Capabilities, Management, Relational Capital and the Impact on Alliance Performance: An Empirical Study with Non-Equity Alliances

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Introduction
Strategic alliances are cooperative arrangements between two or more firms to improve their competitive position and performance by sharing resources (Ireland, Hitt and Vaidyanath, 2002). The fact is that alliances are characterized by mutual interdependence and that each party is vulnerable to opportunistic behavior by the partner. However, initial alliance studies focused on alliance design issues to explain performance differences instead of focusing on the post-formation phase and argued that topics as partner selection and characteristics (e.g. Parkhe, 1993; Geringer, 1991), ownership and control (e.g. Geringer and Herbert, 1989; Beamish, 1985) explained alliance performance. The underlying premise of these studies is that choosing the appropriate governance structure is a critical determinant of alliance success, and studies showed that an appropriate alliance design mitigates the risk of opportunistic behavior (Aulakh, Kotabe and Sahay, 1996). Recent studies show the importance of other variables than alliance design factors that contribute to explaining of alliance performance (e.g. Ariño & de la Torre, 1998). Drawing from this part of the literature we identified three variables relevant variables. Firstly, studies find evidence that a partner firm’s alliance capabilities can lead to improved performance (Lambe, Spekman and Hunt, 2002). However, these studies do not reveal how strategic alliances successfully acquire and create the complementary and idiosyncratic resources that facilitate competitive advantage and superior performance. Hence, beside alliance capabilities effective management of alliances is necessary for their benefits to be realized (Ireland et al., 2002). Thirdly, studies have argued that relational capital is important for alliance success (Dyer and Singh, 1998). Relational capital involves issues such as trust, friendship and respect (Coleman, 1990). In sum, we find that studies addressed the relation between these variables and alliance performance, yet to our knowledge no study has empirically tested a model that comprehends these firm and dyad level variables.

In other words, the objective of this study is to develop and test a conceptual model relating a firm-level alliance capability and management and a dyadic level of relational capital to alliance performance. Our study is theoretically relevant, as our alliance performance model comprehends three independent variables that are suggested to be important in the literature, yet to our knowledge only have been empirically tested in (partial) isolation (Ziggers and Duysters, 2003). Additionally, we focus on non-equity arrangements, which is an understudied area in the alliance literature. Finally, we view performance from the firm level, yet more interesting we distinguish three related yet separate performance dimensions (Ariño, 2003), that is net spill-over, satisfaction, and goal attainment and show that the identified antecedents have different and sometimes opposite effects on the performance dimensions.

In the next sections of this paper the main conceptual arguments of alliance capability, alliance management, relational capital and their impact on alliance performance will be discussed and hypotheses will be proposed. After discussing the research strategy, we present the empirical results of a study among a sample of 91 firms involved in non-equity alliances. Finally, results will be discussed as well as directions for future research.

Model Development
In this study we adopt a process approach towards alliances (Zajac et al., 1993). Recent studies show that process aspects such as alliance management and relational capital are important to alliance success (Ariño et al., 1998). Additionally, recent studies have shown that firms that have developed alliance capabilities have an competitive edge in attaining their goals with the alliance (Draulans et al., 2003; Kale et al., 2002). Next, we discuss each antecedent after having discussed the dependent variable: alliance performance.
**Alliance performance**

Drawing from the strategy literature three levels of performance can be recognized that depend under the goals under consideration: financial performance, operational performance and organizational effectiveness (Venkatraman and Ramanujam, 1986). Financial measures include various measures of profitability, growth and cost position (for a review, see Geringer and Herbert, 1991). Frequently used operational measures include stability measures such as longevity of the venture, ownership or contract stability and survival. The most commonly used organizational effectiveness measure is an overall assessment of the firm’s satisfaction with the alliance performance. Other organizational effectiveness measures include the degree of fulfillment of strategic goals that the alliance was aimed at covering (Parkhe, 1993a, b), and net spillover effects of the alliance on other activities of the firm (Parkhe, 1993b). Building on these insights Ariño (2003) found in her study on the construct validity of alliance performance that alliance performance is both planned and emergent, consist of a process and outcome dimensions and consists of multiple performance dimensions. In this study we view alliance performance from the firm level and adopt the three outcome dimensions as suggested by Ariño: net spill-over, satisfaction and goal attainment. Although, these dimensions are related we contend that they represent a different aspect of alliance performance. For example, financial performance is the relevant level of performance when partners have explicit financial goals for the alliance. In other words goal attainment takes into account the interests of multiple constituencies. Additionally, an alliance can lead to positive spill-over effects. For example, knowledge learned from the partner can be applied in areas outside the alliance scope. Satisfaction refers to an overall assessment of the alliance and includes both process and outcome aspects. In other words, goal attainment is related to satisfaction and vice versa. In sum,

**H1**: Alliance performance consists of three dimensions; that is net spill-over, satisfaction, and goal attainment.

**Alliance capability**

From a theoretical perspective the organizational learning, dynamic capabilities and evolutionary economics literature offer some of the most useful insights with regard to capability development, since capabilities often rest upon unique sources of knowledge (Kale et al. 2002). Organizational capabilities develop as a result of recombining and/or integrating knowledge within the firm. This knowledge is typically built through learning that involves making associations between a firm’s past actions, the effectiveness of those actions and future actions (Fiol and Lyles, 1985). According to Lambe et al. (2002) alliance capability has three main facets 1) alliance experience, 2) alliance manager development capability and 3) partner identification propensity.

Experience with alliances is a resource that can be leveraged across an organisation, because it contributes to knowledge about how to manage and use alliances (Simonin, 1997). Day (1995) noted that such experience contributes to the quality of a firm’s ‘alliance management’ by, among others, improving their abilities with respect to “selecting and negotiating with potential partners” and “planning the mechanics of the alliance so that roles and responsibilities are clear cut”. Much of the knowledge about finding, developing and managing alliances is “tacit” and firms must learn by doing (Lambe et al. 2002, Anand and Khanna, 2000). Day (1995) suggests that firms with an alliance capability have the ability to develop capable alliance managers. These managers then enable firms to plan and navigate the mechanics of an alliance so that roles and responsibilities are clearly articulated and agreed upon. Simonin (1997) stated that the lower-than-average failure rate of joint ventures in the oil industry could be linked to the fact that managers have learned the essentials of collaboration. Lambe et al. (2002) draw the conclusion that competent alliance managers will negotiate structure and operate alliances in ways that allow such firms to secure attractive alliance partners and to minimise the chances of alliance mismanagement such as poor conflict resolution. Furthermore, they will work with their partner firms on successfully combining and synthesising their complementary resources into idiosyncratic resources that may well lead to competitive advantage. Firms that have an alliance capability systematically and proactively scan and identify partners that have the complementary resources that are needed to “develop” a relationship portfolio or mix that complements existing competencies and enables them to occupy positions of competitive advantage (Hunt, 1997). Firms that
can identify such partners not only enhance their ability to compete but also improve their chances of alliance success (Dyer and Singh 1998; Lambe et al, 2000; Simonin 1997; Sivadas and Dwyer 2002). In addition, Varadarajan and Cunningham (1995) and Day (1995) suggested that firms that scan for promising partners may also often achieve an alliance ‘first-mover’ advantage that allows them to gain access to and pre-empt competition from scarce resources offered by potential alliance partners. Day (1995) argues that a firm that is adept at identifying, consummating, and managing strategic alliances is likely to have first mover advantage in bringing the best candidates into the relationship.

In summary institutionalized organizational experience with alliances contributes to a firm’s knowledge of how to successfully form and implement alliances (Simonin 1997; Spekman et al 1999). Firms having such experience will improve their ability to select, negotiate and structure alliances so that they can secure alliance partners that have complementary resources (Spekman et al. 1999; Day 1995). Lambe et al. (2002) concludes that an alliance capability is a key antecedent to complementary resources, idiosyncratic resources and alliance success. It allows firms to acquire and combine their most basic resource advantage in a fashion that contributes to alliance success. It is proposed that

H2: Firms with higher developed alliance capabilities will achieve higher levels of alliance performance.

Alliance Management
Evidence suggests that alliance management transaction costs without a dedicated function exceed those experienced by firms relying on the function as the focal point for leveraging knowledge and lessons acquired from previous alliance experiences (Ireland et al., 2002; Dyer et al., 2001). Encouraging alliance partners to work together, sharing their knowledge in the process of doing so, and developing systems to codify existing and new knowledge to support future alliance activities are alliance managerial tasks. Active alliance management enforces knowledge transfer which in turn facilitates mutual learning and partner cooperation that leads to higher levels of performance. However, to do so, partners must have the capacity to absorb inputs through which new knowledge is created. Moreover, evidence suggests that high absorptive capacity is associated with more successful applications of new knowledge toward commercial ends (Ireland et al., 2002). Alliance management is a necessary condition to successfully perform these activities. Using alliance management routines to complete these tasks in a competitively superior manner contributes to a competitive advantage. Alliance management routines reveal a managerial logic that governs alliance related decision-making processes throughout the firm. These routines represent a shared belief about how activities, such as setting individual and joint objectives, should be accomplished. The key of alliance management is that it should be focused on value creating dimensions of alliances such as knowledge management, establishing cooperation and assuring accountability (Ireland et al., 2002; Dyer et al., 2001).

It is important to maintain or achieve alignment or fit between alliance partners (Powell, 1992). This fit should be formed in two contexts – strategic and operational. Partner fit requires attention of issues including: (1) specifying alliance objectives that meet all partners’ needs; (2) assessing the degree of similarity in terms of the alliance’s importance to each partner; (3) analyzing the degree to which alliance outcomes can be expected to create value for targeted market segments; (4) determining the anticipated response to the alliance stakeholders; (5) Evaluating the similarities and differences in the partners’ organizational structures; and (6) specifying how alliance conflicts regarding strategic issues are to be handled. In general terms, alliance management should focus on maintaining or creating strategic fit through specifying individual and joint objectives. Additionally, the development of procedures and tools contributes to attaining operational fit. Furthermore, evaluation and monitoring mechanisms contribute to assessing the performance of the alliance and subsequent corrective action. In sum, we contend that initial alliance design flaws can be attenuated or even corrected through active alliance management. That is, repairing the possible misalignment in partner fit which leads to improved performance. Additionally, active alliance management is a prerequisite for transforming resources into value. Therefore the next hypothesis is proposed:

H3: Firms with active alliance management will achieve higher levels of alliance performance.
Relational capital

Relational capital involves issues such as trust, friendship and respect (Coleman, 1990). It is considered as the extent to which the partners feel comfortable and are willing to rely on trust in dealing with one another (Ariño, De la Torre and Ring, 2001). For example, in a study on joint ventures of Büchel and Thuy (2001) identified two behavioral factors related to relational capital. Equity, understood as fair dealing including the sociological meaning of indebtedness and going beyond the economic/rational calculation of equivalence of benefits and a second factor referring to the quality of the relationship as the willingness of partners to commit to the relation.

The essence of relational quality is that it is not only an important variable influencing alliance performance, but also depends on a number of identifiable factors, some of which can be managed consciously. Relational capital allows partners to rely on trust, but is seen to be broader than trust, it also encompasses, among other things, the compatibility of corporate cultures and the convergence of organizational characteristics (Ariño et al. 2001). Strong relational capital usually engenders close interaction between alliance partners. It facilitates exchange of information and know-how across the alliance interface and builds in through a feedback pattern of a ‘trust-cycle’ (Butler, 1995; Zand, 1972).

The norm of reciprocity provides the basis for a theory of cooperation (Axelrod and Dion, 1988) and is the basis of stable relationships. The norm calls for parties to help rather than harm those whose actions have benefited them. It also suggests that parties should respond in kind to those damaging their interests and thus an alliance partner’s exploitation of the firm’s cooperative behavior should not be tolerated. In addition, strong information sharing can signal trust and trustworthiness in alliance relationships. In related research, interviews with managers showed that trust signaling symbols can involve behaviors suggestive of openness and receptivity in communication patterns, fairness and discretion in interactions (Butler 1991). Gradually, as each side deals repeatedly with their partner, suspicion declines and trust grows reciprocally (Johnson et al., 1996; Ring & Van de Ven, 1992). This starts a process in which relational norms evolve. Relational norms are defined as expectations about behavior that are shared by a group of decision-makers (Heide and John, 1992) and provide guidelines for the initial probes that potential exchange partners may make towards each other. Relational norms prescribe acceptable behavior at the onset of inter-organizational partnerships, which, if considered equitable by partner firms, eventually lead to future expectations of trust (Ring and Van de Ven, 1992).

The social identity theory further posits that social control in inter-organizational exchanges is conducive to shared beliefs and mutual identification by the partner firms (Ashforth and Miles, 1989). Accordingly, in socially controlled partnerships monitoring occurs through interpersonal interactions and these repeated interactions over time lead to systematize and shared organizational values, which help in building trust between partners. The long-term economic performance is also enhanced through social control. Through the process of socialization and indoctrination, a partnering firm allows wide latitude to the partner firms thus enabling the latter to respond to conditions quickly and in a manner consistent with the goals and objectives of the alliance (Aulakh, 1996). Relational capital in the alliance is considered as the quality of the relationship that exists between alliance partners. It is through relational capital that the alliance is actually enacted and implemented. It facilitates exchange and transfer of information and know-how across the alliance interface (Kale et al. 2002). As in all business interactions, the building of relational capital depends on the partnering signaling to each other and the interpretation and response to this signaling. Therefore the next hypothesis is proposed:

\[ H4: \text{Alliances with high levels of relational capital will attain higher levels of alliance performance.} \]

Research Design

The research involved both a conceptual and conclusive phase. Based on a literature review the core constructs were identified and hypotheses were developed as presented in the preceding section. Building on this work a research strategy was developed for the testing of the developed hypotheses. Firstly, existing measures and scales were used to develop a questionnaire. Secondly, a mail survey was conducted among a sample of Dutch alliance managers responsible for non-equity alliances.
Sample and Data
The alliance data gathered for testing the hypothesis were derived from a survey among managers responsible for a contractual alliance. The alliances were collected through three Dutch temporary and subsidized project organisations - CLICT, CONNECT and NIDO - that had the aim to stimulate cooperation between different parties, such as firms, research institutions and other private or public organisations, in order to develop innovative products and services. Each project organisation provided an overview of projects and related organisations. The final sample frame consisted of the 248 names and affiliations of managers responsible for contractual alliances. To ensure high response rates several techniques were employed such as the inclusion of a self-addressed reply paid envelop, a head letter referring to both the University of Nijmegen and the project-organisation, assuring anonymity and we provided an incentive by donating to a charity organisation for each returned questionnaire. Additionally, each organisation was contacted by phone to assure that the respondent was knowledgeable about the selected alliance. Sequentially each sub sample was approached. For the CLICT and CONNECT sample the procedure consisted of sending a questionnaire by postal mail and after a week the respondents were called to check whether they had returned the questionnaire. Three weeks later a second reminder round was conducted that followed the same procedure. For the NIDO sample a similar procedure was followed except that the first letter was distributed to the alliance managers personally. In sum, 248 questionnaires were distributed, of which 101 were returned. After checking the responses 10 incomplete questionnaires had to be eliminated, reducing the sample to 91 useable questionnaires (36.7% response rate).

A t-test to estimate the non-response bias was conducted, however no significant changes were found between respondents to the first or second round. Additionally, a Chow test was conducted to determine whether our sub samples could be pooled (Chow, 1960; Leeflang et al., 2000). The results indicated that the estimated parameters (intercepts and slopes) of the three sub samples were homogeneous and that the data could be pooled without creating estimation biases. Building on our literature review we selected existing measures and scales and when necessary adapted them to the idiosyncrasies of our study. The initial questionnaire was pre-tested among experts to increase reliability and validity.

Dependent variable
The construct alliance performance has been developed in prior studies (Ariño, 2003; Geringer et al., 1991; Glaister et al., 1998). Hence, we adopted this existing measure and scale and primarily followed the suggestions by Ariño (2003). Building on alliance performance studies and drawing from organizational effectiveness insights, she finds that alliance performance consists of three outcome dimensions. Although, all are representative for alliance performance, each dimension singles out a different aspect of performance. The first dimension refers to overall satisfaction with the alliance. One perceptual item is used: “Overall, to what extent do you think your firm is satisfied with the global results of this venture?” Respondents replied to a 7-point Likert scale. The second dimension referred to the net spill-over a firm attains. This means, the additional benefits are firms attain in other activities that are non-related to the alliance. For this perceptual item a 7-point likert scale was used. The third dimension refers to goal attainment. That is, to what extent did a firm attain its goals within the alliance? A 11-item scale was used to assess goal attainment versus the importance of that specific goal. We used the product term (Ariño, 2003), and constructed one item-measure for goal attainment. In sum each performance dimension is represented by a single item. Medium correlations between the items indicate to a certain extent relatedness, yet not enough to support one single performance measure. This finding is corroborated by a factor analysis (principal components with varimax). Hence, we contend that enough support is found to conduct separate regression analysis for each performance dimension (hypothesis 1).

Explanatory variables
The first explanatory variable is alliance capability. We adopted items as developd by Lambe et al. (2002). Conducting a factor analysis (principal component with varimax), our sample does not confirm the dimensions as found by Lambe et al. However, three factors were found (eigen value > 1; explained variance 67.4%).
The first factor – Integration – consists of three items that refer to capabilities, such as focus on culture, communication and knowledge (alpha = 0.7763). The second factor – Routines – consists of three items that refer to the extent that the firm has standardized procedures for specifying the benefits, objectives and the role of the partners (alpha = 0.6239). The third factor – Joint Programs – consists of two items that refer to the standard development of programs and cooperation philosophies.

The second explanatory variable is alliance management. Originally, we developed 11 items referring to issues as setting goals, installing management instruments, and implementing evaluation mechanisms. Factor analysis (principal component with varimax rotation) resulted in three factors (eigen value > 1; explained variance 73.1%). The first factor – Setting Objectives - refers to items as goal specification, resource allocation by either the firm or jointly with the alliance partner (alpha = 0.7300). The second factor – Procedures/Tools – consists of two items and refers to the extent that the firm has implemented and uses standardized instruments to manage the alliance. The third factor – two items –refers to the extent that the firm has set up formal evaluation and monitoring mechanism.

The third explanatory variable is relational quality. Although this construct has been used in multiple studies (Cullen et al., 1995; Cullen et al., 2000; Kale et al., 2000; Sarkar et al., 2001) we adopted the items as introduced by (Büchel et al., 2001). She distinguished commitment from equity items, however, we developed additional items for trust as prior studies suggest that trust differs from commitment and equity. Based on factor analysis (principal components with varimax) we identified four factors (eigen value > 1; explained variance 71.8%). The first factor refers to trust and consists of four items referring to issues as trust and sticking to agreements (alpha = 0.7811). The second factor consists of three items and refers to the harmony and honesty in the cooperation (alpha = 0.8267). The third factor refers to communication issues as clear responsibilities, personal contact and effective communication (alpha = 0.6770). The fourth factor – Equity – consists of two items that refer to the degree of equity in the distribution of profits and rewards.

Control variables
Secondary objective data provided by the project organisations or through additional data collection control variables was used for the control variables (e.g. contacting the targeted organisations). The use of project organisations implied that our sample consists of firms that are operating in different industries. A dummy variable was created with a value of 1 for firms operating in production, trade or service industries and a value of 0 for organisations that are supporting or providing knowledge to the alliance, such as consultancies, branch organisations and research institutes. A second dummy variable for firm size was created, splitting the sample in two groups using the median value of 300 employees. A value of 0 refers to small firms (i.e. < 300) and a value of 1 refers to large firms (i.e. >300). Finally, a third dummy refers to profit (value 1) and non-profit (value 0).

Analysis and Results
The sample size in relation to the number of variables does not fit with structural equation modelling demands (Kline, 1998). Therefore our model was tested with regression analysis using ordinary least squares estimation. Both dependent and independent variables are normally distributed within limits. The data were tested for outliers and influencers with an assessment Mahalobnis distance, Cook’s distance and standardized residuals of the and decided to excluded three cases for further analysis. A test for multi-collinearity was conducted and no signs were found, which was supported variation inflation factors smaller than 3 and condition indexes higher than 0.1. Also an estimation of common method bias was conducted using an unrotated principal components factor analysis (Podsakoff et al., 2003). The factor analysis resulted in three dimensions with eigenvalues above 1 and explaining 60.5% of the total variance. The first factor consisted of the three performance items, while all other items were loading below the 0.6 on this factor. The remaining items were positive, however it was concluded that although some common method bias is present in our sample, it is within limits. Additional residual analysis showed limited concern for violating other regression analysis assumptions. In presenting our results we tested for each performance dimension two models. Firstly, a model that only contains the control variables and subsequently a model with control and explanatory variables. The results of the regression analysis are presented in table 1.
Analysis indicates that in the full models 2, 4, and 6 trust between alliance partners has a significant effect on the performance of the alliance. However, the relational capital factors harmony and communication are only related to net spill-over effects and satisfaction. In contrast, our results show support that the alliance management factors procedures/tools and evaluation/monitoring mechanisms is positively and significantly related to goal attainment. In sum, we find support for hypothesis 1 that performance consists of three dimensions. Hypothesis 2 is partially supported for net spill-over dimension and an unexpected negative effect of joint programs has been found for the goal-attainment dimension. Hypothesis 3 is partially supported for the goal attainment dimension, while no significant results were found for satisfaction and spill-over effects. Finally, substantive support is found for hypothesis 4. Relational capital, in particular trust is found to be positively related to all three performance dimensions, while the other dimensions are related to satisfaction and spill over effects with the exception of equity in sharing benefits.

Additional, interesting results are that the implementation of joint programs and cooperation philosophies contribute positively to net spill-over effects, yet are negatively related to firm goal attainment. Furthermore, the drop in the adjusted R square in model 6 compared to the models 2 and 4, suggests that other important variables are omitted in our goal attainment model.

**Discussion**

This study points out that performance of non-equity alliances is determined by the extent of relational capital among alliance partners, in particular by trust and shared norms and values. In other words in these types of arrangements social control plays a pivotal role. These results are in accordance with the social identity theory that social control in inter-organizational exchanges is conducive to the shared beliefs and mutual identification by the allying firms. Monitoring occurs through interpersonal interactions and these repeated interactions over time lead to systematize and shared organizational values, which help in building trust between partners (Aulakh et al. 1996).

Secondly, our study shows support for the multi-dimensional nature of alliance performance, as suggested by Ariño (2003). Especially in the case of satisfaction with the alliance there is reason to believe that this outcome performance is influenced by process performance. If partners trust each other, share norms and values and communicate they may be satisfied with their pattern of interaction and may value the performance of their alliance as satisfactory. As a consequence they may decide to maintain the relationship waiting for better times when external circumstances allow goal fulfillment.
The opposite occurs if partners are unsatisfied, then the chances are that the alliance will be terminated (see also Ariño 2003). This reasoning is also supported by our results. Thus measuring performance of alliances in terms of satisfaction might be considered as a behavioral performance indicator. In addition, net spill over effects seems to be achieved if specific tools and procedures are in place that supports cooperation, besides of course the presence of relational capital. They contribute to the alignment of partners enabling the use of the alliance’s potential (Ireland et al., 2002). Finally, goal attainment is found to be conceptually and empirically different from the other two performance dimensions.

Contrary to expectations neither alliance capability or alliance management had any substantial effect on alliance performance, with the exception of alliance management with regard to goal attainment. One explanation for this is that non-equity alliances are controlled by interpersonal interaction that implies informal alliance management. Besides, non-equity alliances tend to involve lower asset specificity than equity alliances and therefore the potential for hold-up is smaller and therefore might require less formal management. An issue that deserves further attention.

The study takes the perspective of only one partner, a limitation common to most alliance research. Taking an alliance perspective, including all partners of the alliance in the analysis, might contribute to a more comprehensive view. Also a larger sample is required to allow structural equation modeling that is estimating the measurement and structural model simultaneously. Replication of the study is necessary to achieve generalizability of the results. These may be bound to the sample used, non-equity alliances in the Netherlands, as well as because of the results of the study compared to other studies were alliance capability and alliance management did have an influence on performance (e.g. Kale et al. 2002, Dyer et al. 2001)

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