting the results. First, our research design is a cross-sectional survey and causality cannot be ascertained. Second, we have gathered self-reported information from one side of the cooperating dyads in a similar manner to that of other similar studies. Continuing reliance on evidence provided by a single informant raises doubts of consistent response bias on measured concepts

and their artifactual covariations cumulating in the literature (Avolio et al., 1991; Podsakoff & Organ, 1986). To address these concerns, future research should seriously consider collecting data from both sides of the alliance using multiple informants (such as the studies of Doz, Olk, & Ring, 2000; Fryxell, Dooley, & Vryza, 2002). Third, we have restricted our study to a nonequity partnership in a collectivist cultural context. Generalizability of our model may be called into question if we attempt to generalize the results beyond our sample. Individualistic societies may have different mechanisms for trust formation (Doney, Cannon, & Mullen, 1998) and less reliance on business relationships than Hong Kong. Replication of our findings in other settings is thus needed.

Despite these limitations, this study highlights the importance of action patterns during the cooperation process. It adds to the sparse research on interaction between partners in interfirm cooperation. Instead of examining the sequence of actions as in previous research, we focus on the pattern of these actions. To the extent that action patterns discern the cooperation process, it merits further research effort to consolidate the approach. More theoretical development and empirical investigation along these lines may advance our understanding of interfirm cooperation. To apply the measures in this study for further research, we suggest refining the scales to measure actions of both sides of the partnership. Multiple informants from both sides are also called for. Additional action pattern variables, particularly those that involve response time and overall action sequence that were not examined in this article, deserve further investigation.

APPENDIX
Measures and Items of Variables

<i>Measures and Items</i>	<i>Reliability</i>	<i>Source</i>
Partnership satisfaction ^a	.92	Adapted from Saxton (1997)
1. Overall, our firm is satisfied with this project.		
2. The goals of the project have been achieved.		
3. This project has added to the long-term success of our firm.		
4. This project has been completed to high professional standards.		
5. Our firm is proud of this project.		
Asset specificity ^a	.60	Adapted from Ganesan (1994)
1. Both firms have changed their ways of working to suit the specific needs of each other.		
2. Both firms have invested significantly in time and effort for this project.		
3. If we decided to stop working with each other, both firms would be wasting a lot of knowledge concerning each other's methods of operation.		
Partner reputation ^a	.77	Adapted from Ganesan (1994)
1. This contractor has a reputation for being honest.		
2. This contractor has a reputation for being concerned about the architects.		
3. This contractor has a bad reputation in the market. ^b		
4. Most architects would like to deal with this contractor.		
When problems occurred on this project, how often did you and the main contractor . . . ^c		
1. cooperate with each other (e.g., fully comply with the requests of the other partner, even at the expense of your own short-term interests)?		

<p>2. compromise with each other (e.g., conform to the minimum request of the other partner while bargaining for concession)?</p> <p>3. avoid each other (e.g., while appearing to fulfill the requests of the other partner, actually did not have the intention of doing so)?</p> <p>4. defy each other (e.g., depart from the requests of the other partner by challenging the partner)?</p> <p>5. manipulate each other (e.g., control the power of the other partner and actively influence the other partner's action)?</p>		
<p>Action acquiescence^c This variable is measured as N_1/N_T, where N_1 = score on item 1; N_T = total score of items 1 to 5.</p>	<p>N/A</p>	<p>New scale</p>
<p>Action simplicity^c This variable is measured as $\Sigma(N_i/N_T)^2$, where N_i/N_T is the score of item i/total score of items 1 to 5.</p>	<p>N/A</p>	<p>New scale</p>
<p>Action reciprocity^c When problems occurred on this project, how often did you and the main contractor . . .</p> <ol style="list-style-type: none"> 1. reciprocate each other (if my partner cooperates, I will cooperate; if my partner defies me, I will defy him)? 2. act and treat each other very differently depending on the situation? 3. repeat the other's actions immediately (act in the same way as the other partner)? 	<p>.64</p>	<p>New scale</p>

a. Responded on a 7-point scale ranging from *strongly disagree* to *strongly agree*.
 b. Reverse-coded item.
 c. Responded on a 7-point scale ranging from *seldom* to *frequently*.

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