

INTERFIRM DISTANCES AS CHANNELS FOR EXTERNAL RESOURCES: THE CHOICE BETWEEN ALLIANCES AND MERGERS & ACQUISITIONS

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ABSTRACT

This study develops an external resource perspective to examine firms' strategic choice between alliances and M&A through the lens of organizational distances, namely strategic, technical and structural distances. We find overall support for our arguments through examining alliances and M&A in the U.S. computer industry over a nine-year span.

INTRODUCTION

Considerable research efforts have been focused on the formation of either alliances or acquisitions. Each of them represents a distinct stream of research without much interaction between them. In addition, previous research generally takes a focal firm perspective, which emphasizes a single firm's inclination to form alliances or acquisitions (Wang & Zajac, 2003). Further, although external relationships are found to be conducive to resource acquisition, previous studies have not paid much attention to the conditions and ways for firms to choose a specific governance mode. To address these gaps, we develop an external resource perspective, which extends the relational rent perspective (Dyer & Singh, 1998), and argue from a dyadic angle that two firms can choose different forms of governance mechanisms, depending on their strategic, technical, and structural distances. Strategic distance is the degree of dissimilarity between two firms' business strategies on key resource allocations across primary functional areas (Geletkanycz & Hambrick, 1997). Technical distance refers to the degree of dissimilarity in technology knowledge bases between two firms, while structural distance means the shortest distance between two firms in an interfirm network.

Such organizational distances have distinctive implications for different stages of alliances or M&A including intent to alliance/ M&A formation, partner/target selection, negotiation and formation, cooperation and integration, and performance evaluation. Previous research on the formation of alliances and M&A is fragmented because it only focuses on one or few stages. Yet, decision makers tend to consider many potential issues involved in every stage of alliances or acquisitions before making final strategic decisions. We believe that the decision for either alliances or M&A is constrained not only by the searching activities, but also by the issues at respective stages.

THEORY AND HYPOTHESES

Extant research has provided many examples on how firms can benefit from relational rents (e.g., Dyer & Singh, 1998; Nahapiet & Ghoshal, 1998). Prior studies from such a resource perspective, however, have not differentiated the various rents that can be generated through

external linkages and how the linkage formation choice is affected correspondingly. In this study, we explore the antecedents of either alliances or acquisitions and compare the different mechanisms for resource expansion. We contend that the strategic choice of such a governance mode is not only a consideration of one partner's strategic intentions, but also a simultaneous evaluation of two firms' strategies, resources, and related positions in inter-organizational networks (Koza & Lewin, 1998; Park, Chen, & Gallagher, 2002). The organizational distances between partners will affect firms' propensity to combine and extend resources. In particular, these distances will differentially influence firms' preferences for choosing either alliances or acquisitions as a way for seeking external resources.

Strategic Distance

In the literature, the role of strategic distance on the choice of governance mode is somewhat ambiguous. A large strategic distance is generally conceptualized as an obstacle for achieving synergies in both alliances and M&A (Bleeke & Ernst, 1995). By looking at each stage, we may be able to reveal the distinction between alliances and M&A as follows. First, a large strategic distance discourages the combination of two firms through acquisitions in the partner selection stage. Managers in a target firm may desire for an acquiring firm that has a small strategic distance with it because the target firm can keep its organizational continuity in strategy and maintain stability, especially in the retention of human resources.

Second, a large strategic distance may not be a curse for firms combining resources through alliances in the cooperation stage. Interacting with partners through alliances that have different strategic orientations may bring in new ideas and strategic thinking to a firm, and help it adapt its dominant logic to the new environment (Prahalad & Bettis, 1986).

Last, strategic distances present different performance and risk implications for the post alliance/ M&A stage. Research has suggested that large differences in strategic orientations and management style bring damage to post acquisition performance (Chatterjee et al., 1992), though not to alliance performance. Saxton (1997: 456) also found that the importance of organizational fit as interpreted in the acquisitions literature would be *misapplied* in the context of alliances.

We argue that if two firms are very different in strategy emphases, they can have a more plausible start by having small investments through alliances rather than committing huge resources to unpredictable acquisition outcomes. Therefore,

Hypothesis 1: Firms are more likely to choose alliances over acquisitions with their partners when a large strategic distance exists between them, and a small strategic distance is more likely to result in acquisitions rather than alliances.

Technical Distance

Previous research generally hypothesized a linear relationship between technical distance and either strategic alliances or acquisitions, though the results are mixed. For example, over the continuum from non-equity alliances to outright acquisitions, Colombo (2003) found that the more dissimilar the knowledge base of partner firms, the more likely an alliance will resort to equity form. However, Balakrishnan and Koza (1993) argued that firms tend to use less equity form such as joint ventures rather than the complete buyout such as acquisitions under information asymmetry. Folta (1998) also found that dissimilar partners are more likely to prefer equity collaboration to acquisitions.

We argue that there exists a U-shaped relationship between technical distance and the choice of governance modes. A small or large technical distance may lead to M&A, and a moderate level of technical distances may motivate firms to choose alliances over acquisitions.

A Small technical distance. In the initial stages, a similar knowledge base makes it easier for an acquiring firm to evaluate the true value of the target firms, thereby avoiding a high premium for the target firm. In the cooperation and integration stage, learning opportunities through alliances may be greatly impaired if both firms share a similar technology base. It is also difficult for firms to prevent unintended leakage of knowledge to alliance partners. Furthermore, firms in similar technical domains are more likely to compete in the same market, which hinders close cooperation through strategic alliances. As to the post-acquisition performance, the benefits of joining two similar businesses can be explained by the economies of scale, which is one of the main drivers for acquisitions (Hitt, Ireland, & Harrison, 2001).

A moderate level of technical distance. A moderate-level of technical distances justifies a firm's decision to pursue strategic alliances because of resource complementarity, the increased absorptive capability and learning opportunities in the cooperation stage. After investigating 4,192 strategic technology alliances made during 1980s, Hagedoorn (1993: 378) found that "technology complementarity, reduction of the innovation time-span, and market access and influencing the market structure are the most mentioned motives".

A high level of technical distance. A high level of technical distance may call for acquisitions because of the need for new knowledge and efficiency in the strategic intention stage. Acquisitions are sought because a parent firm sees the need to expand into a given area but it does not have the related capabilities and resources to be effective in the target domain. The knowledge transfer and learning through alliances in the cooperation stage are greatly constrained because of the divergent knowledge bases (Cohen & Levinthal, 1990).

It should be noted that a high level of technical distance may increase the information asymmetry between acquiring and target firms. However, studies on decision making suggest that managers balance threats of loss and opportunities for gain when they make strategic choices (e.g., Shapira, 1995). Steensma and Corley (2001) also pointed out that the boundary decisions of firms are not only constrained by the risks inherent in uncertainties, but also motivated by the opportunities for sustainable advantage. Thus,

Hypothesis 2: There exists a U-shaped relationship between technical distance and governance modes. Firms are more likely to choose M&A over alliances at either a small or a very large technical distance. Alliances will be preferable at a moderate level of technical distance.

Structural Distance

The structure and quality of social ties among firms shape economic actions by creating unique opportunities and access to those opportunities (Uzzi, 1996). We propose that small structural distances in previous alliance network tend to result in acquisitions, while large structural distances are more likely to bring about alliances.

The structural distance between a pair of firms facilitates the strategic decision in a number of ways. First, a small structural distance facilitates complex information flow for acquiring firms in the searching stage. Second, a small structural distance encourages self-enforcement in the integration stage. Third, the redundant information exchanged among closely connected firms in the cooperation stage discourages the formation of learning alliances

(Rindfleisch & Moorman, 2001).

In a word, a large structural distance under indirect ties makes it difficult for a firm to evaluate potential targets, but offers a good mechanism for a firm to learn beyond its existing domain through strategic alliances. Thus,

Hypothesis 3: Firms are more likely to choose alliances over acquisitions with their partners when a large structural distance exists between them.

METHOD

To control for the country difference (Beamish & Banks, 1987) and industry effect (Hennart & Reddy, 1997), we focus on the intra-industry alliances and acquisitions in the computer industry in the United States. Within the computer industry, we study both hardware and software sectors. The unit of analysis for this study is the announcements of new alliances and acquisitions from 1989 to 1997. We identify 273 alliance pairs and 84 M&A pairs between firms in the computer industry of United States.

The bulk of the data on alliances and M&A are retrieved from SDC Platinum database and verified using Lexis-Nexis and the Dow Jones News Retrieval Service. Patent data are collected from United States Patent and Trademark Office (USPTO). Other firm-level data are drawn from Standard & Poor's Compustat, Moody's FIS Online and Lexis-Nexis database.

Measures

Governance modes: There are three possible outcomes based on the dyadic relations: No action, alliance and M&A. We classify these three outcomes into two categories. The first category is a binary decision (1=Action, 0=No action), and the dependent variable for the second category is also a binary decision (1=Acquisition, 0=alliance).

Strategic distance. We adapt the measurement of strategy validated by Finkelstein and Hambrick (1990) to map out the resource allocations in a firm. Six strategic dimensions are used to create a composite measure: 1. advertising intensity; 2. R&D intensity. 3. plant and equipment newness, 4. nonproduction overhead, 5. inventory levels, and 6. financial leverage. We use the following procedures: First, a partner's score on each strategic dimension at year t was standardized, and then we calculate the absolute difference between two firms on each dimension at the same year. To create a single, composite indicator of strategic distance, we sum together all six-difference measures by assuming an equal weight across different dimensions.

Technical distance. Since our sample firms are in the high-tech industry, the patents represent the technical stock of a firm (Ahuja & Katila, 2001). The computer industry, including hardware and software sectors, covers 16 technical domains classified by the USPTO at the 3-digit level. For each pair of firms in our sample, we collect data on their patents from 1984 to 1997 with a five-year moving window to avoid the left-censoring problem. Following the approach by Vassolo, Anand and Folta (2004), we obtain the indicator of technical distance by dividing the number of dissimilar technical domains between two firms by 16. We further test our measurement of technical distance by using the concept of Euclidean distances (see details in Rosenkopf & Almeida, 2003). It produces consistent results with our approach.

Structural distance. We construct the alliance relationships among 187 firms for each year from 1985 to 1997. The alliance matrix for each year is written into Ucinet 6 software (Borgatti, Everett, & Freeman, 2002). Then we use the "distance" command to calculate the

optimum path between a pair of nodes before the event year.

All the three distance measures are based on the data prior to the dyad-year, when the new alliances or M&A are announced. We also control for some variables, including *Joint alliance/M&A experience*, *joint firm age*, *previous dyadic ties*, *firm size difference*, *year dummy* variables. We also use a dummy variable of *same business sector*. If the M&A or alliances are formed within each business sector, it is coded as intra-sectional activities (1=yes, 0=no).

The SDC database only reports those firms with at least one alliance or acquisition. Therefore, the 'No action' outcome is not readily available in the database. Maoz and Russett (1993: 627) argue that many non-event data are nearly irrelevant and carry little information. King and Zeng (2001: 138) suggest that "researchers can collect all (or all available) ones and a small random sample of zeros and not lose consistency or even much efficiency relative to the full sample". To be comparable to the event data, we select 242 random pairs which have neither alliances nor acquisitions between them at a certain year. We perform two hierarchical logit models, which compared the choice between "Action" and "No Action" as well as that between "Alliance" and "Acquisition".

Results

We estimate the variance inflation factors and found that no variable had a variance-inflation factor greater than 5, which is below the recommended ceiling of 10 (Kleinbaum, Kupper, & Muller, 1988). Although differences among various types of alliances and M&A are not hypothesized, we conduct a preliminary test on the sub-samples of technology-based activities, non-equity alliances, and horizontal M&A. Three Chi-square tests suggest that we cannot reject the null hypothesis that there is no difference between the sub-sample and the whole sample at the 95 percent confidence level. We use the robust standard errors to address the interdependence within clusters.

The coefficient for *strategic distance* is negative and significant across all models. It suggests that the probability for alliance formation will be enhanced when the strategic distance is increasing. Thus, Hypothesis 1 is supported. For Hypothesis 2, the coefficient for *technical distance* is negatively significant, suggesting that firms will be more likely to choose alliances when the technical distance is increasing. A further test of the squared term of technical distance shows that the squared technical distance is positively significant at $p < .05$ level. It suggests that there exists a U-shaped relationship between the technical distance and the governance mode. The coefficient for *structural distance* is positively significant, which predict an opposite direction for the hypothesized relationship. Hypothesis 3 is thus not supported. It may be caused by one network study as information flow can be achieved through multiple networks at different levels. Still, it reveals the importance of considering network embeddedness in choices of interfirm governance modes.

All of these models perform better than a random proportional chance model, which yields a "hit" rate of $p^2 + (1-p)^2$, where p is the probability of an event having occurred (Bayus & Gupta, 1992; Gulati, 1995). The hit rate for a random model is 62.9 percent. The percent of correctly classified cases in the three models ranges from 88.6 percent to 90 percent, a rate clearly superior to the random chance model.

The hierarchical logit regression for the choice between "Action" and "No action" shows that strategic distance is negatively related to the dependent variable (1=Action, 0=No action) at a highly significant level. It suggests that firms are less likely to build external linkages given a large strategic distance. A large structural distance also prevents firms from cooperating in

external relations. However, a large technical distance surprisingly encourages the linkage formation. It reveals that the pursuit of novel technologies takes precedence over interfirm differences, especially in a high-tech industry.

DISCUSSION AND CONCLUSION

The conceptual framework of this study has provided a parsimonious and effective model to address the governance mechanisms. The low correlation among the three distance concepts also shows how each can offer a distinct angle to examine the governance mechanisms. The finding that a high level of strategic distance will motivate firms to choose alliances over M&A suggests that the research in this area should go beyond an indiscriminant approach, which conceptualizes the strategic distance as an obstacle to both alliances and M&A (Bleeke & Ernst, 1995). Our finding on technical distance also suggests that the boundary decisions of firms are constrained by both risks and opportunities for sustainable advantage. It is especially important to address the aspect of opportunities in those dynamic industries, where the obsolete rate of current capabilities is so high that firms have to improve their competitive advantages through constant internal innovation and external resource acquisition.

The results also confirm some of the previous findings. The *joint alliance experience* remains negatively significant, which suggest that firms are more likely to undertake future alliances once they have accumulated related alliance experiences. The same is true to the effect of *joint M&A experience*, which is positively significant in all the three models. The variable of *prior dyadic ties* is positive and significant across all the models, suggesting that prior interactions between two firms in alliances do increase the chance for future acquisitions.

Our study contributes to the literature in the following aspects: First, this study tries to bridge the separate streams of literature on the formation of either alliances or M&A by putting them under a common context for developing external resources. Second, this study has made exploratory analyses for investigating governance mechanisms from firms' dyadic relationships. Third, this research also contributes to the literature on the formation of either alliances or M&A by looking at not just the snapshot but from a process angle.

While this research has advanced our understanding of interfirm differences and governance modes, it has its limitations. Although we have limited our study in one industry to set the boundary conditions for theory development, it is also desirable to examine the research questions in other industries, especially in a less dynamic environment. Further, this research does not theorize different relationships for various types of alliances and M&A as decided by our research focus and sample characteristics. A fine-grained research in discerning the within group variances is still warranted for a sounder theoretical development. Future research can also explore other organizational differences and examine their effects on governance modes such as institutional distance, status distance, and capability distance, etc.

REFERENCES AVAILABLE FROM THE AUTHORS

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