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**DETERMINING INTERNATIONAL STRATEGIC ALLIANCE PER-
FORMANCE**

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ABSTRACT

This paper considers the relationship between subjective measures of international alliance performance and a set of variables, which may act as predictors of success before the alliance is formed (pre-alliance formation factors), and a set of variables which emerge during the operation of the alliance (post-alliance formation factors). The empirical study, based on a web-survey, investigates a sample of Danish partner firms engaged in 48 equity joint ventures and 70 non-equity joint ventures with international partners. The results show a significant relationship between alliance performance and partner reputation preceding alliance formation as well as strong relationships between collaborative know-how, trust, and protectiveness and alliance performance during the operation of the alliance.

Keywords: International strategic alliance, Performance, alliance formation

INTRODUCTION

International strategic alliances are a rapidly growing organizational form attesting to the growing importance of conducting business across institutional and national borders. The dramatic growth of international joint ventures between firms is fundamentally reshaping the nature of international business. As market complexity is growing, inter-firm collaboration has become a crucial component of the pursuit of international competitive advantage. Yet such international collaborative arrangements are very complex to manage successfully, partly because of the difficulty of matching the goals and aspirations of autonomous organizations, headquartered in two or more countries. Often, it seems, the good intentions and rational motives behind these alliances are not congruent with the strategic direction of either firm on its own, let alone the strategic direction of both in unison. Consequently, IJVs are frequently plagued with high degrees of instability and poor performance (Parkhe, 1993).

Research on strategic collaboration between firms has received increasing attention in the literature during the last two decades, reflecting the increasing frequency and importance of strategic alliances in business practice. Two main streams, in terms of focus, in this literature can be identified; one stream is mainly concerned with examining the underlying conditions favoring alliance formation (motivation for alliance formation and contractual, or structural, structures used in these alliances) (Harrigan, 1985; Contractor & Lorange, 1988; Hennart, 1988; Williamson, 1991), the other stream is occupied with investigating alliance outcomes and the impact of alliances on the partner firms (Kogut, 1989; Blodgett, 1992; Dussage & Garette, 1995; Doz, 1996). Rarely have the two streams been combined in order to investigate the underlying factors that promote (or impede) successful outcomes in international strategic alliances (Saxton, 1997)¹. This study aims at combining elements from these two streams of research in an attempt to gain a more complete understanding of the determining factors of international alliance performance.

The paper is organized as follows: The following section provides a review of the relevant literature on determinants of performance in international strategic alliances and develops a set of research hypotheses. Data collection and method is discussed in the third section. The fourth section presents results and the fifth discusses the findings. The final section addresses limitations of the study and offers avenues for future research.

¹ For an exception, see Glaister & Buckley, 1999.

INTERNATIONAL STRATEGIC ALLIANCE PERFORMANCE

Measures of Alliance Performance

The debate in the literature on alliance outcome has predominantly been focusing on outcome as a result of either (1) conditions surrounding the formation (e.g. Kogut, 1988a; Park & Ungson, 1997) or (2) collaborative processes and partner interaction (e.g. Ring & Van de Ven, 1994; Larsson *et al.*, 1998). Many of the early empirical studies concerning performance in international alliances relied on a variety of financial and objective indicators, such as profitability, growth and cost position (Tomlinson, 1970; Lecraw, 1983), survival (Killing, 1983; Geringer, 1990), duration (Harrigan, 1986; Kogut, 1988b), instability of ownership (Gomes-Casseres, 1987), and re-negotiation of the alliance contract (Blodgett, 1992). Other scholars link not only duration and performance, but also include the underlying motives behind the alliance formation. For instance, Porter and Fuller (1986) implicitly link the time horizon of an alliance to the motives behind its formation:

‘Coalitions involving access to knowledge or ability are the most likely to dissolve as the party gaining access acquires its own internal skills through the coalition. Coalitions designed to gain the benefits of scale or learning in performing an activity have a more enduring purpose. If they dissolve, they will tend to dissolve into merger or into an arm’s-length transaction. The stability of risk-reducing coalitions depends on the sources of risk they seek to control. Coalitions hedging against the risk of a single exogenous event will tend to dissolve, while coalitions involving an ongoing risk (e.g., exploration risk for oil) will be more durable (p. 329).’

Similarly, Anderson and Weitz (1989) propose a model in which “perceived continuity of relationship” is a dependent variable, determined in part by trust, reputation for fair play (i.e. the absence of perceived opportunism), and communication between the parties. According to Anderson and Weitz (1989), a convergence of the latter variables promotes long-term relationships, which in turn facilitates the attainment of the alliance motives of flexibility, scale economies, efficiency, and low overhead. Although implicitly linking motivation for alliance formation to performance outcome, the primary focus of these studies is on the relationship between repeated interaction and motives for alliance formation and duration and survival of the alliance is seen as a prerequisite for success. However, international strategic alliances may not be intended to fulfill standard financial objectives such as profit generation, but may instead be formed to fulfill a range of motives, such as enhancing parent learning (Kogut, 1988), improving strategic positioning of the

parent firms (Contractor and Lorange, 1988), or gaining legitimacy within the larger social environment (DiMaggio and Powell, 1983). Hence, the extent to which an international alliance has achieved its aims may not be adequately reflected by financial and objective measures. In fact, as argued by Geringer and Hebert (1991), despite poor financial results, liquidation, or instability, an international alliance may have met or exceeded the parents' objectives and so be considered successful by one or all of the parents. By the same token, an international alliance may be viewed as unsuccessful despite good financial results or continued duration and survival. As suggested by Anderson (1990), perhaps parents need to recognize that most international alliances should be evaluated more subjectively over a longer period of time than is usually the case. By utilizing strictly formal, financial measures of performance, managers run the risk of terminating the alliance before it has reached its full potential. This has led several researchers to turn to subjective, perceptual measures of a parent's satisfaction with alliance performance in an effort to provide information regarding the extent to which the alliance has achieved its overall objectives (see for example Killing, 1983; Beamish, 1985).

Hence, in light of this controversy it is hardly surprising that the operationalization of international alliance performance has proved difficult, with no consensus on the appropriate definition and measure of this concept (Geringer & Hebert, 1991; Parkhe, 1993; Glaister & Buckley, 1999).

Determinants of Alliance Performance

Alliance performance is a complex, systems-level concept that becomes relevant only when its component parts are thoroughly understood down to the operational level. Multiple factors determine the performance outcome of international strategic alliances, ranging from the nature of the industry and institutional environment within which the alliance operates to the quality and commitment of the alliance management. Since inter-organizational collaboration, especially across national borders, is path-dependent and continuously changing over time, it is conceptually important to distinguish between factors contributing to performance at the outset of an international strategic alliance and factors determining the ongoing development of performance in the relationship. Consequently, the following discussion of the determinants of performance in international strategic alliances is separated into two categories: *pre-alliance formation factors* and *post-alliance formation factors* pertaining to different stages during the relationship develop-

ment. *Pre-alliance formation factors* refer to variables pertaining to the time before the alliance is formed, in particular prior experience with partner, the reputation of the partner, and the perceived learning potential. Once the alliance is formed and operating, *post-alliance formation factors*, such as collaborative know-how, trust, protectiveness, and cultural distance are hypothesized to determine the performance of the alliance. While the individual importance of most of these variables has long been recognized in the strategic alliance literature, their simultaneous effects on international alliance performance have thus far been ignored. Figure 1 on the next page shows the conceptual model discussed in detail below.

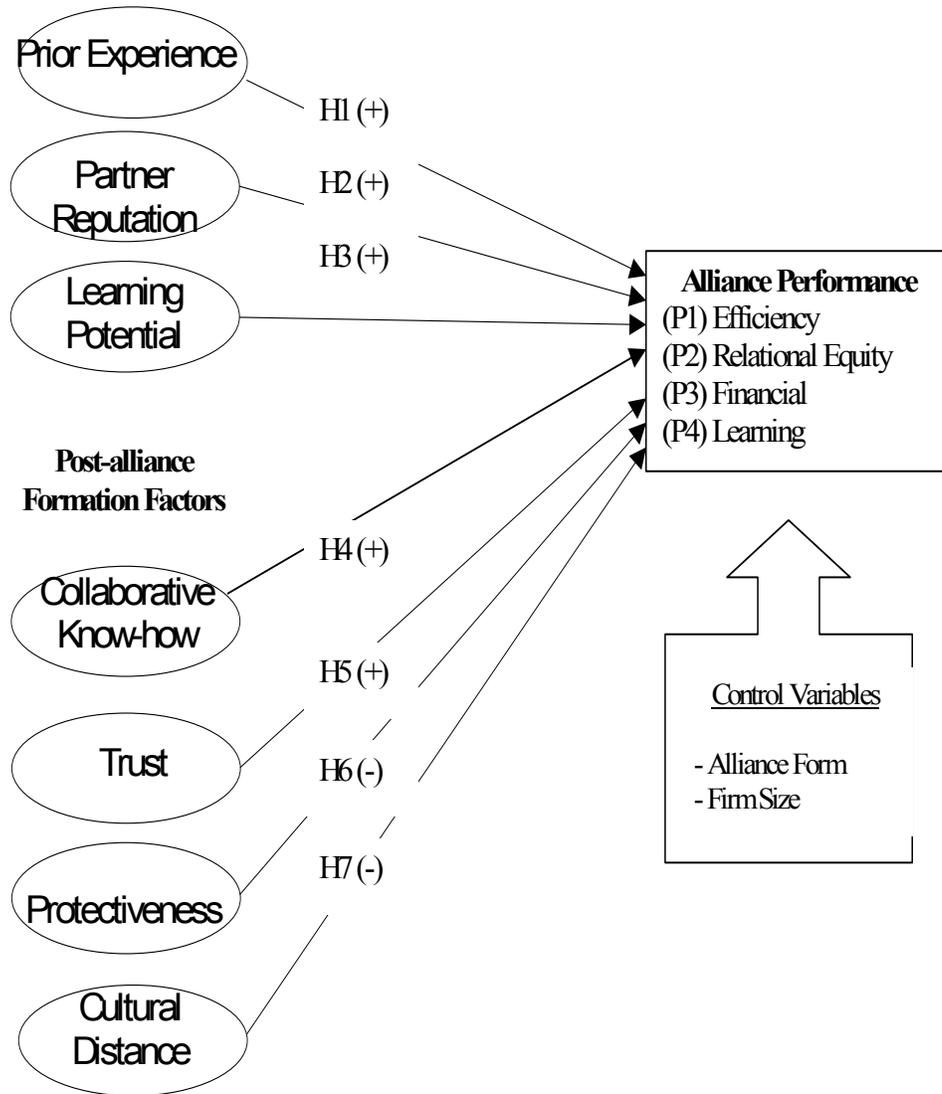
Pre-Alliance Formation Factors

1. Prior Experience with Partner

According to transaction cost economics (TCE), in a world without transaction costs all activities would be carried out as exchanges between units, and it is due to the failure of markets to allow for many exchanges without prohibitively high transaction costs that firms come to exist (Williamson, 1985, 1991). In addition to concerns about the emergence of firms as a response to transaction costs, TCE also deals with the choice of organizational form and how this may vary according to the specific types of exchange activities encompassed. Alliances blend elements of the two extremes of market and hierarchy. Following this, it seems logical that firms would enter such collaborative arrangements when the transaction costs associated with an exchange are intermediate and not high enough to justify vertical integration (Williamson, 1985). Hence, the application of TCE to the formation and management of international strategic alliances seems obvious. Recently, however, researchers have been critical of TCE's treatment of each transaction between firms as an independent event (Ring & Van de Ven, 1992). This assumption is particularly inappropriate in situations where firms repeatedly enter into relationships of transactions with each other, since as the length of the interaction between partners increases, the economic and informational transactions become increasingly embedded within the social relations of the partners, which helps establish

**Pre-alliance
Formation Factors**

Figure 1: Conceptual Model



trust and deter opportunism (Granovetter, 1985). The desire and willingness to expend resources in the development of long-term relationships is closely linked to a firm's prior experiences with that partner and the extent to which positive or negative expectancies have been fulfilled (Larson, 1992). Experience earned from prior engagement serves as evidence to justify subsequent risky steps beyond the accumulated evidence (Das and Teng, 1998). That is, faced with a situation in which one can be taken advantage of, a natural response is to restrict one's transactions to those who have shown themselves to

be trustworthy. Hence, a benefit of prior affiliation is that it allows the partner firms to know each other better thus facilitating a greater understanding of the respective capabilities and resources they are seeking to access and combine (Saxton, 1997). In addition, prior relationships indicate a history of repeated interaction, which may lead to relational advantages and stability. Thus, from a game-theoretic perspective, giving incumbents an advantage in the next round serves as a signal to the partner that the focal firm is playing a long-run “repeated game” (Fudenberg & Levine, 1998).

Moreover, successful previous cooperation between the partners leads to the development of skills and routines that are specific to the relationship. These *relationship-specific* assets include knowledge about the strategy, structure, and operation of the partner organization as well as familiarity with its executives and managers. In international strategic alliances, where the likelihood of failure due to dissimilarities is high, this source of information about cultural (both organizational and national) characteristics of the partner firm can save valuable time and agony in the early states of alliance formation. In addition, it seems easier to strengthen personal ties that are already in place than to start anew. Hence, prior experience with a partner may increase the likelihood of predicting accurately expected behavior of the partner and thus reduce the potential for conflict. Consequently, one would expect prior experience with a partner to be positively related to international alliance performance:

Hypothesis 1: Prior experience with a partner is positively related to alliance performance.

2. Partner Reputation

Reputation refers, in this study, to the knowledge held by individuals about the potential partner in terms of this partner’s behavior in prior network relationships in addition to more traditional attributes of reputation, such as innovativeness, quality of management, employee talent, financial soundness, use of corporate assets, social responsibility, quality of product/services etc. Hence, the concept of reputation is closely related to Mayer *et al.*’s (1995) concept of integrity, since among the biggest concerns of firms entering into alliances is the predictability of their partner’s behavior. In lack of prior experience with a particular partner, the next logical step is to rely on the reputation of that firm, which is a direct consequence of prior relational behavior (Granovetter, 1985). Research suggests that most firms are embedded in a social network of prior alliances through which they

are connected with one another either directly or indirectly (Kogut *et al.*, 1993). The concept of structural embeddedness focuses on the informational role of the position an organization occupies in the overall structure of the network (Gulati, 1998; Uzzi, 1996). Thus, the type of network in which a firm is embedded defines the opportunities potentially available; its relative position in this structure and the types of interfirm ties it maintains defines its access to those opportunities (Uzzi, 1996). Within such a dense social network, reputational considerations play an important role in a firm's potential for future alliances, because these social affiliations determine the firm's perceived status and serve as a source of legitimacy. This is especially true for firms entering new markets or industries or collaborating across organizational and national boundaries, where affiliation with a known firm might signal quality and trustworthiness and thereby serve as a foundation for a favorable evaluation by a potential partner. Furthermore, a firm's reputation can influence the perception of an entire industry. IBM serves as an example, since IBM has a reputation for dominating whatever business it enters (through commitment of resources), even if it arrives late. Thus, IBM's involvement in life sciences is both a statement about the importance of life sciences research and an indication that more innovation is on the horizon. Hence, for a company looking for a partner to provide IT infrastructure to their life science applications, IBM may be perceived favorably due to its reputation as being credible and committed as a partner. By the same token, IBM seeks to partner with application providers of high quality and standard (measured as financial stability and a solid development team and based largely on reputation) to ensure a high-quality solution. Hence, firms like IBM, for whom strategic alliances (both national and international) is a natural part of their business, actively manage their reputation through, among many other things, targeted corporate and brand communication activities and assessment of corporate collaborative image across channels of ISAs. The establishment of foreign trade councils by many countries to support international trade, which help firms obtain valuable information about potential foreign partner firms, serves as a source of reputational information. For instance, whereas the business license of a focal firm can provide information about its legal capacity, registered capital, and business scope, foreign trade councils can usually provide invaluable reputational information regarding local (consumer) perceptions of the focal firm, its competitive position, and its relationship to local authorities.

A firm with a reputation of being honest, fair, and trustworthy gives one the first piece of evidence to take some initial risk (Barney and Hansen, 1994). Alternatively, once a firm has acquired a reputation for not being trustworthy in collaborative relationships or in general, future partners will perceive this firm as a greater liability in terms of inter-firm collaboration. Hence, following Burt and Knez's (1996) argument, I argue that particularly the historical trustworthiness of parties in previous interaction with others is important, and that it is the social context (e.g. networks) that makes reputational effects possible. Therefore, locating a partner with a good reputation seems to be an early indicator of successful collaboration.

Hypothesis 2: A favorable reputation is positively related to alliance performance.

3. Learning potential

As alliances increasingly become a fact of life in the business environment, exploiting the learning potential of alliances will become more important. By bringing together different firms with unique skills and capabilities, alliances can create powerful learning opportunities. However, without active management of the learning process and an understanding of the nature of alliance knowledge, many of these opportunities will remain unexploited. The acquisition of new organizational knowledge is increasingly becoming a managerial priority. As the global competitive environment continues to intensify, this priority takes on new significance. New knowledge provides the basis for organizational renewal and sustainable competitive advantage. In various studies, knowledge acquisition has been linked with operational performance as well as with the performance of specific organizational tasks (e.g. Epple *et al.*, 1991; Doz, 1996). In bringing together firms with different skills and knowledge bases, alliances create unique learning opportunities for the partner firms. By definition, alliances involve a sharing of resources. In some cases, the shared resources are strictly financial, limiting partner learning opportunities, while in others access to knowledge is more profound. This access can be a powerful source of new knowledge that, in most cases, would not have been possible without the formal structure of an alliance. Partner firms that use this access to knowledge as the basis for learning have the opportunity to acquire knowledge that can be used to enhance partner strategy and performance. Despite the logical notion that alliances create learning opportunities, and although organizations often talk in glowing terms about their alliances'

learning potential, research suggests that learning through alliances is a difficult, frustrating, and often misunderstood process (Inkpen, 1996; Inkpen & Crossan, 1995).

The formation of an alliance represents a strategic initiative that has the potential to create experiences, actions, and strategic choices that provide the basis for learning. However, the formation of the alliance cannot ensure that its learning potential will be realized. Accessibility is not sufficient for effective learning, however, the conscious efforts of management in the formation stage of the alliance to assess the potential for learning by targeting partners with complementary skills and resources improves the likelihood of knowledge development during latter stages of the alliance. Moreover, if the initial motivational intent behind the alliance includes explicit attention to knowledge development and learning and this intent is later manifested in considerable resource commitment to knowledge development and internalization for commercial purposes through absorptive capacity (Cohen & Levinthal, 1990), one would expect a high potential for learning to have a positive impact on alliance performance.

Hypothesis 3: A high learning potential is positively related to alliance performance.

Post-Alliance Formation Factors

4. Collaborative Know-How

Once the alliance has been formed, prior experience at cooperating becomes essential to the management of a diverse portfolio of collaborative ties as well as to accumulate the capability to benefit from the resulting interdependencies (Powell *et al.*, 1996). The importance of collaborative know-how in relation to alliance performance is evidenced by Lei and Slocum (1992), who attribute alliance failure to lack of collaborative experience and understanding. Moreover, Simonin (1997) empirically found support for the emergence of a distinct form of collaborative know-how, which emerges from past experience, and which helps achieve greater benefits in subsequent alliances. As suggested by Simonin (1997) and others, this collaborative know-how affects the ability of firms, engaged in strategic alliances, to understand and adopt proper procedures and mechanisms for knowledge accumulation, transfer, interpretation, and diffusion. For instance, Toyota has developed an infrastructure, including a wide range of organizational routines that facilitates the transfer and diffusion of knowledge within its extended enterprise. Much of Toyota's success is attributed to its ability to learn from- and with its partners (particu-

larly suppliers) and these learning activities are coordinated by two major divisions: purchasing and the Operations Management Consulting Division (OMCD). Key routines that help facilitate learning in the extended enterprise include the establishment of on-site consulting, supplier learning teams and problem-solving teams as well as employee rotation and elaborate systems for performance feedback and process monitoring (Dyer, 2000). Hence, the development of these key collaborative routines from prior collaborative relationships has helped Toyota increase the level of performance of their dyadic relationships by facilitating knowledge transfer and eliminating many of the sources of uncertainty and disruptive noise involved in cooperation. Collaborating across national borders magnifies the complexity of alliance management due to increased uncertainty about market- and partner information. In addition, inter-partner cultural difference, whether at the national, industrial, or organizational level, can potentially hinder effective knowledge transfer and learning in international strategic alliances. Establishment of formalized collaborative routines (for instance in the form of an alliance unit) as well as partnering with a local partner with previous (international) collaborative experience is likely to reduce cross-cultural problems.

Hypothesis 4: Collaborative know-how is positively related to alliance performance.

5. Trust

Trust has been included in numerous relationship studies conducted in both domestic (see Anderson & Weitz, 1989; Morgan & Hunt, 1994) and international (see Johnson *et al.*, 1996; Larson, 1992) settings. Most studies concentrate, however, on two key components of trust; a cognitive component, derived from confidence in the reliability of a partner, and a behavioral component, derived from confidence in the intentions, motivations, honesty, or benevolence of a partner. Despite this attention to trust in alliance literature, the majority of research on trust is anecdotal, with little evidence of economic benefits. One reason for this lack of evidence is the intangible nature of trust, making it hard to define, not to mention quantify and measure. Hence, trust's impact on ISA bottom-line results remains somewhat of a mystery. Consequently, we need to measure performance differently in order to capture the real benefits of trust in international joint ventures.

Trust among partners in alliances is obviously important, as it is in all relationships, however, in the extant literature, trust is treated as a residual term for the complex social-psychological processes necessary for social action to occur (Koza & Lewin, 1998).

Since trust is a social phenomenon, both national culture and institutional arrangements have an impact on trust and the perception of trust. Hence, applying a single definition of trust is unlikely to capture the complexity of this concept, which might be the reason why useful measures of trust are lacking in the literature. Recognizing the problems of trust as a useful concept in terms of research, some authors have attempted to develop non-trust explanations for non-opportunistic behavior in strategic alliances, arguing that trust is nothing more than an emergent and epiphenomenal property of successful alliances (Madhok & Tallman, 1998). Despite these difficulties of defining and operationalizing trust, the importance of this factor, as it relates to alliance performance in international strategic alliances, is evident. For any strategic alliance to be formed and function, a minimum of inter-firm trust must exist. In fact, as argued by Arrow (1972: 357): ‘Virtually every commercial transaction conducted has within itself an element of trust’. The literature suggests that one of the most critical factors determining alliance performance is the degree of trust between the partners (Bleeke and Ernst, 1993; Buckley, 1992). Trust has been shown to increase cooperation, improve flexibility, lowering the cost of coordinating activities, and increasing the level of knowledge transfer and potential for learning (Smith *et al.*, 1995; Simonin, 1999). However, according to Sherman (1992: 78), ‘the biggest stumbling block to the success of alliances is the lack of trust’. Moreover, the need for trust seems particularly important for any transaction conducted over a period of time and across organizational and national boundaries, where the level of complexity makes it virtually impossible to monitor in detail all aspects of exchange.

Trust is an important component of IJV performance because it provides for greater adaptability in an IJV, as well as improves knowledge exchange, a key component of organizational learning and IJV success (Dodgson, 1996; Das & Teng, 1997). Since the knowledge being exchanged may be not only tacit but also proprietorial (specific), and as such constitute important elements of a firm’s competence and competitiveness, high levels of trust are positively related to knowledge transfer (Simonin, 1999). Uzzi (1996) reported from his field study that trust acted as the governance mechanisms of embedded relationships and as such facilitated the exchange of especially tacit knowledge related capabilities and information. In other words, trust promotes voluntary, non-obligating exchanges of assets and services between actors. Hence, many researchers (see for instance Park & Ungson, 1997; Das & Teng, 1997) suggest that trust is important because

it reduces the likelihood of opportunistic behavior, facilitates control through a shared-value system, and it tends to increase efficiency and improve performance.

If, as noted by Williamson (1985: 19), “transaction costs are the economic equivalent of friction in physical systems”, then we may conceptualize trust as the behavioral ‘lubricant’ that can improve a system’s (here an alliance’s) operating efficiency. Consequently, a significant outcome of trust is that it facilitates tighter social relationships and hence reduces uncertainty in transactions. In collaboration across organizational and national boundaries, where the level of complexity makes it virtually impossible to monitor in detail all aspects of exchange, trust is even more important. Hence, as the level of trust increases the (perceived) need to monitor diminishes². It follows, then, that trust is an important determinant of alliance performance because it increases a firm’s access to external knowledge and strengthens its ability to- in conjunction with its network partner- create new innovative and efficient ways of combining existing knowledge-related capabilities and resources in order to extract superior rents. Hence:

Hypothesis 5: Trust is positively related to alliance performance.

6. Protectiveness

Transaction cost economics assumes that agents are opportunistic, demonstrating self-interest and guile (Williamson, 1985). Williamson (1985) asserts that opportunism does not pose the same difficulties for transactions within firms as it does for transactions between firms. He provides three reasons: 1) common ownership of assets limits incentives for individuals within firms to be opportunistic, 2) internal organization is able to use authority to direct behavior, and 3) individuals within firms are likely to be better informed about conditions or be better able to monitor behavior than those in different firms.

Hence, the lesson of opportunism, Williamson maintains, is that contracts must recognize conditions, which promote opportunism and provide appropriate safeguards, such that contractual commitments become credible (Williamson, 1993). Strategic collaboration has been advanced - from a traditional Williamson-like transaction cost standpoint – as an intermediate form between market and hierarchy, in order to explain the existence and economic justification of these networks. As mentioned earlier, knowledge exchanged in a collaborative arrangement may be proprietary and thus provide important elements of

² Although this may in turn reduce the cost of knowledge exchange, it may also lower the amount of new knowledge created if it results in some level of complacency due to “overembeddedness”.

a firm's defining competence and competitiveness. Therefore, consistent with the resource-based view of the firm, knowledge protectiveness is often seen as an appropriate safeguard against opportunistic behavior in strategic alliances. Because of inter-partner asymmetry of knowledge demand and supply, it is expected that partner protectiveness and accessibility to its knowledge will be correspondingly asymmetrical. Hence, in general, international alliance partners are likely to be more protective of their knowledge resources when their competitive advantage relies on them. Consequently, in a situation of high competitive overlap between partners (for instance in a horizontal alliance), the firms will strive to restrict knowledge sharing because of the risk of knowledge spillover (Yan & Luo, 2001).

As argued by Doz, Hamel, and Prahalad (1986), the transparency or permeability of the organizational membrane between partners can be regulated through the adoption of strict policies or the development of shielding mechanisms, such as "walling off" (Baughn *et al.*, 1997) proprietary technology. In addition, gatekeepers can be assigned to filter information access and disclosure across organizational boundaries. However, the ability to learn through joint ventures does not simply rest on the firm's internal absorptive capability and willingness to learn; it also depends on the willingness of external sources to cooperate (i.e. minimize protectiveness) (Pisano, 1988). Reciprocity suggests that accessibility to a partner's knowledge depends, to a large degree, upon the extent to which the focal firm is open with its own knowledge to the partner. Protectiveness not only reduces the amount of information exchanged but also leads to uncertainty and distrust. Hence, Simonin (1999) found in his study of knowledge transfer in strategic alliances that protectiveness was positively related to ambiguity, and hence negatively related to knowledge transfer, suggesting that protectiveness acts as a barrier to effective knowledge exchange. This argument is supported by Madhok & Tallman (1998), who argue that safeguarding may hinder learning (performance) in strategic alliances. Lyles and Salk (1996) furthermore suggest that when disruptive to the operation of the alliance, protectiveness will contribute to the escalation of cross-cultural and other conflicts between partners. Protectiveness, then, hinders the effective exchange of knowledge and resources, suggesting that in order for successful collaboration to take place in international strategic alliances, the level of protectiveness should be at its lowest.

Hypothesis 6: Protectiveness is negatively related to alliance performance.

7. Cultural Distance

By their very nature, international strategic alliances are affected by differences in national cultures (Barkema & Vermeulen, 1997; Park & Ungson, 1997). The adverse affect of cultural differences between IJV partners on alliance performance has been suggested by several scholars (see Mjoen and Tallman, 1997). This is consistent with the traditional internationalization perspective, which suggests a negative relationship between national cultural distance and performance. In fact, as argued by Meschi (1997), most problems encountered in international joint ventures can be traced back to cultural factors, be they national or organizational. Lyles and Salk (1996) report that not only conflicts but also cultural misunderstandings rooted in cultural differences can minimize flows of information and learning. Hence, the partner's national or organizational culture has the potential to affect in depth all aspects of the collaboration, including performance.

Empirical findings are inconsistent due to the methodological and theoretical confusion related to the cultural distance construct (see Shenkar, 2001). For instance, Barkema and Vermeulen (1997) found that cultural distance (measured as uncertainty avoidance and long-term orientation) was positively related to IJV survival. This is supported by Barkema *et al.* (1997), who also found aggregate cultural distance to be significantly related to IJV survival. However, Chen and Boggs (1998) found that cultural distance decreased the perceived prospects of IJV continuation in their sample of Chinese IJVs. In addition, Killing (1983) found that joint ventures, where one partner is from a developing country and the other from a developed country, are more likely to lead to decision impasses due to divergent attitudes. Moreover, Beamish (1985) showed that such joint ventures have a higher rate of failure than those formed between two firms both originating in developed countries. Similarly, Mowery *et al.* (1996) found that distance and cultural differences were key obstacles to inter-firm collaboration for U.S. firms engaged in international alliances compared to firms engaged in domestic alliances. Moreover, cultural asymmetry (Hamel, 1991) can sometimes lead to an unbalanced situation between partners in their attempt to decode, transfer, and interpret knowledge.

Despite the mixed results of prior research, empirical as well as anecdotal evidence suggests that cultural distance is an important component of IJV success, although the relationship can be debated. In summary, at least four interrelated negative effects of cultural distance on IJV performance can be identified: (1) cultural distance can lead to communication problems, which may hamper knowledge exchange and inter-

organizational learning, (2) cultural distance can increase managerial conflicts due to misunderstandings, which may lead to additional costs, (3) cultural distance can influence partner firm approaches to conflict resolution, which may adversely impact operations, and (4) cultural distance can erode applicability of certain partner competencies, which may decrease the potential benefits from cooperation (Chen & Boggs, 1998; Park & Ungson, 1997; Parkhe, 1991). Hence, if cultural distance is measured as a multidimensional construct spanning national, organizational and communicative culture, one would expect the following relationship:

Hypothesis 7: Cultural distance is negatively related to alliance performance.

DATA COLLECTION AND METHOD

This study involves Danish partner firms in international strategic alliances with partner firms from a variety of countries from predominantly Europe, North America and Asia. All alliances were still in existence up until 1995, however, the respondents were asked to select the most recent alliance when filling out the survey. Since no publicly available database of Danish firms engaging in international strategic alliances exist, a list of potential firms was generated from the KOB database³. Through a targeted reduction of the initial database, consisting of all Danish firms and organizations, both public and private, I created a target sample base of 1851 private firms⁴. The reduction criteria were based on interviews with firms engaged in international strategic alliances (of which several had fewer than 30 employees), press announcements and research on how the database was constructed. As it was impossible to determine *a priori* which firms engage in international strategic alliances and since my definition of international strategic alliances is broad, I decided to survey a rather large sample of private, Danish firms, with at least 20 employees and a high degree of internationalization (evidenced by activities in more than one foreign country). Consequently, the sample consisted of a large subset of firms for

³ The KOB database is a comprehensive database of all registered Danish firms. The database is updated continuously by Kobmandstandens OplysningsBureau A/S. KOB is Denmark's largest credit agency and data for the database comes from a variety of sources, including TDC (Teledenmark), CVR (Danish state register of firms) and each local municipality. In addition, KOB conducts more than 200,000 interviews per year and co-operate with the largest international credit agencies, who are all approved by Berne Union and members of the ICIA. KOB is a member of FEBIS, BIGNet and is connected with Eurogate. Additional information can be found at www.kob.dk.

⁴ The original reduction resulted in 1859 firms. Although the KOB database is updated regularly I cross-checked with other sources and this led to omission of 8 firms due to miscoding (i.e. out of business or parent firm not Danish).

whom the survey was not relevant. However, the idea behind this sampling method was to capture as many of the firms engaged in international strategic alliances as possible. The first question on the survey was designed to identify membership of the desired sample (i.e. “has your firm engaged in an international strategic alliance – as defined..”). Respondents were encouraged to log on to the web page even if their firm did not engage in an international strategic alliance as defined, since this would help identify the actual size of the sample. If respondents answered “No” to the first question regarding their involvement in an international strategic alliance, they only had to fill out one more question regarding preferred survey methodology for future questionnaires.

While the KOB database provides some financial indicators and industry information, it is less useful when attempting to identify motivational factors and critical sociological dimensions pertaining to the management of these alliances. As the database is merely capturing firm specific information, no indication of alliance activity and/or management is reported. Hence, in order to obtain the requisite level of detail on strategic sociological management issues it was necessary to approach the Danish partners directly. To generate data from a fairly large sample and given time and cost restraints it was decided to administer a web-based survey. Since target firms were engaged in international activities and 91% (Statistics Denmark, 2001) of private Danish enterprises with more than 10 employees are reported to have access to the Internet, the survey was conducted in English through a web page. A preliminary test indicated that language was not a significant barrier to target respondents as well as the convenience and time reducing aspects of a web survey were highly appreciated. Using English as the language of choice on the questionnaire furthermore enables extension of the study to include foreign partner firms.

The questionnaire was compiled from several sources. First of all, a series of semi-structured interviews with key managers of two Danish partner firms were conducted over a period of 4 months in order to identify relevant issues pertaining to the formation and management of international strategic alliances. One firm was at the negotiation stage when the first set of interviews was conducted; the other had been engaged in the alliance for several years, yielding a somewhat broad perspective of relevant issues. Secondly, a comprehensive literature review of strategic alliance and international joint venture literature yielded an impressive list of questions deemed relevant. On the basis of the

semi-structured interviews and the literature review a suitable questionnaire was devised and published on a web page. The questionnaire and web design was tested for language and design issues by MBA and Ph.D. students at a large West Coast (U.S.) research institution and for content by faculty at both a large West Coast (U.S.) research institution and a Danish business school. Finally, the survey was tested on site at the two Danish partner firms. This final stage allowed the researcher to observe the behavior of the respondents as they filled out the web survey and confusions, both in terms of content and design, were eliminated⁵. This final test indicated that the questionnaire was an appropriate instrument to obtain the data required.

Web Survey and Reliability

In order to increase reliability and response rate a formal letter was sent out to the managing director of all firms in the sample. Given the relatively small size of many of the firms in the sample and lack of an identified alliance manager in the database, letters were sent directly to the managing director with the hope that he would forward it to a potential alliance manager. The letter served two functions: to direct the target person to the web site and to ensure authenticity of the survey. The letter furthermore indicated a password (an 8 digit tax filing number that respondents would be familiar with) to be used in accessing the survey thereby limiting access only to members of the sample. Since the respondents were managing directors the length of the questionnaire was held at a minimum and the web page designed to make responding easy and quick (through the use of drop-down menus, radio buttons and check-boxes). Only few questions were open-ended and most responses were assessed using 7-point Likert-type scales. Appendix A illustrates the survey design and scale items.

Prior research indicates that ordinal classification of perception is a more realistic task for respondents than use of interval or ratio measures (Geringer, 1991). Likert-type scales appeared to be more feasible than potentially more precise yet more complex scaling methods, especially given the limited amount of time the respondents were likely to devote to the questionnaire. In order to be able to discriminate and capture some of the complexity in the responses a 7-point, rather than a five-point or three-point, Likert scale was chosen. In order to further increase reliability and reduce survey error, particular at-

⁵ I am indebted to Dr. Don Dillman for his patience and help in the early stages of designing the web sur-

tention was paid to principles for designing the web questionnaire in such a way as to reduce different types of error (see table 1 below for an overview of principles and specification of the type of error each was intended to address).

A total of 1851 letters were sent out in the spring of 2001. In exchange for their participation in the study and to provide motivation and accurate responses, the respondents were assured of anonymity, security in data collection method (i.e. password protection and the host server belonged to the a renowned university) and were promised a summary report of the findings. After two reminders 362 firms had filled out the online survey of which 119 were usable (i.e. they had indicated engagement in an international strategic alliance). There were no missing data since the online survey was designed in a way that did not allow respondents to submit without filling out all relevant questions, however, all questions included a “not in a position to answer” option in order to allow respondents an “out”⁶. The initial response rate was about 20 per cent, however, due to the sampling technique a more realistic response rate can be derived by reducing the sample by the number of non-respondents for whom the survey was not relevant. As I suspected a large proportion of non-respondents did not belong to the sample of firms engaging in international strategic alliances, I called 50 (randomly selected) firms among the non-respondents in order to test this hypothesis and disprove non-response bias. As predicted, 84 per cent of the non-respondents indicated that they did not belong to the sample (i.e. did not engage in international strategic alliances), 10 per cent indicated (indirectly) membership of the sample but would not fill out the survey due to time constraints or company policies.

vey.

⁶ “Not in a position to answer” was coded as missing data during data analyses.

Table 1: Sources of survey error and principles for dealing with these

Type of Error

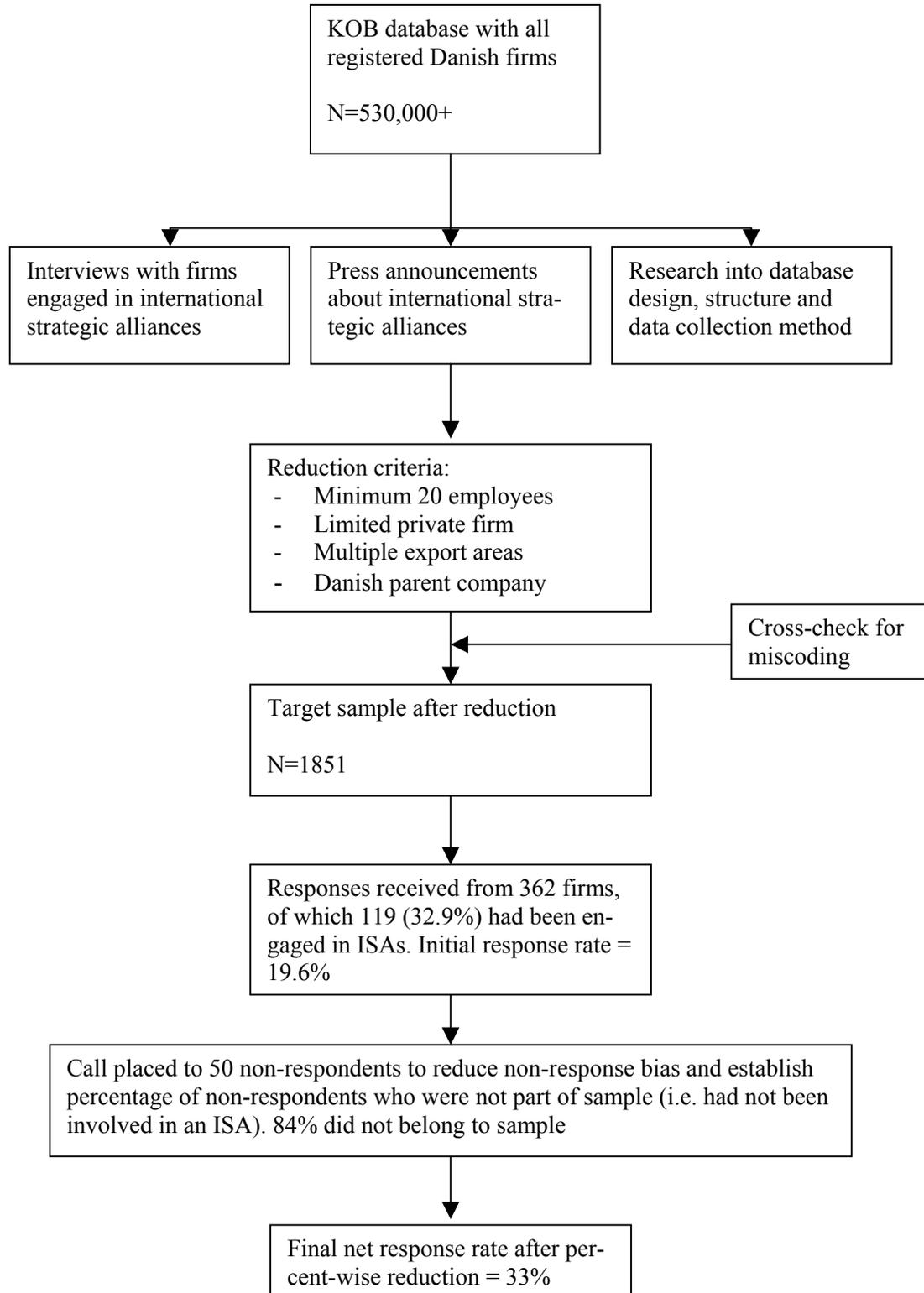
	Sampling	Coverage	Measurement	Non-response
Motivational welcome screen, captivating first question, and use of help (?) buttons for instructions				X
PIN number for limiting access only to people in sample	X	X		
Presenting each question in a conventional format similar to traditional paper design			X	X
Restraining the use of color in order to maintain readability and measurement properties			X	
Ensuring accessibility and view ability for all users: avoid the use of JAVA etc. and restrain screen width to 640 x 480		X	X	X
Carefully design and consider the mode implications of drop-down boxes etc.			X	
Web-survey is one long document, allowing the user to scroll back and forth between questions. Questions appear in logical order.		X	X	X
Restricting number of answer choices to amount that can be displayed on one screen			X	
Restraining the use of question structures that have known measurement problems on paper surveys (e.g. check-all-that-apply and open-ended questions)			X	X

(Source: Adapted and modified from Dillman *et al.*, 1998 and Dillman, 2000.)

Only 2 per cent (1 firm) was engaged in international strategic alliance activity and filled out the survey after the phone call. Hence, the final number of usable responses was 120. Since 84 percent of the firms contacted after the survey had been conducted did not belong to the sample, it seems fair to assume a percent-wise reduction of the leftover non-respondents in order to establish an estimate of the “relevant” sample. After the percent-

wise reduction, the net response rate was 33 per cent (120 of 364). Figure 2 depicts the sampling approach.

Figure 2: Sampling Approach



Non-response Analysis

The main problem with mailed, as well as web-based, surveys is the possibility of bias resulting from low response rates (Fox *et al.*, 1998). In order to test for possible non-response bias, respondents and non-respondents were compared in terms of size and turnover. No statistically significant differences were found. Another method for testing for non-response bias is to compare early respondents to late respondents, since it has been argued that late respondents, especially after repeated follow-ups, are similar in composition to non-respondents (Armstrong & Overton, 1977; Churchill, 1991). Although time consuming, however, it seems more appropriate to contact non-respondents in order to establish the reason for not responding. Hence, following the survey, I contacted 50 randomly selected non-respondents. There was no statistically significant difference between this sample and the other non-respondents or this sample and the respondents in terms of overall composition (size and turnover). Of the 50 firms contacted, 42 (84%) did not engage in international alliance activity in the period specified in the survey. Of the 8 (16%) that did indicate international alliance activity, 50 percent (4) said they had no time to fill out the survey, 37.5 percent (3) would not participate due to company policies and the reminding 12.5 percent (1) filled out the survey after several phone calls. These findings are consistent with the respondents to the survey of which 65.9 per cent (243) indicated no alliance activities as specified in the survey. Furthermore, 5 firms contacted the author and gave “company policies” as reason for not responding, whereas representatives from 2 firms took the time to contact the author and tell him that they did not have time to fill out the survey. The results suggest that non-response bias does not pose a problem for the interpretation and generalizability of the findings of the study. Consequently, the sample can be considered representative of the target population.

Sample Characteristics

The sample is composed of 120 international strategic alliances of which 48 are equity joint ventures (EJVs) and 70 are non-equity joint ventures (NEJVs). Two respondents did not indicate alliance form. The time dimension of the study runs from 1985 to 2001 with 94.2 per cent of the alliances formed in the period 1995-2001. Due to the dyadic nature of the study, where the alliance had more than one foreign partner, the Danish respondent was asked to identify the ‘most important’ foreign partner. As a result, the data set comprises 73 alliances (60.8% of total) with partners in Western Europe, pre-

dominantly with EU members (94.5%); 15 alliances (16.7% of total) with North American, mostly United States, partners; and 10 alliances (8.3% of total) with Asian, primarily Indian and Chinese, partners. The rest of the alliances were formed with partners from Australia, Eastern Europe, the Baltic States or South America.

In terms of degree of international experience, the Danish firms were asked about the year of their first export, first foreign subsidiary and first international strategic alliance. 98 firms (81.7%) responded to the question about export experience with the lowest number of years (reported year subtracted from 2001) being 2 and the highest being 113. The mean and standard deviation for export experience is 23.41 and 18.21. 69 firms (57.5%) reported on year of establishment of first foreign subsidiary with the lowest number of years (reported year subtracted from 2001) being 3 and the highest being 97. The mean and standard deviation for establishment of first foreign subsidiary is 16.81 and 16.75. 91 firms (75.8%) reported on international strategic alliance experience ranging from 0 years to 89 years of experience (reported year subtracted from 2001). The mean and standard deviation for international strategic alliance experience is 10.57 and 12.67. A combined international experience construct was computed in order to show the composite international experience of the sample. The mean and standard deviation of this construct is 23.68 and 19.27. Table 2 shows descriptive statistics of degree of international experience. Of the sample, 88 or 73.3 per cent furthermore indicated that they are currently involved in other international strategic alliances, indicating the presence of a high level of international collaborative experience in the sample.

Table 2: Descriptive statistics of degree of international experience

Level of internationalization	<i>Mean</i>	Standard deviation
Export experience	23.41	18.21
Subsidiary experience	16.81	16.75
International SA experience	10.57	12.67
Combined international experience*	23.68	19.27

* Combined international experience is a construct based on the earliest reported international engagement. Although there is a clear trend of incremental internationalization from export to establishment of subsidiary followed later by engagement in international strategic alliances, some firms engaged in ISAs before engaging in export or establishing foreign subsidiaries.

The industry sectors of the alliances are as follows: low-tech manufacturing (11.7%), high-tech manufacturing (57.5%), wholesale (19.2%), retail (1.7%), consultancy (3.3%) and other services (6.7%). In total, 83 (69.2%) of the alliances are in the manufacturing sector and 37 (30.8%) in the tertiary sector. Table 3 shows distribution of industry sectors.

Table 3: Distribution of the sample firms according to industry sector

Industry	Number of firms	Percent of firms
Manufacturing (high-tech)*	14	11.7
Manufacturing (low-tech)	69	57.5
Wholesale	23	19.2
Retail	2	1.7
Consultancy	4	3.3
Other services	8	6.7
Total	120	100.1

* Based on the level of technical sophistication in output. Included in this category are firms within biotechnology, pharmaceuticals, telecommunications, chemical, computer and electronics industry. All other manufacturing is considered low-tech.

The absolute size of the Danish partner was measured in terms of turnover and number of employees (generated from the KOB database), however, no reliable data on the absolute size of the foreign partner were obtained. Among the Danish partners, the number of employees ranged from 20 (the minimum) to 3500 with a mean of 194.91 and a standard deviation of 426.751. Turnover data only existed for 58 firms and ranged from 9,112 (1000DKK) to 3,966,761 (1000 DKK) with a mean of 599,225.09 (1000DKK) and a standard deviation of 854,248.76. Hence, although the majority of the sample comprises what would normally be termed small and medium sized enterprises (SMEs), in a Danish context the sample is highly representative of the entire sample of registered private Danish firms. Table 4 shows descriptive statistics of absolute size.

Table 4: Descriptive statistics of firm size

	<i>Mean</i>	Standard deviation
Size (# of employees)	194.91	426.75
Size (Turnover in 1000DKK)*	599,225.09	854,248.76

* Data for this measure were available for 58 firms. The most current year (1998-2000) of report was used.

Operationalizing Performance

To cover the complexity of this construct, a principal component analysis with 'varimax' rotation was performed on items tied to financial, operational, and effectiveness dimensions, as recommended by Venkatraman and Ramanujam (1986). The factor analysis produced four factors with eigenvalues greater than one, combined accounting for 85.4 percent of the variance in the data.

The first factor, relational equity, explained 29.4 percent of the variation and had an eigenvalue of 4.26. This factor was based on items capturing the value of the relational exchanges with external constituents through marketing, distribution, and customer service (see Morgan and Hunt, 1994). As the relationships to customers, partners, suppliers, and investors improve so does the performance of the alliance (three items, Cronbach's $\alpha = 0.91$)

The second factor, financial performance, explained an additional 19.3 percent of the variation and had an eigenvalue of 1.72. This factor represented the relationship between financial performance and perception of overall alliance performance. The scale was based on three items from Glaister and Buckley (1999) reporting actual performance versus projected performance in terms of sales, market share, and profitability. This scale had a Cronbach's alpha of 0.79.

The third factor, learning, explained 18.1 percent of the variation and had an eigenvalue of 1.32. This factor captured learning issues of performance measured as level of knowledge transfer and knowledge development resulting from the alliance. This scale had two items with a Cronbach's $\alpha = 0.88$.

The last factor, efficiency, measured the degree to which the alliance had resulted in more effective/efficient procedures and lower operation costs. This factor explained 16.6 percent of the variation and had an eigenvalue of 1.04. Cronbach's alpha for this two-item construct was 0.76.

Although there is much disagreement in the management literature on a valid measure of performance, the multidimensional operationalization proposed here seeks to overcome some of the drawbacks of prior measures of performance that relied heavily on measures like survival and duration of the alliance (cf. Harrigan, 1988). Appendix B shows the actual items.

Measures of Determinants of Performance

The variables discussed in the section, which develops the hypotheses, are summarized in table 5. This table indicates the method of variable measurement, frequencies when appropriate, and the direction of the hypothesized relationships. Prior experience with partner was measured as a dichotomous variable (1 or 0) according to whether or not prior relationships between the two firms existed. Partner reputation refers to the importance of the reputation of the partner when selecting the partner for the alliance. Reputation was measured on an ordinal scale from 1-7 according to importance of reputation when selecting this partner. Learning potential refers to the intent behind the alliance in terms of technology/knowledge development. The focal firm was asked a series of questions regarding the underlying motivation for collaboration and partner choice in terms of access to technology/knowledge in order to assess the learning potential of the partnership. The three-item construct had an alpha value of 0.84.

According to Lei and Slocum (1992), collaborative know-how has an important impact on performance. In this study, collaborative know-how is the extent to which the firm possesses collaborative experience. Following Simonin (1997, 1999) the focal firm was asked to assess itself in terms of level of know-how in various alliance-related tasks, such as identifying and selecting a partner, experience with international partner, and alliance management. Cronbach's alpha for this construct was 0.77. Building on Morgan and Hunt's (1994) findings that trust is key to relational performance, trust, in this study, is measured as a multi-item construct on an ordinal scale from 1-7. The first item asked respondents to evaluate the overall level of trust between partners, whereas the other two items were adopted from Cummings and Bromiley's (1996) instrument to measure inter-organizational trust, measuring confidence in partner to move joint projects forward and the risk of opportunism. Cronbach's α for this construct was 0.78. Protectiveness is distinct from trust in that it measures the degree of internal stickiness (Szulanski, 1996). Following Simonin (1999) this construct was measured as a two-item construct on ordinal scales from 1-7, based on the extent to which the partner firm has restricted the focal firm's access to knowledge/competencies (according to the focal firm) and the extent to which the focal firm has restricted its partner's access to knowledge/competencies (Cronbach's $\alpha = 0.82$). The final construct hypothesized to influence alliance performance in international strategic alliances is cultural distance.

Table 5: Measurement of Variables and Expected Direction of Signs

Variables	Measurement	Expected Sign			
		P1	P2	P3	P4
Dependent variables					
- Relational equity (P1)	Multi-item construct (three items), measured as ordinal scales from 1='Worse than expected' to 3='Better than expected'. See text for details.				
- Financial performance (P2)	Multi-item construct (three items), measured as ordinal scales from 1='Worse than expected' to 3='Better than expected'. See text for details.				
- Learning (P3)	Multi-item construct (two items), measured as ordinal scales from 1='Worse than expected' to 3='Better than expected'. See text for details.				
- Efficiency (P4)	Multi-item construct (two items), measured as ordinal scales from 1='Strongly agree' to 7='Strongly disagree'. Both items were reverse coded in survey. See text for details.				
Independent variables					
<i>Pre-alliance formation</i>					
- Prior experience with partner	Dichotomous variable (1 or 0) measured according to whether prior relationships between the partners existed (n=90) or not (n=29). One firm was not in a position to answer.	+	+	+	+
- Partner reputation	Ordinal scale from 1='Low' to 7='High'.	+	+	+	+
- Learning potential	Multiple-item construct (three items), measured as ordinal scales from 1='Low' to 7='High'. See text for details.	+	+	+	+
<i>Post-alliance formation</i>					
- Collaborative know-how	Multi-item construct (four items), measured as ordinal scales from 1='No know-how to 7='Extensive know-how' and 1='Not at all' to 7='Quite a lot'. See text for details.	+	+	+	+
- Trust	Construct consists of three items, measured as ordinal scales. Level of trust among partners range from 1='Low' to 7='High'. The two other scales range from 1='Strongly agree' to 7='Strongly disagree': both items were reverse coded in survey. See text for details	+	+	+	+
- Protectiveness	Construct consists of two items, measured as ordinal scales from 1='Not at all' to 7='Quite a lot'. See text for details	-	-	-	-
- Cultural distance	Construct consists of three items, measured as ordinal scales from 1='Strongly disagree' to 7='Strongly agree'. See text for details	-	-	-	-
Control variables					
- Alliance form	Dummy variable (1 or 0) measured according to whether the alliance was an equity joint venture (n = 48) or a non-equity joint venture (n = 70). Two firms were not in a position to answer	?	?	?	?
- Size	Raw score of number of employees	?	?	?	?

Based on Mowery *et al.* (1996), Grant (1996), Harrigan (1986), Lyles and Salk (1996), and Simonin (1999), cultural distance was measured as a multi-item construct on ordinal scales from 1-7. Attempting to overcome some of the criticism of this construct (see Shenkar, 2001) the items measure several dimensions of cultural distance; national cultural distance, communicative distance, and organizational cultural distance. Cronbach's alpha for this construct was 0.83. Appendix B shows the actual items.

Control Variables

As indicated above, the sample includes different types of alliances, categorized according to whether or not a separate entity was established. If a separate entity was established, the alliance was coded as an equity joint venture (EJV) and conversely, if no separate entity was established, the alliance was coded as a non-equity joint venture (NEJV). As noted by several authors (Geringer, 1991; Saxton, 1997; Gulati, 1995), the administrative governance form of a collaborative arrangement may testify as to the motives of the partner companies and hence have an impact on expected performance outcome. The underlying assumption is that there is a correlation between alliance form and commitment since EJVs typically involve considerable financial investment and managerial time and hence are assumed to represent a longer term commitment than NEJVs. To control for alliance type, this variable was entered as a dummy, coded 1 for EJVs and 0 for NEJVs. The size of the firm was entered as a raw score of number of employees⁷ in order to control for the possibility that alliance performance may be spuriously higher in large firms. The industry sector of the alliance was also entered as a dummy variable, coded 1 for the manufacturing sector and 0 for the tertiary sector in the initial model, however, the results showed that industry had no impact and hence it was omitted in the final analyses in order to increase statistical power. Removing the effects of the control variables improves confidence that the findings center on the hypothesized relationships, above and beyond the effects of exogenous influences at the firm, alliance, and industry level.

Test Methodology

Pearson correlations were run between each of the hypothesized variables and the four performance variables in order to test for individual relationships. Then, three dis-

tinct multiple regression models⁸ were run to determine which combinations of factors predicted alliance performance. Model 1 included the *pre-alliance formation* variables; Model 2 included the *post-alliance formation* variables, and Model 3 included both sets of variables. Alliance form and company size were treated as control variables in the regression procedure.

RESULTS

Table 6 reports the means, standard deviations, and correlations for all variables in the order hypothesized. As could be expected, the dependent variables are relatively highly correlated, however, the correlation coefficients are 0.5 and below, indicating that the four measures of performance are capturing different aspects of perceived alliance performance.

In general, Relational equity is relatively strongly correlated with Prior experience with partner, Trust, Protectiveness and Cultural distance (each significant correlation has the expected sign). Similarly, there are relative strong significant correlations between the Financial performance measure and Prior experience with partner, Collaborative know-how, Trust, and Protectiveness (each significant correlation has the expected sign). The Learning performance measure correlates with Prior experience with partner, Partner reputation, Collaborative know-how, Trust, and Protectiveness (each significant correlation has the expected sign). Finally, I observe high significant correlations between the Efficiency performance measure and Collaborative know-how, Trust, and Cultural distance (all with the expected sign).

⁷ The number of employees was chosen as indicator of size due to a lack of consistency and missing data in the turnover data set.

⁸ When variables are ordinally scaled, as in this study, such analyses deviate from the regression assumption of interval data (Michel & Hambrick, 1992). However, the work of Michel and Hambrick (1992), Keats and Hitt (1988) and others has demonstrated that the use of ordinal scales does not present a serious problem.

TABLE 6: Means, Standard Deviations and Correlations

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Relational equity	2.35	0.66												
2. Financial performance	2.36	0.74	0.50**											
3. Learning	2.21	0.71	0.39**	0.34**										
4. Efficiency	3.73	1.62	0.23**	0.38**	0.06									
5. Prior experience with partner	0.75	0.44	0.20*	0.16*	0.21*	0.09								
6. Partner reputation	5.23	1.54	0.14	-0.05	0.16*	-0.06	0.19*							
7. Learning potential	3.67	1.65	-0.00	-0.14	0.12	-0.09	-0.13	0.36**						
8. Collaborative know-how	4.46	1.08	0.10	0.21*	0.17*	0.22**	0.04	-0.05	0.12					
9. Trust	4.78	1.41	0.36**	0.44**	0.20*	0.29**	0.20*	-0.06	-0.41**	0.14				
10. Protectiveness	2.67	1.57	-0.35**	-0.47**	-0.40**	0.01	-0.20*	0.07	0.01	0.24**	-0.29**			
11. Cultural distance	3.86	1.78	-0.17*	0.01	-0.12	-0.18*	-0.18*	-0.04	-0.11	-0.37**	-0.15	-0.04		
12. Alliance form ^a	0.41	0.49	0.02	0.17*	-0.20*	-0.14	-0.11	-0.35**	-0.22**	-0.27**	0.06	-0.17*	0.22**	
13. Size ^b	194.91	426.75	-0.01	0.01	-0.12	-0.11	-0.18*	0.07	-0.05	0.20*	0.09	0.15	0.05	-0.05

^a Equity or non-equity; ^b number of employees; * $p < 0.05$, one-tailed test; ** $p < 0.01$, one-tailed test.

Table 7 displays the results of the multiple regression analyses for combinations of the independent variables with alliance performance as the dependent variables. The variance inflation factor (VIF) was used to assess multicollinearity. The VIF scores (all less than 1.7) suggested that while multicollinearity does exist, it will not significantly influence the stability of the parameter estimates (Dielman, 1991). The threat of unequal variances (heteroscedasticity) was checked by the Levene test. The results ($p > .10$ for all predictor variables) showed no pattern of increasing or decreasing residuals, thus suggesting the presence of homoscedasticity in the regression test.

Model 1 shows the effects of the pre-alliance formation variables on alliance performance. The Learning performance measure (P3) is the only dependent variable for which this model is significant at the $p < 0.05$ level ($F = 2.40$, $R^2 = 0.10$). The only variable with a significant coefficient ($p < 0.05$) is Prior experience with partner, which is positively correlated as anticipated.

Model 2 captures the effects of the post-alliance formation variables on alliance performance. For Relational equity as the dependent variable (P1) this model is significant at the $p < 0.01$ level ($F = 5.55$, $R^2 = 0.23$). The coefficients for Trust and Protectiveness are both significant at the $p < 0.01$ level in the predicted direction. For Financial performance as the dependent variable (P2) the model is significant at the $p < 0.01$ level ($F = 14.27$, $R^2 = 0.43$). The coefficients for Collaborative know-how and Trust are significant at the $p < 0.01$ level with the anticipated signs. The coefficients for Protectiveness and Cultural distance are significant at the $p < 0.05$ level with the anticipated direction (negative) for Protectiveness but the opposite (positive) for Cultural distance. For Learning (P3) as the dependent variable the model is significant at the $p < 0.01$ level ($F = 7.51$, $R^2 = 0.29$). The coefficients for Collaborative know-how and Protectiveness are significant at the $p < 0.01$ level with the anticipated signs. For Efficiency (P4) as the dependent variable the model is significant at the $p < 0.01$ level ($F = 3.56$, $R^2 = 0.16$). The coefficient for Trust is significant at the $p < 0.01$ level in the direction anticipated.

Model 3 represents the full model with all independent variables. As such, this model offers a stronger, multivariate test of the hypotheses and allows examination of how the pre- and post alliance formation variables simultaneously affect alliance performance. For Relational equity as the dependent variable (P1) this model is significant at the $p < 0.01$ level ($F = 4.53$, $R^2 = 0.27$, adjusted $R^2 = 0.21$).

TABLE 7: Results of Multiple Regression Analyses^a

Variable	Model 1				Model 2				Model 3			
	Pre-alliance formation				Post-alliance formation				Full Model			
	P1 ^b	P2 ^c	P3 ^d	P4 ^e	P1	P2	P3	P4	P1	P2	P3	P4
Constant	1.79**	2.14**	1.85**	4.75**	2.01**	0.85*	2.10**	1.31	1.29**	0.55	1.39**	1.90
Prior experience with partner	0.19*	0.17*	0.18*	0.06					0.06	0.02	0.06	-0.00
Partner reputation	0.14	0.01	0.05	-0.10					0.17*	0.09	0.11	-0.07
Learning potential	-0.01	-0.09	0.09	-0.09					0.07	-0.02	0.10	-0.02
Collaborative know-how					0.10	0.37**	0.23**	0.16	0.12	0.39**	0.24**	0.15
Trust					0.24**	0.27**	0.06	0.29**	0.27**	0.26**	0.10	0.29**
Protectiveness					-0.31**	-0.45**	-0.45**	0.06	-0.30**	-0.45**	-0.44**	0.06
Cultural distance					-0.11	0.13*	0.00	-0.05	-0.09	0.13*	0.03	-0.05
Alliance form	0.09	0.18*	-0.15	-0.19*	0.00	0.15*	-0.22**	-0.10	0.09	0.19*	-0.16*	-0.13
Size	0.02	0.04	-0.10	-0.10	0.00	-0.02	-0.12	-0.17*	-0.00	-0.03	-0.11	-0.17**
R ²	0.06	0.07	0.10	0.06	0.23	0.43	0.29	0.16	0.27	0.44	0.31	0.17
Adjusted R ²	0.02	0.03	0.06	0.02	0.19	0.40	0.25	0.12	0.21	0.39	0.26	0.10
F	1.45	1.68	2.40*	1.36	5.55**	14.27**	7.51**	3.56**	4.53**	9.56**	5.61**	2.42**

^a Entries represent standardized regression coefficients, N=120; * p<0.05, one-tailed test; ** p<0.01, one-tailed test, ^b P1 refers to Relational Equity, ^c P2 refers to Financial Performance, ^d P3 refers to Learning, ^e P4 refers to Efficiency

Individual coefficients for Partner reputation ($p < 0.05$), Trust ($p < 0.01$) and Protectiveness ($p < 0.01$) are significant in the predicted direction. For Financial performance (P2) as the dependent variable this model is significant at the $p < 0.01$ level ($F = 9.56$, $R^2 = 0.44$, adjusted $R^2 = 0.39$). Individual coefficients for Collaborative know-how ($p < 0.01$), Trust ($p < 0.01$), Protectiveness ($p < 0.01$), and Cultural distance ($p < 0.05$) are significant. All signs of these coefficients are as expected except for Cultural distance. For Learning (P3) as the dependent variable this model is significant at the $p < 0.01$ level ($F = 5.61$, $R^2 = 0.31$, adjusted $R^2 = 0.26$). Individual coefficients for Collaborative know-how and Protectiveness are significant at the $p < 0.01$ level in the direction anticipated. For Efficiency (P4) as the dependent variable this model is significant at the $p < 0.01$ level ($F = 2.42$, $R^2 = 0.17$, adjusted $R^2 = 0.10$). The coefficient for Trust is significant at the $p < 0.01$ level and the sign is as expected.

In terms of model fit, for Relational equity (P1) as the dependent variable, the full model explains an additional 19 percent of the variance in performance over the model, which includes only the pre-alliance formation variables (Model 1). Compared to the model, which includes only the post-alliance formation variables (Model 2), the full model explains an additional 2 percent of the variance. Similar results can be observed for Learning (P3) as the dependent variable, whereas Financial performance (P2) and Efficiency (P4) are best explained in terms of the post-alliance formation variables. Hence, including both pre- and post alliance formation factors seems to explain certain aspects of alliance performance (i.e. Relational equity and Learning) better than a model that incorporates either set of variables alone. On the other hand, Financial performance and Efficiency seems to be explained best by the post-alliance formation variables, although the differences between Model 2 and the full model (Model 3) are tiny.

Overall, the test offers strong support for hypotheses 4 (Collaborative know-how), 5 (Trust) and 6 (Protectiveness). There is weak support for hypothesis 2 (Partner reputation), however, contrary to hypothesis 7, Cultural distance shows a *positive* relationship with performance. The findings do not lend support for hypotheses 1 (Prior experience) and hypothesis 3 (Learning potential).

DISCUSSION

Although many will agree that the performance of international strategic alliances often falls short of expectations, our understanding of the underlying determinants of alliance performance is rather limited. The purpose of this study is to further the understanding of the complexity of performance in interfirm relationships, across national borders, as it relates to different stages in the development process of the alliance. To accomplish this, a set of pre-alliance formation variables; prior experience with partner, partner reputation, and learning potential, and a set of post-alliance formation variables; collaborative know-how, trust, protectiveness, and cultural distance were identified and their individual and simultaneous effect on alliance performance assessed. In order to unlock the “black box” of alliance performance, four different aspects of alliance performance were measured. The most interesting finding for the pre-alliance formation variables was that partner reputation (when selecting the partner) is important for alliance performance measured as relational equity. Not surprisingly, selecting a partner with a favorable reputation has a positive impact on subsequent relational exchanges with customers, suppliers, and distributors as predicted in *hypothesis 2*. The fact that partner reputation has no effect on the other three performance measures suggests that reputation is a complex subjective construct, which direct effect on alliance performance seems to be more psychological in terms of relational marketing than internal performance.

For the post-alliance formation variables, the findings confirm the importance of collaborative know-how, trust and a low level of protectiveness in managing the alliance. Collaborative know-how (*Hypothesis 4*) seems particularly important for financial performance and learning, indicating that experience in alliance management improves the effectiveness of alliance activities. Since efficiency is measured at the focal firm level, it is hardly surprising that collaborative know-how is not significantly affecting this measure. Perhaps more surprising is it that collaborative know-how also does not affect relational equity. Given the importance of relational equity for alliance performance, one would expect firms with alliance experience to better understand the value of relational exchanges. Perhaps the results attest to the difficulty of transforming previous, somewhat tacit, knowledge into useful mechanisms for managing relational equity in subsequent relationships. As predicted, trust (*Hypothesis 5*) and Protectiveness (*Hypothesis 6*) are highly significant across most performance variables. Hence, this study provides support for previous findings of the importance of trust and relationship characteristics in explain-

ing alliance behavior and success (e.g. Saxton, 1997). Moreover, as noted by Simonin (1999) and others, protectiveness has a negative impact on knowledge transfer and alliance performance. This study confirms these findings as protectiveness is negatively correlated with both learning, relational equity, and financial performance. The findings that trust is not affecting learning and protectiveness is not affecting efficiency indicate that trust and protectiveness are distinct constructs.

Cultural distance was predicted to have a negative impact on performance, however, the findings show this construct to have a slight positive effect on financial performance thereby adding to the ongoing debate about the theoretical and methodological properties of this construct as well as the inconsistent empirical findings (for a thorough discussion see Shenkar, 2001). As suggested by Morosini (1998) and others, cultural differences, particularly when measured at different levels, have the potential for synergy as well as disruption. Perhaps controlling for closing distance mechanisms such as cultural attraction (both organizationally and geographically), acculturation and level of internationalization would yield more consistent results. An alternative explanation for the lack of support for the negative relationship between cultural distance and performance could be the fact that about 61 percent (73) of the partner firms in this study were from Western Europe with most of them (69) from other European Union countries. Although the European Union arguably is still far from being culturally integrated, the cultural distance between EU countries can be assumed to be relatively lower in general than the cultural distance between EU countries and non-EU countries, particularly when measured as a composite of national, organizational, and communicative distance. Hence, the political, monetary, and cultural integration of the EU may have suppressed the effect of cultural distance on alliance performance. Finally, it is possible, as empirically shown by Simonin (1999), that other factors, such as collaborative know-how and absorptive capacity, exert moderating effects on the relationship between cultural distance and alliance performance.

The moderate correlations between the measures of performance together with the finding that the list of significant independent variables differ somewhat for each model when varying the dependent variable suggests that the four performance measures are capturing different aspects of alliance performance. The Relational equity measure is a subjective assessment of alliance relationship performance. Conceptually this measure is a proxy for the extent to which the alliance is successful in managing its relational equity

that is its relational exchanges with customers, suppliers, and distributors. The Financial performance measure is a subjective assessment of alliance performance in terms of meeting its financial objectives. Learning, on the other hand, is a measure of the extent to which the alliance has resulted in development of new technology/knowledge, regardless of whether this has been commercialized or not (i.e. the financial impact might not have been recorded yet). The final performance measure, Efficiency, taps into the perception of whether or not the alliance has led to process modifications and operational efficiencies for the focal firm.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Although the use of subjective performance measures provides much needed information regarding the extent to which the IJV has achieved its overall objectives, these types of measures remain subjective and are thus exposed to serious limitations and biases. One such limitation stems from the data collection methodology of using respondents from one partner only. Clearly, collecting data from each parent of the IJV regarding its level of satisfaction with the IJV would enhance the reliability of the subjective measures, however, it also presents a myriad of logistical and cost barriers. Hence, the key issue is whether data collected from one parent represents a reliable measure of IJV performance and even a reliable estimate of the other partner's perception of this performance. On this issue, Geringer (1991) found significant positive correlations between the two parent firms' assessments of the IJV performance. Moreover, Geringer (1991) also found support for his hypothesis regarding a parent's actual reported satisfaction with IJV performance and the perceptions by its partner. In addition, only very few studies have tested the consistency between objective and subjective measures of performance in alliances and although some initial support for this relationship has been shown (cf. Geringer, 1991), more formal testing of the consistency between objective and subjective measures of IJV performance is needed. Hence, reliance on a single parent company respondent as a data source appears to be a justifiable option, particularly when the respondent represents one of the key stakeholders (i.e. the managing director of the parent company with direct responsibility for the IJV).

Another limitation of this study is the generalized definition of international strategic alliances employed and the limited scope (duration) of the alliances. Perhaps an alternative explanation for the failure to support *hypothesis 3* (Learning potential) can be found

in the nature of collaboration included in this study. Parent firms may seek collaborative access to other firms' knowledge but will not necessarily wish to internalize the knowledge in their own operations. For example, a firm primarily involved in distribution activities may form an alliance with a manufacturer to ensure a stable product supply. Through the alliance, the distributor firm gains access to manufacturing skills. If the distributor has no acquisition intent associated with its partner's manufacturing skills, the manufacturing knowledge embodied in the alliance outputs has limited value to the distributor beyond the terms of the collaborative agreement. In addition, the effects of learning potential on alliance performance may simply be longer-term than captured in this study. Since respondents were asked to report on the most recent international strategic alliance in order to secure reliability of memory, all alliances had been formed within the last 5 years. Hence, controlling for type of alliance (horizontal or vertical), the nature of the agreement (motivation) and duration may prove beneficial for future research.

Finally, a note on trust seems appropriate given its apparent importance for determining alliance performance. Trust is a multidimensional construct, including at least affection, cognition, and intended behavior (Cummings & Bromiley, 1996). In this study, inter-organizational trust is based on items measuring affective and cognitive aspects of trust only. Moreover, since trust was not the central objective of the survey used for data collection, only a limited number of questions regarding this construct were included. In addition, measuring interorganizational trust via one respondent in the focal firms only presents obvious limitations in terms of reliability. A fruitful avenue for future research may be to cross-check measures of trust with other individuals within the focal firm as well as with individuals from the partner firm. Another promising future research direction is to investigate the mediating effects of trust, conceptualized at different stages of alliance development, on different alliance performance measures. When a new alliance is formed, there will often be a sense of hesitancy by the partners in terms of sharing knowledge, particularly if the partners have no prior collaborations. Over time, if an alliance survives the critical honeymoon period, deeper ties between the partners becomes the norm. In many cases, ties develop between the managers involved in the alliance. Thus, after a relationship is formed and a pattern of interactions develops, partner firms may decrease their efforts to protect knowledge spillover. Specifically, as trust increases and mutual partner understanding develops, alliance knowledge becomes more accessible and the potential for innovation and learning increases. Hence, treating trust as both a *fea-*

ture and a *determinant* of relationship quality in an attempt to examine the evolution of trust and its impact on international collaborative relationships seems a particular interesting avenue for future research.

Determining international strategic alliance performance is a complex process and remains a challenge to researchers and managers alike. This study has attempted to shed new light on the antecedents of international alliance performance while paying attention to the different stages of ISA development. Although this study employs a multidimensional operationalization of alliance performance, more theorizing and empirical testing is needed in order to fully appreciate the complexity involved in ISA management. Perhaps then we will be able to determine not only why- but also whether IJVs succeed or fail.

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