

**EFFECTS OF STRUCTURAL CONDITIONS
AND PROCESS CHARACTERISTICS ON ALLIANCE OUTCOME**

Rekha Krishnan

Tilburg University
P.O. Box 90153
5000 LE Tilburg
The Netherlands
Phone +31-13-4668217
Fax +31-13-4668354
E-mail: R.Krishnan@uvt.nl

Niels G. Noorderhaven

Tilburg University
P.O. Box 90153
5000 LE Tilburg
The Netherlands
Phone +31-13-4663186
Fax +31-13-4668354
E-mail : N.G.Noorderhaven@uvt.nl

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ABSTRACT

Prior research on strategic alliances has tended to explain alliance outcomes primarily on the basis of the structural conditions of the alliance, neglecting the influence of characteristics of the interaction processes between partners. Though in recent research the focus is shifting towards process aspects of alliances, as yet, studies undertaking this perspective are not only few and fragmented but also remain distanced from outcome theories. In this paper, building on the “relational quality” approach, we construct a process-outcome model of alliances in which relationship quality, influenced by process characteristics, moderates the relationship between structural conditions and alliance outcomes. Hypotheses derived from the model are tested on data from Indian-foreign alliances. Our findings show that relationship quality is indeed influenced by process characteristics, and that relationship quality has a strong moderating effect on alliance outcomes. These results emphasize on an integral approach-combined influence of structure and process on alliance outcome-to the study of alliances.

Key words: Alliances, Process, Outcome

The past two decades have witnessed a dramatic rise in the use by business firms of alliances of various kinds (Hagedoorn, 1995; Hergert & Morris, 1988; Inkpen, 2001), and, with a time lapse, an increase in the attention paid to this phenomenon by researchers (Child & Faulkner, 1998; Contractor & Lorange, 1988; Harrigan, 1988; Kogut, 1988; Osborn & Hagedoorn, 1997; Yan & Luo, 2001).

Whereas recent criticism of the interfirm alliance literature has identified a number of shortfalls, the most prominent among them in our view is the lack of attention paid to process aspects. Much of the research tries to explain alliance success primarily or solely on the basis of the structuring of the alliance (Yan, 1998; Yan & Zeng, 1999). The underlying premise of these studies seems to be that "choosing the appropriate partner, aligning strategic and economic incentives of the partner firms, and using ownership control are critical determinants of partnership success" (Aulakh, Kotabe & Sahay, 1996: 1006).

Studies adopting this approach to explain alliance outcomes neglect the influence of the alliance management process, and consequently run the risk of rendering a seriously incomplete explanation of alliance success and failure. For example, the joint venture between Dunlop and Pirelli commenced in 1970 with an intent to integrate completely. The enthusiasm triggered by compatible strategies gradually waned as a result of inefficient management of the alliance process. Among other things, Pirelli's inability to meet its new product development target for radial tyres caused Dunlop to lose confidence in Pirelli and this ravaged the quality of the partnership (Yan & Luo, 2001). Failure to efficiently manage the partner interaction process resulted in the ultimate dissolution of the alliance in 1979. Cases like these suggest that researchers who base their explanation of alliance outcomes on structural conditions alone run the risk of arriving at incomplete conclusions. This is reflected in the observation that the results in this line of research are often unclear and sometimes contradictory (Killing, 1983; Anderson and Gatignon, 1986 vs Beamish, 1984; Janger, 1980). Accounting for the subtler, unobservable process characteristics that evolve from partner interaction in explaining alliance outcomes (Kumar & Nti, 1998; Zajac & Olsen, 1993) would yield a fuller meaning to the understanding of the phenomenon of alliances (Parkhe, 1993a).

The above discussion suggests that studies explaining alliance outcomes primarily on the basis of the structuring of the alliance fall short of providing a satisfactory explanation of alliance outcomes. Structural conditions undoubtedly are important, but even if the structural conditions are

favourable, an alliance may go sour if the interaction between the partners fails. Conversely, an alliance with relatively unfavourable structural conditions may be successful if the partners are able to gradually adapt the structure of the alliance to its function. Failing to take these possibilities into account is likely to lead to inconsistent results (Doz 1996; Yan & Zeng, 1999).

A thorough explanation of the alliance phenomenon warrants a comprehensive model that encompasses structural conditions, process characteristics and outcomes of strategic alliances (Gray and Wood, 1991). Though it is encouraging to note that the focus is shifting towards process aspects of alliances, as yet studies taking this perspective are not only few and fragmented (Yan & Zeng, 1999) but also remain distanced from outcome theories (Parkhe, 1993a). Development of a complete theory of alliances will not be possible “until theories of processes evolve substantially beyond their current stage and are effectively merged with theories of outcomes”, Parkhe (1993a: 262). Firstly, our paper is an initial response to Parkhe’s (1993a) call to integrate the “diverse aspects” of inter-firm alliances that “have remained inchoate, as if they were unconnected, rather than being tightly interwoven aspects of the common phenomenon of IJVs” (Parkhe, 1993a: 232). We provide a comprehensive process-outcome model of strategic alliances encompassing structural conditions, process characteristics and outcomes, and formulate a set of hypothesis based on our model that “break down complexity into its essential components and link these components to related variables”(Parkhe, 1993a: 243).

Secondly, at present our understanding of the international alliance process is limited to few in-depth (e.g., Ariño and de la Torre, 1998; Doz, 1996) and conceptual studies (e.g., Kumar & Nti, 1998; Madhok, 1995; Zajac & Olsen, 1993), and very few empirical studies (e.g., Reuer & Ariño, 2001; Reuer, Zollo & Singh, 2002). Our paper intends to contribute to the knowledge of alliance processes by empirically testing the moderating effect of relational quality on the relationship between structural conditions and alliance outcomes. Our model builds on earlier work in the field, both conceptual (e.g., Parkhe, 1993a; Ring & Van de Ven, 1994) and empirical (e.g., Ariño & De la Torre, 1998; Doz, 1996).

Thirdly, our study responds to the dearth of empirical studies on international alliances in emerging economies and a nearly complete absence of studies accounting for the process aspects of international alliances in emerging economies. We test our model on data from Indian-foreign alliances. India is an interesting example of a country that has made the transition from a protected domestic market under an import-substitution policy towards integration in the global economy.

More knowledge of the influence of management processes on international alliance outcomes in India will also help us understand better problems of international collaboration with firms in other Asian countries, as well as with local firms in other parts of the world.

The paper is organized as follows. Firstly, based on the literature on strategic alliances, we identify process characteristics that may be assumed to influence the quality of the relationship between alliance partners. Next, we present a model linking relationship quality, structural conditions, and alliance outcomes. After that we describe the data and methodology, followed by the results. Finally we discuss our findings and draw conclusions.

A PROCESS-OUTCOME MODEL OF STRATEGIC ALLIANCES

As a response to one-sided focus on the effects of structural conditions in much of the existing strategic alliance literature, scholars have begun to address process characteristics. Building on early work by Macneil (1974), Ring and Rands (1989) and Ring and Van de Ven (1992) a new, process-oriented approach has been developed that emphasizes the importance of “relational quality” (Ariño and de la Torre, 1998; Ariño, de la Torre and Ring, 2001a; Ring, 1996, 1997). The gist of this approach is that relational quality, “the extent to which the partners feel comfortable and are willing to rely on trust in dealing with one another” (Ariño, De la Torre and Ring, 2001a: 111) is not only an important variable influencing alliance outcomes, but that it also depends on a number of identifiable factors, some of which can be managed consciously. Relational quality allows partners to rely on trust, but is seen to be broader than trust, it also encompasses, among other things, the compatibility of corporate cultures and the convergence of organizational characteristics (Ariño, De la Torre and Ring, 2001a: 111).

We build on the relational quality approach, but we organize some of the factors differently, for a number of reasons. First of all, it is not clear to what extent relational quality is or is not identical to trust or relies on trust. Although the concept is claimed to be broader than trust, in the description of its effects trust assumes a central position. Relational quality allows partners to use trust as a complement to other governance or control mechanisms, encourages collaboration beyond the scope of the formal agreement, promotes the resolution of conflict, and accommodates essential responses to changes in the environment of the alliance (Ariño, de la Torre and Ring, 2001a: 123).

Although trust is only mentioned explicitly as the first effect of relational quality, the other three effects also seem to hinge vitally on its presence. The use of the concept of trust, rather than that of relational quality, to describe the key characteristics of inter-organizational relations may have to do with the inclination to see trust as a purely interpersonal phenomenon (Ariño, de la Torre and Ring, 2001b). However, there is no a-priori reason not to apply the concept of trust at the organizational level, if trust is defined as a behavioral, rather than a psychic characteristic, and if we recognize that organizations have qualities that transcend those of the individuals within them (Hofstede and Peterson, 2000; Noorderhaven, 1995).

Secondly, in the relational quality approach there is no clear demarcation between the conditions leading to a high relational quality and relational quality as such. Ariño, De la Torre and Ring (2001a: 113) enumerate the “elements” of relational quality, but many of these (like, e.g., prior experiences) appear to be sources of relational quality (or interorganizational trust), rather than characteristics of the relationship. We want to distinguish process characteristics from their effects of the quality of the relationship.

Thirdly, since we want to bridge the gap between the process-oriented approach and studies concentrating on the structural conditions of alliances, we will include these structural conditions in our model. One category of elements of relational quality is also grouped under the heading of “structural conditions”, which are factors influencing only the initial stock of goodwill between the partners.

Our model (see Figure 1) links alliance outcomes to structural conditions, as is usual in alliance research, but adds the moderating effect of process. We distinguish three important aspects of the structural conditions of an alliance, which are often identified in the alliance literature: the governance structure, the corporate distance, and strategies of the partners. These structural conditions will be discussed later in the paper. We begin with discussing alliance outcomes, followed by the interaction process.

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Alliance Outcomes

We believe that alliance outcomes should be viewed through the eyes of the partners. In much of the prior research survival of the alliance has been taken as a measure of success. However, survival is a very imperfect indicator of success as, firstly, an alliance may be successful and still be discontinued (e.g., because it has served its purpose) and, secondly, an alliance may be unsuccessful and not (yet) discontinued (e.g., because the partners still hope to improve things) (cf. Yan & Zeng, 1999). Hence it is better to look directly at the degree of satisfaction of the partners, which can for instance be measured in terms of the alliance meeting the expectations of the individual firms (e.g., Beamish, 1984; Killing, 1983). In a study conducted by Geringer & Herbert (1991), a subjective measure of performance was found to be strongly correlated with a survival-based objective measure. This confirms that alliances evaluated by the partners as satisfactory are more likely to survive than alliances that are seen to perform less satisfactorily. But the subjective measure has the advantage that it can measure the impact of process characteristics in real-time, whereas a survival-based operationalization of alliance success allows only for retrospective analysis.

Interaction Process

In our model, the interaction process moderates the relationship between the structural conditions and alliance outcomes. Partner interaction is seen as affecting both the level of *trust* and the *transparency* in the relationship.

Trust. The concept of trust has received ample attention from various disciplines, and with it diverse interpretations. Of the many definitions used (see, e.g., Sitkin et al., 1998) we adopt a conceptualization of trust that does justice to our contention that trust in the context of interfirm alliances is formed through the interaction process between partners. We conceptualize trust as the expectation that the partner will be reliable, will exhibit predictable behaviour and will act fairly when faced with the possibility for opportunism (Zaheer, McEvily & Perrone, 1998). We contend that, depending on characteristics of the interaction between partners, the strength of this expectation may vary during the course of the relationship.

Trust mitigates fear of opportunistic behaviour and is likely to limit the transaction cost associated with an exchange (Gulati, 1995). Initially an alliance will normally be characterised by fragile trust (Ring, 1996). Ring (1996: 152) defines fragile trust as “a type [of trust] that permits economic actors to deal with each other, but in guarded ways”. The fragile trust that is derived from

the structural conditions will subsequently be influenced by the nature of interactions between the partners as their relationship evolves (Ariño & De la Torre, 1998; Ring, 1996; Zajac & Olsen, 1993). Whether the trust in the relationship will become stronger to the point where it can be characterised as "resilient" trust (Ring, 1996) or whether the fragile trust will further deteriorate depends on process aspects rather than on the structural conditions.

Transparency. Transparency reflects the "openness" (Hamel, 1991:93) of partner behaviour. Though transparency could also mean accessibility with regard to partner resources, our focus here is on behavioural transparency. Behavioural transparency refers to the speed and reliability (Parkhe, 1993b) with which partners open up to each other their actions concerning the alliance. Transparency is seen as an element of relationship quality by Ariño, De la Torre and Ring (2001a). We see transparency as a vitally important factor in the sensemaking and interpretation processes within alliances. Managers in alliances have to bridge the distance in organizational culture (and often also in national culture) between the collaborating firms. Organizational practices (e.g., authority structures and rules and procedures) are socially constructed and need to be interpreted (Daft and MacIntosh 1981), and, hence, can easily be misinterpreted when interpretation takes place across organizational boundaries. Misinterpretation of the partner's behavior can easily lead to deterioration of the alliance. Transparency is highly influenced by the way in which the partners interact. Poor partner interaction will not lead to greater transparency. A higher degree of transparency among partners facilitates better understanding, leading to more positive outcomes.

Our model suggests that the levels of trust and transparency moderate the relationship between structural conditions and alliance outcomes. Below we will formulate hypotheses concerning these effects. But first we will have to ask ourselves the question of how trust and transparency are in turn influenced by the interaction process; otherwise these dimensions of relationship quality could be taken as exogenous variables. Undoubtedly many external and internal factors influence the build-up or breakdown of trust and the increase or decrease in transparency. Here we concentrate on the internal factors, and we focus on the characteristics of the interaction process.

Interaction Process and Relationship Quality

In considering the impact of interaction processes on the build-up of trust, Noorderhaven (1996) argues that the duration, intensity, and riskiness of the partner interaction are important. The

duration of the interaction is important because trust is built up gradually through an iterative mutually reinforcing process (Dyer & Chu, 2000; Murakami & Rohlen, 1992; Ring & Van de Ven, 1992, 1994). Successful interfirm relationships are typically built up in small, specific steps, allowing the partners to learn about each other gradually (Parkhe, 1998). The *intensity* of the interaction process refers to the level of communication, and the degree of whole person involvement (Dyer & Chu, 2000; Noorderhaven, 1996). This in turn depends to a great extent on the partner interface (Doz, 1996). The boundary spanners (Gulati, 1998; Parkhe, 1998) work towards creation of a partner interface conducive to positive partner interaction. They create an environment of trust and enhance transparency. The intensity of the interaction process as discussed in the literature referred to above reflects both the amount of interaction and the spatial characteristics of the interaction processes, viz., how much of the interaction between the partners has the form of face-to-face contacts.

The *riskiness* of the interaction refers to opportunities for a partner to an alliance to behave opportunistically. If a partner has the opportunity to defect, but refrains from doing so, this is a powerful booster of trust (Coleman, 1990; Noorderhaven, 1996). The relevance of riskiness to trust has been widely recognized in prior research (Coleman, 1990; Das & Teng, 1998; Mayer, Davis & Schoorman, 1995; Nooteboom, Berger & Noorderhaven, 1997). Roehl & Truitt (1987) make a comparable point when they state, "stormy open marriages are better". Nicholas Piramal India, an Indian pharmaceutical company's alliance with a British company, Boots Plc bears testimony to this, "we don't export any of their products. We often get offer from distributors saying that they would like us to export strepsils to South Africa, Botswana etc. We say we don't have permits in those countries and forward those distributors to Boots and also mark a copy to Boots. This way Boots would also know what these mean to us. These are meaty offers and we can always feel tempted, but we stick to our word". The fact that the partners do have the possibility to terminate the relationship and in fact explore other opportunities makes sure that the alliance "develops the necessary sophistication and resilience" (Roehl & Truitt, 1987: 88).

On the basis of the above, we expect the process dimension of inter-firm alliances, characterized by duration, riskiness and intensity of partner interaction, to affect relationship quality, characterised by trust and transparency.

Hypothesis 1a: Alliance duration is positively related to trust.

Hypothesis 1b: Higher intensity of interaction between partners is positively related to trust.

Hypothesis 1c: Positive reaction of partners to adverse situations is positively related to trust.

Hypothesis 2a: Alliance duration is positively related to transparency.

Hypothesis 2b: Higher intensity of interaction between partners is positively related to transparency.

Hypothesis 2c: Positive reaction of partners to adverse situations is positively related to transparency.

In view of the perceptual nature of the hypothesized consequences of interaction (trust and transparency), it is important to choose objective measures for the interaction process itself as much as possible. The aspects of interaction processes incorporated in the above hypotheses, especially hypotheses 2a,b and 3a,b have the advantage that they measure relatively objective terms like the frequency and modalities of contact (intensity), the number of years the relationship has been in existence (duration), rather than partner's perceptions of the interaction process itself.

Governance Structure, Trust, Transparency and Outcome

The various dimensions of the set of structural conditions are assumed to affect the evaluation of the performance of the alliance by the partners, but this effect is assumed to be moderated by the degree of trust and transparency. We expect trust and transparency to have parallel effects in many instances (but not always), and, as discussed above, they are also largely produced by the same processes.

With regard to the *governance structure* the point can be made that although partners may try to install sufficient safeguards to counteract opportunistic behaviour (cf. Hamel, Doz & Prahalad, 1989), e.g., in the form of contracts covering as many contingencies as possible, this strategy can easily backfire. Under many conditions a flexible governance structure may be better, because this offers the possibility for the alliance to develop over time. This is crucial, as the knowledge of each other and of the environment will initially be far from perfect. Hence, a too tight and rigid governance structure will function like a straitjacket, impeding later adaptations to the alliance structure. Obviously, the tightness of the governance structure should also be seen in relation to the aim and scope of the alliance. Gulati & Singh (1998) assert that the alliance partners craft their governance structure around anticipated co-ordination costs and expected appropriation

concerns. A rigid governance structure involves stringent contracts with standard operating procedures.

Several authors have constructed scales measuring (aspects of) the rigid-flexible governance continuum, as perceived by managers (see, e.g., John, 1984; Noorderhaven, Nooteboom & Berger, 1998; Provan & Skinner, 1989). However, in order to avoid “perceptual distortion” (Skinner & Guiltman, 1985) in measuring control or governance tightness, as well as to avoid common method bias, it is preferable to use non-perceptual measures of governance tightness. Our definition of governance structure as rigid and flexible is based on the divergence of the actual control from the expected control based on the formal governance structure. The governance structure is regarded to be rigid when the partner holding the formal control in the alliance holds the actual control too. This indicates that the formal arrangements are stringent and that the governance structure is rigid, as decision-making always flows from one partner. The governance structure is regarded to be flexible when formal and actual controls in the alliance do not coincide. This indicates that the formal arrangements are non-stringent and the governance structure is flexible as decision-making shifts between the alliance partners. Our third set of hypotheses pertains to the effect of the flexibility of the governance structure on the evaluated performance of the alliance, moderated by trust and transparency. For reasons described above, we believe that a flexible governance structure better enables the alliance to adapt to unforeseen and changing circumstances, and to reap benefits that were not anticipated at the outset. However, flexible governance structures are also vulnerable to opportunistic exploitation. And the extent to which partners are able to make use of the advantages offered by flexible governance structures depends on how transparent they are to each other. Hence, we propose that flexible governance yields better results if high trust and transparency are produced by the interaction process. But under the opposite conditions it is better to have more rigid governance. Hence the following hypotheses:

Hypothesis 3a: Trust positively moderates the impact of a flexible governance structure on alliance performance.

Hypothesis 3b: Transparency positively moderates the impact of a flexible governance structure on alliance performance.

Corporate Distance, Trust, Transparency and Outcome

Partners in an alliance will have to bridge the differences between their firms stemming from differences in organizational and national culture (Olk, 1997; Park & Ungson, 1997). Taking this phenomenon into account is necessary for a satisfactory view of alliance processes. In some cultures, problems are actively solved by taking deliberate actions, while in other cultures conflicts are accepted as preordained situations and no actions are taken (cf. Moran & Harris, 1982). Hence, it is important that partners understand the behavioural differences between themselves to narrow their corporate distance. Since corporate distance creates ambiguity (Simonin, 1999) leading to conflict and even failure of the alliance (Barkema, Bell & Pennings, 1996; Woodcock & Geringer, 1991), it is important that partners work towards bridging it and facilitate trust generation. A certain corporate distance will always exist, and this can even be seen as a condition for forming a fruitful alliance: only if the partners are different in some way, can they provide important and complementary inputs (Nooteboom, 1999). However, a smaller corporate distance facilitates co-operation and may be assumed to be related to better outcomes, whereas a larger corporate distance may be associated with a higher risk of failure. Corporate distance will undoubtedly not be entirely unrelated to the flexibility of governance, since a smaller corporate distance - in particular if this is the result of previous interactions (cf. Gulati, 1995) - may make it easier for partners to use a flexible governance structure. Large corporate distance is associated with great differences in national culture, as well as in business practices and operational mechanisms of the partners (Simonin, 1999).

Cultural distance has often been calculated using scores on Hofstede's (1980; 1991) well-known indices (e.g., Kogut & Singh, 1988). Simonin (1999) used two questionnaire items to measure cultural distance as perceived by respondents, and two other items to measure perceived organizational distance. In order to avoid common method bias it is preferable, however, to use non-perceptual data for measuring corporate distance, as perceptual data are suggested for measuring performance evaluation, as discussed earlier.

The next set of hypotheses pertains to corporate distance. In all cases, a small initial corporate distance is expected to lead to better outcomes. But trust and transparency moderate the relationship between corporate distance and outcome. If the corporate distance is small at the outset, the trust and transparency produced in the interaction process will make relatively little difference, although even here we expect better results than with low trust and transparency. But the

advantages of trust and transparency resulting from the interaction are strongest, if the initial corporate distance was large. In this situation, we expect substantial performance differences between alliances with an interaction process conducive to the production of trust and transparency and alliances lacking such an interaction process. This expectation is captured in hypotheses 4, 5a and b:

Hypothesis 4: Corporate distance is negatively related to alliance performance.

Hypothesis 5a: Trust positively moderates the impact of corporate distance on alliance performance.

Hypothesis 5b: Transparency positively moderates the impact of corporate distance on alliance performance.

Strategic Interdependence, Trust, Transparency and Outcome

Prior research has emphasized that the strategies of partners in an alliance have an important bearing on performance (Hennart & Zeng, 1997; Hill & Hellriegel, 1994). While some scholars found support for the positive effect of convergent strategies on alliance performance (Stuckey, 1983), others found divergent strategies to have a positive influence on alliance success (Bleeke & Ernst, 1991; Park & Russo, 1996).

We conceptualise strategies in terms of the match in partners' expectation of interdependencies of tasks involved in the alliance. Gulati & Singh (1998) identified the expected interdependence in an alliance on the basis of the underlying value creation logic. They captured the value creation logic of the partners by identifying eight strategic rationales for entering into an alliance from an extensive review of the literature. Based on these strategic rationales, they classified interdependencies between partners in alliances into pooled, sequential and reciprocal in terms of Thompson (1967). A similar typology could be used to measure strategic interdependence. The task complexities and task interdependence are high under reciprocal interdependence and low in pooled interdependence with sequential exhibiting moderate task complexity and interdependence. A match in strategic interdependence exists when, for instance, both partners expect reciprocal interdependence (e.g., when the rationale of partner A is jointly reducing the time needed for innovation and that of partner B is joint development of technology). Both these tasks involve the same level of interdependence and complexity. Since partners expect identical levels of

task interdependency and complexity, their commitment towards the alliance will match. A mismatch in strategies exists when, for instance, one partner expects reciprocal interdependence while the other expects sequential interdependence (e.g., when partner A's rationale is joint development of technology and that of partner B is access to technology). These two tasks involve different levels of interdependence and complexity. While partner A anticipates higher task complexity and hence higher commitment, partner B anticipates moderate task complexity and hence lesser commitment, resulting in potential conflicts due to a mismatch in the commitments of the partners towards the alliance.

For strategic interdependence we expect a differential moderating impact of trust and transparency. Considering the effect of trust-producing interaction processes, we expect little difference between outcomes of alliances for high-trust producing interaction processes and low-trust producing processes when there is a mismatch in strategic interdependence. Even if high trust is produced, the mismatch in strategic interdependence makes it unlikely that the partners will be able to benefit substantially from this trust. If anything, we may assume that the outcomes of these alliances are only marginally better than in the case of low-trust producing alliances. These differences in outcomes under high and low trust conditions become larger if a match in strategic interdependence exists, however. Alliances in which the interaction process produces high trust levels will be much better able to reap the benefits of this match in strategic interdependence than low-trust alliances. This is reflected in Hypothesis 6a.

Hypothesis 6a: Trust positively moderates the impact of a mismatch in strategic interdependence on alliance performance.

Finally, if a mismatch in strategic interdependence exists, transparency-increasing interaction processes will only make this mismatch more obvious, decrease satisfaction and thereby render failure of the alliance more likely. If there is a match in strategic interdependence, increased transparency will not drive the partners apart, but on the contrary may reveal additional areas of mutual benefit, and cause the alliance to prosper. If the interaction process helps little to increase the transparency, the negative outcomes described above for the condition of high transparency and a strategic interdependence mismatch can to a certain extent be avoided, making the alliance fare

somewhat better. But on the other hand, low transparency makes it more difficult to reap the benefits of a match in strategic interdependence.

Hypothesis 6b: Transparency negatively moderates the impact of a mismatch in strategic interdependence on alliance performance.

Summarizing, we expect the duration, intensity and riskiness of the interaction within an inter-firm alliance to have a positive effect on the level of trust and transparency within the relationship. Trust and transparency, in turn, moderate the effects of the structural conditions of the alliance on the partners' satisfaction with performance.

METHODOLOGY

Data

In order to obtain a target population of Indian-foreign strategic alliances for this study we examined Capitaline, a secondary database, and member lists of various international chambers of commerce in India to identify Indian firms engaged in international alliance activity. Selection criteria for this sample included the type of strategic alliances, number of partners, and industries. Since alliances were concentrated in specific industries (Hergert and Morris, 1988; Hladik, 1985), we aimed at manufacturing sector alliances specifically from electrical and electronic equipment, industrial and commercial machinery, machine tools and transportation equipment, chemicals and allied products. We targeted both equity and non-equity international alliances. We chose dyadic alliances, as alliances involving more than two partners would entail process complexities beyond the scope of our study. Moreover, a vast majority of alliances are between two firms (Hergert and Morris, 1988). Accordingly, a sample of 1275 international strategic alliances in India was identified. From the above-mentioned databases managing directors and chief executive officers were identified as potential respondents. Akin to Parkhe (1993) and Simonin (1999) this process was designed to aim at respondents highly knowledgeable about the alliances. The sensitive nature of the questions and also the fact that most international alliances in India are directly dealt with by the top executives demanded that the questionnaire be filled in by the managing directors or chief executive officers.

Data Collection

Questionnaires were designed and the survey was implemented according to Dillman's (2001) Tailored Design Method (TDM). The questionnaires were pretested with university faculty as well as with managing directors of firms with international strategic alliances located in the state of Kerala in India. Announcement cards were sent to the potential respondents inviting them to participate in the mail survey two weeks prior to the mailing of questionnaires. Of the 1275 announcement cards, nearly half returned undelivered. Apparently, many of the alliances had changed their registered addresses or the managing director had changed. The first wave of questionnaires was sent to managing directors and senior executives of 700 international alliances spread over several Indian states, with tea bags attached as incentive (cf., Harzing 1999). This was followed by a second wave of surveys after a 4-week gap. The mail survey was also supplemented with interviews with managing directors of Indian firms with international alliances.

Respondents and Alliance profiles

Of the 700 managing directors and senior executives that received questionnaires, 125 responded, yielding a 18 % response rate. This response rate is high considering the sensitive nature of the questions and the bias of Indian managers against completing questionnaires. All the responses came from individuals directly responsible for the alliances. 80 responses came from chairmen and managing directors of the alliances, 30 responses came from presidents, vice presidents and general managers, and the rest came from full-time directors. Nearly 75% of the respondents were with the firm for more than 5 years and of them almost 25% were with the firm for more than 20 years. The international alliances of Indian firms were spread across 21 countries. Structurally, 43% of the alliances represented in the study were non-equity alliances and the remaining 57% were equity alliances. Of these alliances, 20% of the respondents were in the industrial and commercial machinery industry, 18% in chemicals and allied products and 12% each in the electronics and electrical equipment and transportation equipment industries.

Since all measures were collected using the same survey instrument, the possibility of common method bias was tested using Harman's one factor test (Harman, 1967). The assumption of the test is that if a substantial amount of common method variance exists in the data, a single factor or a general factor that accounts for most of the variance will emerge when all the variables are entered together. A unrotated principal components factor analysis on all the variables revealed 4 factors with Eigenvalues greater than 1.0, that together accounted for 62 percent of the total

variance. Since several factors instead of one single factor were identified and all of them accounted for just 62 percent of the total variance, and since the first factor did not account for the majority of the variance a substantial amount of common method variance does not seem to be present (Podsakoff and Organ, 1986).

To check for *non-response bias* we performed a t-test for difference in means on key variables between a subset of 40 respondents and 355 non-respondents for whom data was available from secondary sources. No significant differences in the means were found for the size of the firms (t value insignificant at $p=0.284$) and age of the local firm (t value insignificant at $p=0.344$).

Variables

Dependent variable

Performance is measured using a 5-item Likert type scale reflecting the extent to which the local partner is satisfied with the performance of the collaboration and the extent to which the local partner perceives the foreign partner to be satisfied with the performance of the collaboration. All the items are adapted from Mjoen & Tallman (1997) and Lin & Germain (1998). With a Cronbach alpha of 0.90, this scale for performance demonstrated high reliability (Nunally, 1978; DeVellis, 1991). In an unrestricted factor analysis, these 5 items loaded onto a single factor with an eigen value of 3.58, and their factor loadings were greater than 0.81 (See Appendix for questionnaire items for selected variables).

Independent variables (structural conditions):

Governance Structure

Governance structure is defined as rigid or flexible based on the divergence of the actual control from the expected (formal) control. An objective measure of control captures the formal control in the alliance. Formal control differentiates alliances based on the presence or absence and extent of equity. Consistent with Gulati & Singh (1998), we have classified alliances with majority equity held by the Indian partner (51% or more) as majority equity alliances, alliances with minority equity held by the Indian partner (less than 51%) as minority equity alliances, and alliances with no equity shared by either partner as non-equity alliances.

We coded formal control as ranging from 1 to 4 with higher values indicating the Indian partner's increasing control over the firm's activities. We gave a score of 1 when the Indian partner held a minority stake in the venture (less than 51%), a score of 2 when both partners held equal

stakes in the venture (50:50), a score of 3 when the Indian partner held a majority stake in the venture (more than 50%), and a score of 4 when the alliance is a non equity one. In this last case we would expect greater control over the alliance's activities resting with the Indian partner, as these alliances are predominantly concerned with technology licensing, with little interference in the Indian firm's activities by the foreign partner. A subjective measure of control captures the actual control in the alliance. Actual control in the alliance is measured on a 5-item Likert type scale reflecting the Indian partner's overall control and the day-to-day control in the alliance. Some of the items are adapted from Mjoen and Tallman (1997). A scale score was obtained from the 5 item scores ranging from 1 to 5, with scores above 3 indicating greater actual control resting with the Indian partner.

Scores on contractual control and actual control were used to obtain the final categorical measure of governance structure based on the divergence of actual control from contractual control. We gave a score of '1' whenever the actual control diverged from the contractual control (e.g., when the Indian partner held a minority stake -score 1- but exercised more actual control -score above 3), indicating a flexible governance structure. We gave a score of '0' whenever the scores on actual control and contractual control converged (e.g., when the Indian partner held a minority stake -score 1- and also exercised less actual control -score below 3).

Strategic interdependence

Strategic interdependence is a categorical variable with the variable taking a value of '1' when both partners have rationales that require the same level of interdependency (e.g., when both expect reciprocal interdependency), in which case the expectation of strategic interdependencies match, and a value of '0' when the partners have rationales that require different levels of interdependencies (e.g., when one expects pooled while the other expects reciprocal interdependency), in which case there is a mismatch in the expectation of strategic interdependencies. However, as in Gulati and Singh (1998), each partner in an alliance was placed in one of the 3 categories of expected interdependencies according to the highest level of interdependence present in their expectations. Thus, we classified an alliance partner with elements of both reciprocal and sequential interdependence as expecting reciprocal interdependence, one with sequential and pooled interdependence as expecting sequential interdependence, and so on. "This coding is consistent with Thompson's notion that the three types of interdependencies can be

arrayed on a scale in which reciprocal interdependence can include elements of sequential and pooled interdependence , and sequentially interdependent situations may also have some pooled elements” (Gulati and Singh, 1998: 798).

Corporate distance

National culture and organizational culture constitute corporate distance. National culture is measured using Kogut and Singh’s (1988) index. Organizational culture is measured using a 2 item scale adapted from Simonin (1999), which had an alpha of 0.81 indicating high reliability, with both items loading on a single factor with an eigen value of 1.68 and factor loadings greater than 0.91. We standardized national culture and organizational culture and obtained the mean of both to arrive at the variable corporate distance.

Moderators:

Trust: Trust is measured on a 4-item Likert type scale capturing the fairness, reliability and predictability dimensions of trust. Some of the items are adapted from Aulakh et al. (1996), and the others from Parkhe (1993). Convergent validity was established as item loadings (λ) were significantly related to the underlying factor with t-values ranging between 7.14 and 7.49 and squared multiple correlations being high, ranging between 0.45 and 0.74 (Byrne, 1998). The model exhibited a high GFI of 0.95 and a standardized RMR of only 0.045. In a well fitting model the standardized RMR would be small, 0.05 or less (Byrne, 1998).

Transparency: Transparency is measured by a 3 item Likert type scale capturing the extent to which the local partner considers the behaviour of its foreign partner to be transparent (Ariño and Doz, 2000; Gulati and Gargiulo, 1999). These items were specifically constructed for this study due to the dearth of prior empirical studies in this area. Convergent validity was established with each item loading (λ) being significantly related to the underlying factor (t-values ranging between 6.40 and 6.44). Squared multiple correlations ranged between 0.46 and 0.65.

Partner interaction

Duration: Duration is measured by an item capturing the number of years the alliance has lasted (Simonin 1999).

Intensity: Intensity of interaction is measured by an 5-item scale objectively capturing the frequency and density of communication as distinguished by Gupta and Govindarajan (1991). However, all the items were specifically developed for this study as no items were developed by these authors. Convergent validity was established with each item loading (λ) being significantly related to the latent construct (t-values ranging from 5.03 to 6.46), and GFI being 0.95 and a standardized RMR of 0.051.

Riskiness: Riskiness is measured by a 3-item Likert type scale capturing the reaction of partners to adverse situations in the alliance (Ariño and de la Torre, 1998). Due to the paucity of empirical research, we developed the items for this construct specifically for this study. Convergent validity was established here as well with each item loading (λ) being significantly related to the latent construct (t-values ranging between 4.5 and 7.1).

Control Variables

Size: We controlled for alliance size as larger alliances may evoke different firm perceptions, behaviors and responses than smaller alliances. We operationalized size by capturing the amount of investment in the alliances. This is a better measure than the number of employees in the alliance, as it might not take the foreign partner's direct involvement into account (a majority of employees in most cases were Indians). Investment in the alliance is a direct measure of size as it involves investment by both partners.

Analysis

We used LISREL to establish convergent and discriminant validities. We performed confirmatory factor analysis using LISREL to bring out the latent variables from the questionnaire items. Reliability tests were conducted with the help of reliability analysis in SPSS 10. We tested our hypotheses using regression analysis in line with previous studies on alliances (e.g., Parkhe, 1993; Zaheer and Venkatraman, 1995 etc.)

Reliability and Validity Tests

All constructs display satisfactory levels of reliability as indicated by the composite reliabilities ranging from 0.78 to 0.90 Nunally (1978) (See Appendix for reliabilities of constructs). Convergent validity, the extent to which maximally different attempts to measure construct agree,

can be judged by looking at the factor loadings. All the multi-item constructs met this criterion with each loading (λ) being significantly related to its underlying factor (t-values greater than 5.03), supporting convergent validity. A series of chi-square difference tests on the factor correlations showed that discriminant validity, the extent to which a construct differs from others, is achieved among all constructs (Byrne, 1998). It is particularly important that discriminant validity was achieved between the two constructs riskiness and transparency, as these had a high correlation. We constrained the estimated correlation parameter between riskiness and transparency to 1.0 and then performed a chi-square difference test on the values obtained for the constrained ($\chi^2 = 76.56$, $df = 8$, $p < 0.000$) and unconstrained models ($\chi^2 = 11.53$, $df = 7$, $P < 0.12$). The resulting significant difference in chi-square ($\Delta\chi^2 = 65.03$, $\Delta df = 1$, $P < 0.000$) indicates that the two constructs are not perfectly correlated and that discriminant validity is achieved. We also examined the difference between CFI (comparative fit index) and GFI (goodness of fit index) between the constrained and unconstrained model as suggested by Byrne (1998), and the difference was moderately large ($\Delta CFI = .21$, $\Delta GFI = .09$) suggesting the establishment of discriminant validity. Thirdly, we also ran two separate models using LISREL with one model specified as a two-factor structure (riskiness and transparency as two different factors) and the other model specified as a single factor model (items of riskiness and transparency as loading on one factor). The two-factor structure proved to be a better fit to the data than the one-factor structure, again proving discriminant validity. Moreover, discriminant validity was achieved between trust and transparency ($\Delta\chi^2 = 45.66$, $\Delta df = 1$, $P < 0.000$). We did this for other constructs too, with similar results.

Since there is some likelihood that trust and transparency could mediate the relationship between structural conditions and performance, we also checked for mediation effects. We examined the effect of the structural conditions on trust and transparency separately. The model was insignificant for trust ($p < 0.172$) and transparency ($p < 0.102$). Had the model been significant it would have meant that trust and transparency were mediators as well (i.e., structural conditions influence performance through trust and transparency). The insignificance of the model indicates that process characteristics act as moderators and not as mediators between structural conditions and outcome.

RESULTS

Table 1 reports means, standard deviations and correlations for all variables. Results of OLS regression are presented in tables 2 and 3.

Insert Table 1, 2 and 3 about here

Partner Interaction, Trust and Transparency

Hypothesis 1a,b and c predicted that the partner interaction dimensions characterized by duration, intensity and riskiness would be positively related to trust. Table 2 reports the results. Comparison of models 1 and 2 indicate that partner interaction dimensions explain 33 percent variance in trust. Model 2 surfaced with significant predictions for trust ($p < 0.001$). *Hypothesis 1a is supported*. Duration has a marginal significant effect on trust ($p < 0.1$). However, Hypothesis 1b is not supported. Unlike the prediction, intensity of interaction does not have a significant effect on trust. The *results support hypothesis 1c*. Riskiness, as indicated by the positive reaction of partners to adverse occurring in the relationship has a highly significant effect on trust ($p < 0.001$).

Hypothesis 2a,b and c predicted a significant effect of the partner dimensions of duration, intensity and riskiness on transparency. Table 3 shows the results of the regression analysis. Model 2 is significant at ($p < 0.001$). Model 2 indicates that the partner interaction dimensions explain 51 percent variance in transparency. The results do not support hypothesis 2a. Duration is not a significant predictor of transparency, contrary to predictions. *Hypothesis 2b has been supported*. Intensity of interaction is significantly related to transparency ($p < 0.05$). *Hypothesis 2c is supported* as well. Riskiness, which is the positive reaction of partners to adverse situations in the partnership has a highly significant effect on transparency.

Structural Conditions, Trust and Performance

Results of the OLS regression are presented in Table 4.

Please insert Table 4 about here.

We tested 4 regression equations for the performance variable. After controlling for size in model 1 we introduced the main variables, governance structure, strategic interdependence and corporate

distance in model 2. Model 2 is significant at ($p < 0.01$) and indicates that the structural conditions explain 11 percent of the variance in performance.

We introduced the moderator trust and the interactions of trust with the structural conditions in the third model. Model 3 shows that the moderator trust and its interactions with the structural conditions explain 26 percent variance in performance and the model is significant at ($p < 0.001$). Hypothesis 3a predicted that governance structure would interact with trust to influence performance, such that alliances with a flexible governance structure would benefit more from high trust than alliances with a tight governance structure. *Hypothesis 3a is supported*. Model 3 shows a marginal significant effect of the interaction term ($p < 0.1$), indicating that high trust positively moderates the relationship between flexible governance structure and performance.

Hypothesis 4 predicted a negative effect of corporate distance on performance. The *results support hypothesis 4*. Model 2 indicates that corporate distance has a significant negative effect on performance ($p < 0.01$). Corporate distance has a significant negative effect on performance in the presence of interaction effects as well. Hypothesis 5a predicted that corporate distance would interact with trust to influence performance such that, alliance partners with a large corporate distance between them would benefit more from the high trust resulting from the interaction process than alliance partners with a small corporate distance between them. The results fail to lend support to hypothesis 5a indicating that trust fails to moderate the relationship between corporate distance and performance. However, the interaction has a positive sign in the model, consistent with hypothesis 5a.

Hypothesis 6a predicted that strategic interdependence would interact with trust to influence performance such that, alliances in which the expectation of interdependencies match would benefit more from the high trust and alliances in which there is a mismatch in expectation of interdependencies would marginally benefit from the high trust produced by the interaction process. *Hypothesis 6a is supported*. Model 3 shows that the interaction between strategic interdependence and trust is significant ($p < 0.05$), indicating that trust carries out a marginal positive moderation of a mismatch of strategic interdependence on trust.

Structural Conditions, Transparency and Performance

Results of OLS regression are presented in table 4. We introduced the moderator transparency and the interactions of transparency with the structural conditions in the fourth model. Model 4 shows that the moderator trust and its interactions with the structural conditions explain 34 percent

variance in performance and the model is significant at ($p < 0.001$). Hypothesis 3b predicted that governance structure would interact with transparency to influence performance such that, alliances with a flexible governance structure would benefit more from the high transparency produced by the interaction process. *Hypothesis 3b is supported.* Model 4 shows that the interaction between governance structure and trust is significant ($p < 0.01$), indicating that high transparency positively moderates the relation between flexible governance structure and performance.

Hypothesis 5c predicted that corporate distance would interact with transparency to influence performance such that, alliance partners with a large corporate distance between them would benefit more from the high transparency resulting from the interaction process than alliance partners with a small corporate distance between them. *Hypothesis 5b is supported.* Model 4 reports that the interaction between corporate distance and transparency is significant ($p < 0.1$), pointing out that high transparency positively moderates the relation between corporate distance and performance.

Hypothesis 6b predicted that strategic interdependence would interact with transparency to influence performance such that, alliances in which there is a mismatch in expectation of interdependencies would lose as a result of a high transparency that would expose the mismatch existing in the alliance to the partners. The results do not lend support to hypothesis 6b, indicating that transparency does not moderate the relationship between corporate distance and performance. However, the interaction has a negative sign in the model, consistent with hypothesis 6b.

DISCUSSION, IMPLICATIONS AND FUTURE DIRECTIONS

The purpose of this study was to build a comprehensive model incorporating structural conditions, process characteristics and alliance outcome and based on the model to examine the moderation effect of process characteristics in linking structural conditions to outcome. The study also aimed to determine how trust and transparency were in turn influenced by the partner interaction process. The results indicated that process characteristics play an important role in determining alliance outcome by the way trust and transparency significantly moderated the relationship between structural conditions and performance. This effect was substantial, the moderator trust and its interaction terms with structural conditions explained 26% of the variance in performance and the moderator transparency and its interaction terms with structural conditions explained 34% of the variance in the performance in our sample. Moreover, the partner interaction dimensions, duration,

intensity and riskiness explained 33% of variance in trust and 51% of variance in transparency. On the whole, these findings indicate that contrary to prior research's emphasis on the influence of structural conditions on performance (Yan and Zeng, 1999; Doz, 1996), process elements play an important role in determining international alliance performance and, as a result, are vital to our understanding of the alliance phenomenon.

Contributions

The principal contributions of our research are threefold; theoretical development of a process outcome model that integrates diverse facets of international alliances-structural conditions, process characteristics and alliance outcome- that have so far remained unconnected, and finding empirical support for the model's predictions, thereby being one of the few studies (e.g., Reuer, Zollo and Singh, 2002) that empirically examine the influence of process in alliances, and being the first such empirical study to use data from an emerging economy (i.e., India). The results of this study lead to novel insights into the role of the process characteristics in linking structural conditions to alliance outcome, and suggest that inter-organizational co-operation is complex, with process characteristics moderating the effect of individual structural conditions on alliance performance in various ways, and the process characteristics in turn being influenced by partner interaction dimensions.

As reflected in the results in table 2 and 3 the partner interaction dimensions influence trust and transparency diversely. While riskiness has a strong influence on both trust and transparency, alliance duration and intensity of partner interaction has diverse influences on trust and transparency. Duration has a significant influence on trust but is not significantly related to transparency. Intensity of interaction has a significant influence on transparency but not on trust. A possible explanation could be that though trust and transparency are process elements, they are different in nature, and that the differences are reflected in the way they are influenced by the dimensions of partner interaction. Positive reactions of partners to adverse situations bring partners closer together with regard to trust, and also expose the behaviour of the partners towards each other with respect to transparency (Arino and de la Torre, 1998). Alliance duration, though necessary for partners to develop trust in each other does not appear to be sufficient for them to become transparent. Moreover, alliance duration has only a weak significant influence on trust too. This shows that the uneventful passing of time alone does not foster trust and transparency (Dabbs and Ruback, 1987). Intensity of partner interaction opens up partner behaviour and thereby enhances transparency, but intensity of interaction is not as strong as riskiness in fostering partner

trust. Partners need a demonstration of faith in the form of assistance during times of need, rather than merely intense interaction.

The strong support for the positive moderation of trust as well as transparency on the influence of flexible governance on performance add to our understanding of how in the presence of high trust and transparency, a tight governance structure could function as a strait jacket offering no leeway. A flexible governance structure allows partners to realise benefits not anticipated at the outset especially in the presence of trust and transparency. The moderation effect of transparency on the relationship between corporate distance and performance is supported while the moderation effect of trust on this relationship is not supported. A possible explanation for this discrepancy could be the low effect size (f^2) (below 0.02), given the low sample size (Cohen 1975; Aiken and West, 1991). This explanation becomes more convincing as demonstrated by the expected positive sign in the interaction between corporate distance and performance. This result enhances our understanding of the importance of these soft behavioural variables (trust and transparency) in reducing corporate distance induced by differences in national and organizational cultures. This is very evident from the significant negative effect of corporate distance on performance. With higher trust and transparency, the cultural differences between partners narrow down, which positively influences alliance performance.

The marginally positive moderation effect of trust on the relationship between strategic interdependence and performance is supported while the negative moderation effect of transparency on this relationship is not supported. Here too a plausible explanation for this discrepancy could be the low effect size (f^2 below 0.02), due to low sample size (Cohen, 1975; Aiken and West, 1991), given that the moderation effect of transparency follows the expected negative sign. A match in the expectation of interdependencies between partners leads partners to expect identical interdependencies and complexities in alliance tasks thereby enabling a match in their commitment towards the alliance. When interdependencies do not match partners cannot make use of the higher trust, hence the marginal moderation effect of trust. However, a mismatch in strategic interdependencies coupled with high transparency will only make the mismatch more obvious thereby hampering partners' satisfaction with performance. These results provide additional insights into the partner interdependencies, task complexities and the resulting commitment to an alliance and the role of trust and transparency in the presence of such differences in commitment towards the alliance.

Thus, successful alliances depend heavily on two important building blocks. First, enhancing trust and transparency through a committed partner interaction process (Hypotheses 1a-c, 2a-c). Second, realising the differing influences of the structural conditions in the presence of trust and transparency, like possibilities of narrowing cultural differences in the presence of trust and transparency (Hypotheses 5a,b); reaping the benefits of a flexible governance structure in the presence of high trust and transparency (Hypotheses 4a, b); and being beware of the harmful consequences of a mismatch in strategic interdependencies in the presence of high transparency (Hypothesis 6b). Though we do not find support for hypothesis 6b, we do find a negative sign of the co-efficient in the expected direction.

Limitations and Suggestions for Future Research

Our study's limitations indicate a number of additional opportunities for research on alliance processes. First, our study focuses on the international alliances of firms in a single country, India. We gather both partners' perspective on the alliance from the Indian partner. Geringer and Hebert (1991:252, 256) found a significant positive correlation between the parent's satisfaction with the alliance's performance and the perceptions of the other partner of this parent's satisfaction with the alliance's performance. However, it would be valuable to gain both partners' perspectives on the alliance. Gathering such information could be very challenging especially with 21 countries, like in our sample.

Second, though the structural conditions we considered in our study are those most often mentioned in the alliance literature, there could be other variables that our study omitted. Also with the process variables our study could have omitted some variables, e.g., pertaining to the decision making process in the alliance. Future research could study the process dimensions alone taking into account variables like the decision making processes in the alliance.

Third, our study also has a methodological limitation, in that we largely rely on data collected through cross section surveys. Though we supplemented the survey with field interviews, the interviews were not sufficiently in-depth to yield complementary insights. We welcome future research that adopts a case study approach. Alternatively, a sample of firms collected from a field survey could be tracked over a period of time. The longitudinal data collected this way could be analysed to examine the pattern of change of the process elements and their moderating effect on alliance outcomes over time. Yet another possibility would be to bridge the methodology gap by

bringing the two complementary research methods (survey and case studies) under one study. Bresman, Birkinshaw & Nobel (1999) have used this approach to identify the factors that facilitate knowledge transfer and the patterns of international knowledge transfer in cases of international acquisitions.

Conclusion

A key idea of process and outcome theories developed in our paper- strongly corroborated by our evidence- was that a thorough understanding of the alliance phenomenon that does not yield itself to inconclusive results warrants a comprehensive framework that integrates structural conditions, process dimensions and outcomes of strategic alliances. The implication, both from a research and managerial perspective, is that the influence of alliance structure and process on alliance outcome should be studied simultaneously rather than in isolation (cf. Parkhe, 1993; Gray and Wood, 1991). Our study examined the influence of partner interaction dimensions on trust and transparency, and the moderating effect of these two process characteristics on the relationship between structural conditions and outcome. We hope that our study may serve as a foundation for future longitudinal studies that adopt an integral approach -combined influence of structure and process on alliance outcome- to the study of alliances.

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FIGURE 1
Process-Outcome Model of Interfirm Alliances

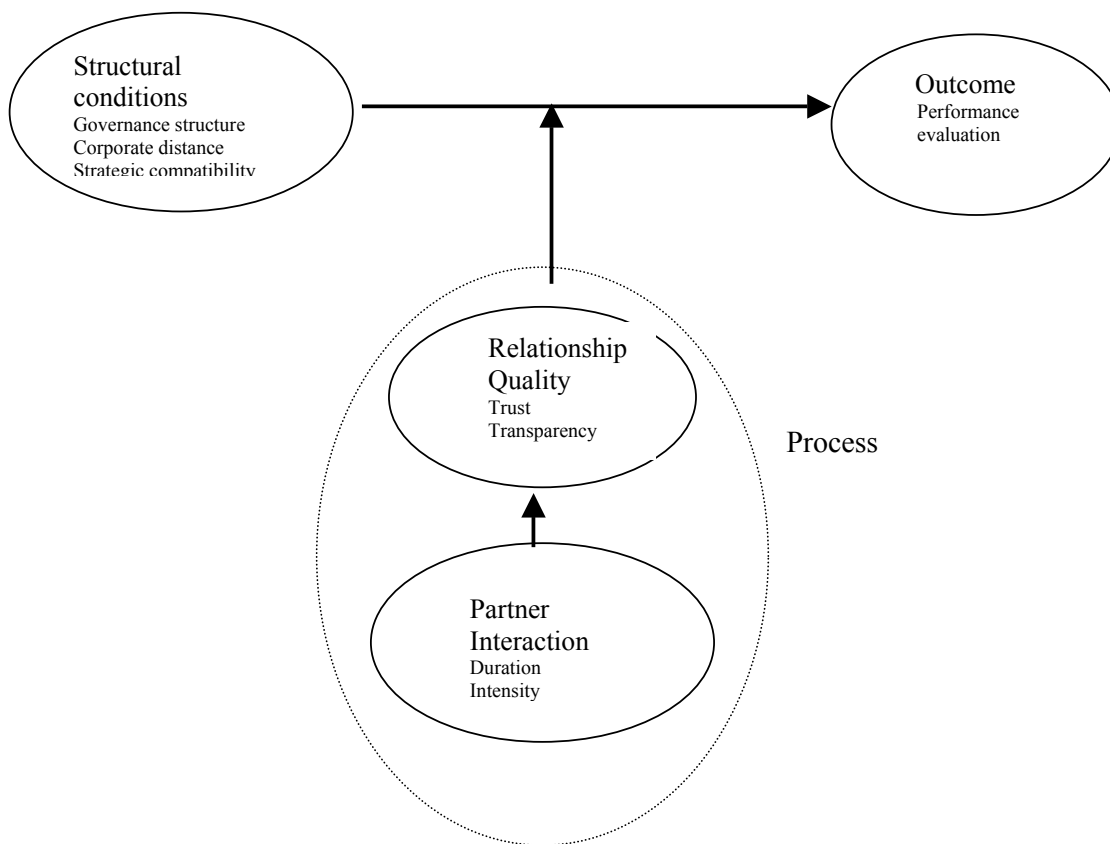


Table 1

| Means, Std Deviations, and Correlation Coefficients of Dependent and Independent Variables^a | | | | | | | | | | | |
|---|-------|------|------|-----|-------|------|------|-----|-----|------|-----|
| Variables | Mean | S.D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Performance | 3.77 | 0.78 | | | | | | | | | |
| Size | 1.42 | 0.95 | .17 | | | | | | | | |
| Governance Structure | 0.42 | 0.49 | .11 | .05 | | | | | | | |
| Strategic Interdepend | 0.28 | 0.45 | -.03 | .09 | .02 | | | | | | |
| Corporate Distance | 0.003 | 0.72 | -.28 | .03 | -.002 | .04 | | | | | |
| Trust | 3.74 | 0.76 | .52 | .15 | .03 | .06 | -.18 | | | | |
| Transparency | 3.66 | 0.74 | .59 | .24 | .09 | .08 | -.17 | .57 | | | |
| Duration | 12.14 | 9.35 | .18 | .15 | -.14 | -.05 | -.06 | .17 | .02 | | |
| Intensity | 2.48 | 0.78 | .33 | .26 | .34 | .09 | .01 | .23 | .45 | -.11 | |
| Riskiness | 3.74 | 0.69 | .54 | .08 | .15 | .04 | -.16 | .57 | .66 | .04 | .39 |

^aN=125. Correlations with absolute value greater than .17 are significant at the .05 level

Table 2

| OLS Regression Results: Trust as Dependent Variable^a | | |
|--|---------|-----------|
| Variables | Model 1 | Model 2 |
| Size | 0.14 | 0.09 |
| Duration | | 0.14+ |
| Intensity | | -0.03 |
| Riskiness | | 0.55*** |
| F | 2.420 | 13.681*** |
| R ² | 0.021 | 0.33 |

^aN=125. Values for independent variables are standardized estimates.

+ P<0.100

* P<0.050

** P<0.010

*** P<0.001

Table 3

| OLS Regression Results: Transparency as Dependent Variable^a | | |
|---|---------|-----------|
| Variables | Model 1 | Model 2 |
| Size | 0.23* | 0.15 |
| Duration | | -0.03 |
| Intensity | | 0.15* |
| Riskiness | | 0.61*** |
| F | 6.546* | 29.304*** |
| R ² | 0.054 | 0.51 |

^aN=125. Values for independent variables are standardized estimates.

+ P<0.100

* P<0.050

** P<0.010

*** P<0.001

Table 4

| OLS Regression Results: Performance as Dependent Variable^a | | | | |
|--|---------|---------|---------|----------|
| Variables | Model 1 | Model 2 | Model 3 | Model 4 |
| Size | 0.17+ | 0.17+ | 0.14+ | 0.03 |
| Governance Structure | | 0.08 | 0.11 | 0.04 |
| Strategic Interdependence | | -0.05 | -0.08 | -0.09 |
| Corporate Distance | | -0.27** | -0.18* | -0.17* |
| Trust | | | 0.22* | |
| Governance Structure x Trust | | | 0.19+ | |
| Strategic Interdependence x Trust | | | 0.18* | |
| Corporate Distance x Trust | | | 0.09 | |
| Transparency | | | | 0.34** |
| Governance Structure x Transparency | | | | 0.29** |
| Strategic Interdependence x Transparency | | | | -0.02 |
| Corporate Distance x Transparency | | | | 0.14+ |
| F | 3.31+ | 3.52** | 7.98*** | 11.09*** |
| R ² | 0.03 | 0.11 | 0.37 | 0.45 |

^aN=125. Values for independent variables are standardized estimates.

+ P<0.100

* P<0.050

** P<0.010

*** P<0.001

APPENDIX (Questionnaire Items)

Performance: ($\alpha=0.90$) (5 point Likert type scales ranging from ‘strongly agree’ to ‘strongly disagree’).

- The objectives for which the collaboration was established are being met.
- Our firm is satisfied with the financial performance of the collaboration.
- Our foreign partner firm seems to be satisfied with the financial performance of the collaboration.
- Our firm is satisfied with the overall performance of the collaboration.
- Our foreign partner firm seems to be satisfied with the overall performance of the collaboration.

Trust. ($\alpha =0.85$) (5 point Likert type scales ranging from ‘strongly agree’ to ‘strongly disagree’).

- Sometimes our foreign partner changes facts slightly in order to get what they want.(R)
- Our foreign partner has promised to do things without actually doing them later.(R)
- Our firm is generally doubtful of the information provided to us by our foreign partner.(R)
- Our foreign partner firm is generally doubtful of the information we provide them.(R)

Transparency. ($\alpha =0.78$) (5 point Likert type scales ranging from ‘strongly agree’ to ‘strongly disagree’).

- Our foreign partner firm has provided relevant information whenever we asked them for it.
- We are promptly notified by our foreign partner whenever any major change occurs at their firm.
- We get clear information about the plans of our foreign partner concerning the collaboration well in advance.

Duration

- Year in which the alliance was formed _____

Intensity ($\alpha = 0.81$)

- How often do senior managers from your firm communicate with their counterparts in the foreign partner firm? (1=daily; 5= once a month or less)
- How often do senior and middle managers in your company make business trips to your foreign partner firm? (1=twice a month or more; 5= once a year or less).
- How often do senior and middle managers from your foreign partner firm visit your firm? (1=twice a month or more; 5= once a year or less).
- How many managers from your company have regular contacts with your foreign partner? (1= only 1; 2= 2 or 3; 3= more than 3).
- How many managers from your foreign partner have regular contacts with your firm? (1= only 1; 2= 2 or 3; 3= more than 3).

Riskiness. ($\alpha =0.79$) (5 point Likert type scales ranging from ‘strongly agree’ to ‘strongly disagree’).

- Our firm and our foreign partner firm try our best to work things out when a problem arises.
- Our foreign partner has never taken advantage of us even when it had the opportunity to do so.
- Our foreign partner has generously come up with assistance (technical, financial etc.) when the need arose.