

Building capabilities to manage strategic alliances
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Kim Sluyts*, Paul Matthyssens, Rudy Martens, Sandra Streukens
University of Antwerp, Belgium
University of Hasselt, Belgium

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Abstract

In recent years, academics have attributed alliance success to a firm's ability to successfully manage their alliances, also called their level of *alliance capability*. We like to contribute to this growing body of literature by (1) verifying the impact of alliance capability on alliance performance and (2) analyzing the drivers of alliance capability. We measure alliance capability through four types of alliance learning processes and study how each of these processes affect alliance outcome. Furthermore, we take into account several possible drivers of alliance capability such as organizational culture, strategic commitment of the top team, experience and alliance management approach. We refine the results by examining how these factors affect each of the four learning processes underpinning alliance capability. Our research model will be tested on a sample of 189 Belgian companies.

*Corresponding author. E-mail:kim.sluyts@ua.ac.be—Telephone: +32 3 265 50 62— Fax: +32 3 265 50 84—Address: UA-TEW-MNG, Prinsstraat 13, 2000 Antwerp, Belgium

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Abstract

In recent years, academics have attributed alliance success to a firm's ability to successfully manage their alliances, also called their level of *alliance capability*. We like to contribute to this growing body of literature by (1) verifying the impact of alliance capability on alliance performance and (2) analyzing the drivers of alliance capability. We measure alliance capability through four types of alliance learning processes and study how each of these processes affect alliance outcome. Furthermore, we take into account several possible drivers of alliance capability such as organizational culture, strategic commitment of the top team, experience and alliance management approach. We refine the results by examining how these factors affect each of the four learning processes underpinning alliance capability. Our research model will be tested on a sample of 189 Belgian companies.

Keywords: alliance capability, knowledge management, organizational learning, alliance management.

1 Introduction

The past decades, interorganizational alliances have become increasingly important for companies as a way to strengthen their competitive position. Despite the fact that companies engage in a rising number of alliances, the rates of success still remain fairly low, causing significant costs for the initiating partners. In the literature this trend towards collaboration has been translated in numerous publications on the merits and pitfalls of alliances and has led to the development of different subdomains such as the stream of research on network structures, network dynamics, relational aspects of networks and finally, network management (e.g., Halinen and Möller 1999, Möller and Svahn 2003, Ritter et al. 2004, Järvensivu and Möller 2009).

Within the IMP literature a considerable amount of research has focused on the management implications of the network approach that companies have adopted in recent years (e.g., Håkansson and Snehota 1990, Anderson et al. 1994, Möller and Halinen 1999, Wilkinson and Young 2002, Ford et al. 2003). However, as Ritter (2002b, p. 119) states: "*There is a lack of studies which deal with the management issues on the firm's level. This is surprising because the ability of firms to survive in their networks becomes a core competence given the importance of relationships and networks.*" According to Ivens et al. (2009), relationships with external actors constitute intangible assets. Focusing on the concept of relationship keyness, they put forward that the management of partner relationships in alliances is similar to key-account and key-supplier management in buyer-supplier relationships. They argue that "*Alliance management should be studied more in detail in cross-sectional and quantitative studies*" (p.518). The work of, amongst others, Ritter (1999), Ritter et al. (2004) and Human and Naudé (2008) has laid the foundations for

gaining new insights in issues arising with the management of alliances at the firm level. In this context they have developed the concept of *network competence*, which is analogue to the concept of *alliance capability*.

Articles on this subject have focused on how firms can improve their alliance outcome through the development of an *alliance learning process* within the firm, which aims to internalize the firm's acquired experiences. By creating and integrating knowledge on the management of alliances, firms can develop alliance capability, which enables them to manage their alliances more successfully. Central to the concept of alliance capability is the idea that the degree to which a company is capable of creating successful alliances is based on internal learning processes on alliance management and the capability to leverage alliance knowledge within the company (Draulans et al. 2003).

Currently, it is not yet clear *why* some firms have been able to successfully build an advanced alliance learning process (and are hence likely to have developed a high level of alliance capability), while others have not. Rothaermel and Deeds (2006) argue that empirical research that investigates factors impacting a firm's alliance management capability is scarce and state that "*understanding how alliance-specific and firm-level factors impact a firm's alliance management capability is an important, yet under researched, question*" (p.430). Finally, Anand and Khanna (2000) call for additional in-depth research on the organizational determinants of alliance capability with the use of empirical data on each firm's alliance management processes.

We like to contribute to this growing body of literature by (1) verifying the impact of alliance capability on alliance performance and (2) analyzing the drivers of alliance capability. In alignment with Kale and Singh (2007), we measure alliance capability through four types of alliance learning processes and study how each of these processes affect alliance outcome. Furthermore, we take into account several possible drivers of alliance capability such as strategic commitment of the top team, experience and alliance management approach. We refine the results by examining how these factors affect each of the four learning processes underpinning alliance capability.

2 Theoretical background and hypotheses

The resource-based view of the firm (RBV) has emphasized the notion that resources owned or controlled by the firm have the potential to provide enduring competitive advantage when they are inimitable and not readily substitutable (Peteraf 1993). Traditionally, authors like Barney (1991) and Amit and Schoemaker (1993) attributed competitive advantage on the presence of certain *internal* resources, without paying much attention to the question on how these resources were being developed. Gradually, a more open-system thinking was introduced in the RBV, leading to the idea that valuable resources and capabilities were often to be found *outside* the firm's boundaries (Gulati and Gargiulo 1999). Through interorganizational alliances, firms can get access to potentially valuable

resources and opportunities such as technology exchange, financial means and market entry. In similar vein, Foss (1999) refers to “network capabilities” as an analogy of firm capabilities. In addition, Baraldi et al. (2007) state that when strategy is conceived as the management of relationships and networks, the way in which the organization relates its own activities and resources to other network parties becomes the primary focus, thereby necessitating a re-orientation of the RBV. Not only do these alliances form a gateway to a vast number of possible resources and competences in the outside world, a carefully built network itself can often be considered as a strategic resource of the firm. A firm’s network is composed of a unique mixture of strong and weak ties, which makes it very difficult to copy by competitors. Gulati et al. (2000, p.207) state that: *“In fact, a firm’s network can be thought of as creating inimitable and nonsubstitutable value as an inimitable resource by itself, and as a means to access inimitable resources and capabilities.”*

Nevertheless, Ray et al. (2004) have demonstrated empirically that resources alone do not create competitive advantages. Resources must be realized through business processes, activities and routines in order to impact positively on performance. Specific examples of such a dynamic have been observed in intra and inter-firm knowledge transfer. The notion “relational capability” refers to internal processes helping a lead firm to appreciate, select and mobilize external capabilities (Lorenzoni and Lipparini, 1999) and a firm’s “alliance capability” has been defined by Kale et al. (2002, p.750) as: *“The firm’s ability to effectively capture, share and disseminate the alliance management know-how, associated with prior experience”*. Such capabilities regarding knowledge and processes must be built in order to realize the potential benefit inherent in internal and external networks created by a firm. Without the necessary alliance capabilities, the potential present in the “stock” of alliances of a company will not be fully realized. Specific alliance capabilities are supposed to play a key role. Building upon the prior general management literature, they can be defined as bundles of accumulated alliance management knowledge, routines and systems, integrated in firm specific business processes.

2.1 Alliance capability and the alliance learning mechanisms

Research on alliance capability deals with the importance of internal processes, tools, specific functions and/or structures that aim to capture and diffuse alliance knowledge that is gathered through alliance experience. Through alliance capability, firms can leverage knowledge on the alliance management process which will not only improve the firm’s ability to manage a single relationship but also its ability to manage the portfolio of all relationships (Gemunden and Ritter 1997). The concept alliance *capability* specifically refers to the firm’s deliberate and emergent learning processes with regard to alliance management, which are translated in firm-specific routines.

The research on development of alliance capability does not directly conceptualize or measure alliance capability; it implies its existence by showing how factors that underlie its development lead to greater alliance success (Schreiner et al. 2009). Generally, the level of

alliance capability of a firm has been measured by the number of alliance learning mechanisms the company has adopted, such as alliance manuals, tools, procedures, training programs and codification of best practices (Draulans et al. 2003, Heimeriks and Duysters 2007, Kale and Singh 2007). These learning mechanisms help the firm develop a superior knowledge on how alliances should be handled, which lead to a significantly better alliance outcome (e.g., Ritter and Gemunden 2002, 2004, Draulans et al. 2003, Heimeriks and Duysters 2007, Schreiner et al. 2009).

In line with the strategy literature on knowledge creation and learning (e.g., Grant 1996, Nonaka 1994, Zollo et al. 2002, Lichtenthaler and Lichtenthaler 2009), Kale and Singh (2007) distinguish four types of alliance learning mechanisms: articulation, codification, sharing and internalization. Through articulation processes such as reports, presentations and debriefing moments, alliance managers are encouraged to make their know-how more explicit. Codification is pointed towards written tools, templates or processes to support the day-to-day alliance management. Alliance managers can also share their experiences and knowledge on the alliance process through meetings, brainstorm sessions or task forces. Finally, managers need to capture all the available knowledge through internalization processes such as trainings. Together, these four types of learning form the alliance learning process which underpins alliance capability. By carefully learning on how alliances should be handled, firms become more adept at it, developing an increased alliance capability. In line with the studies mentioned above, Kale et al (2007) demonstrated the positive effect of the general alliance learning process (alliance capability) on alliance success. We aim to further refine these results, and show how each of the four learning processes individually affects alliance outcome. As all four of these processes aim at increasing alliance knowledge within the firm, each of them in a slightly different way, we expect a positive relation between the four learning processes and alliance performance.

Hypothesis 1: Each of the firms alliance learning processes (articulation, codification, sharing and internalization) positively affects its overall alliance success.

2.2 Alliance experience

Alliance experience has become a central theme within the alliance capability literature. Scholars have used alliance experience both as an antecedent and proxy for alliance capability. In line with previous research we posit that alliance experience leads to know-how on alliances which is generated through the firm's engagement in prior alliances (Gulati 1995, Kale et al. 2002, Heimeriks and Duysters 2007, e.g.). Often alliance experience has been measured as the number of alliances the firm has been involved in during a period of time (Draulans et al. 2003, Sampson 2005, Heimeriks and Duysters 2007, e.g.). Several studies have analysed the direct effect of alliance experience on alliance outcome and have found mixed results. Some studies have emphasized a strictly positive relationship (Shan et al. 1994) while others Rothaermel and Deeds (2006) find that there are diminishing returns to alliance experience: increases in alliance experience do not continuously im-

prove alliance performance (Draulans et al. 2003). The research of Rothaermel and Deeds (2006) links innovativeness of bio-tech firms to alliance experience and shows that there exists an inverted U-shape relationship between the number of alliances the biotech firm entered and its performance: after a certain threshold there seems to be a negative return on alliance experience.

The studies mentioned above have investigated the relationship between experience and alliance outcome, but do not analyze the relationship between experience and alliance capability or *how* experience actually affects alliance performance. So far, the link between experience, alliance capability and alliance performance has not yet been clearly defined (Rugman, 2002). Scholars have suggested that experience in itself will not cause performance improvement, such as suggested in studies on the “experience curve”. The underlying explanation is that performance improves due to learning effects, caused by experience. Organizational learning occurs through the firm’s inferences of past experiences and the translation of these inferences for future actions (Levitt and March 1988). These inferences are firm-specific and can explain the differences in alliance outcome. According to Simonin (1997), alliance experience will contribute to the increase of alliance capability, because experience creates learning effects on alliance processes. In a similar vein, Anand and Khanna (2000) investigated whether firms could learn to manage interfirm alliances as experience accumulates and find strong evidence that companies differ widely in their ability to create value based on experience, which they accrue to differences in alliance capabilities between firms.

Therefore, we argue that firms with a higher level of alliance experience have developed more elaborate articulation, codification, sharing and internalization knowledge mechanisms which increase their alliance capability. Firms that frequently engage in alliances are most likely to benefit most of this knowledge system and are likely to have formalized and designed their alliance management system more systematically. The alliance learning mechanisms will encourage conscious learning and help to capture lessons-learnt from earlier experiences so that the firm can improve its alliance outcome and can go beyond “simple” learning through repetition or “learning by doing” (Levitt and March 1988). This leads us to the following hypotheses:

Hypothesis 2a: A firm’s alliance experience will lead to the development of alliance learning processes

Hypothesis 2b: The alliance learning processes will partially mediate the effect of alliance experience on alliance outcome

2.3 Alliance management

The importance of having an alliance manager in place to increase the alliance performance, has been introduced by Spekman (1996). In his qualitative study on the alliance life cycle he found that the alliance manager was the “crucial ingredient” throughout the management of the different life cycle phases, taking in different important roles in the

alliance stages. Later studies further explored the role of this *dedicated alliance function*, which coordinates all alliance-related activities of the firm, and found that it can improve the alliance management in several ways (Kale et al. 2002, Hoffmann 2005, Heimeriks et al. 2009). First, a separate function creates visibility and legitimacy both within the company and to external parties as it signals the importance of alliances for the company. Alliance managers can act as “sponsors” for alliances, making sure that enough resources are dedicated to the alliance and rising awareness within the company. Second, a centralized function allows the firm to accumulate experience more easily: lessons can be drawn from a variety of alliances in different businesses or areas which can improve knowledge creation and transfer over different business units. Third, an alliance department or manager can focus on developing an alliance strategy for the company or BU which concentrates on how alliances can and should support the strategic direction of the company. Finally, an alliance department can establish an infrastructure to support the management of alliances and to enhance the process. Through the creation of guidelines and manuals the alliance department codifies important alliance know-how that is then spread throughout the company. Alliance departments or managers usually set up knowledge sharing programs such as “best-practices-presentations” or meetings and develop training programs or send managers to externally organized seminars and so on. In sum, the alliance function serves as a repository and distributor of important alliance know-what and know-how. We want to further clarify the relationship between the alliance function and alliance outcome by looking further into *how* the alliance function actually enhances the alliance capability of the firm. Based on the above, we expect that companies that have an alliance manager or department will have more elaborate knowledge codification, articulation, sharing and internalization processes in place which shall improve their alliance outcome. We argue that the development, monitoring and updating of a strong knowledge management infrastructure on alliance can only thrive in companies where people are especially dedicated to this task.

Hypothesis 3a: The presence of an alliance function will positively affect the firm’s alliance learning processes

Hypothesis 3b: The alliance learning processes will partially mediate the effect of the alliance function on alliance outcome

2.4 Top management support

As the strategic direction of organizations is driven by senior management, the development of competences can only reside under the influence of senior management (Hamel and Prahalad 1994; Prabhu and Robson 2000; Sanchez et al.1996). In a study on competence transfer mechanisms, Prevot and Spencer (2006) find that the transfer of competences that are considered to be of strategic importance, will be handled with much more attention and accurate transfer mechanisms. If the TMT signals that alliances and alliance management in particular are of strategic importance, chances are that the company will follow up more closely on its alliance management procedures. Within the strategic management

literature, the effect of the involvement of the top management team has been researched in several fields such as new product development (Cooper et al. 1999), innovation and quality management. In this latter field, Benson et al. (1991), finds that the top can enhance quality norms by setting policies and goals in the area of quality, treating it as a strategic variable, rewarding business unit managers on the basis of the quality of its products and/or services and making resources available for quality improvement.

Although there has been some research on the impact of the commitment of top management on alliance outcome and alliance formation (Eisenhardt and Schoonhoven 1996), there has been little research on the influence of the TMT on the development of alliance capability. A notable exception is the study of Lambe et al. (2002) who find that *joint* alliance competence is strongly influenced by the commitment of *joint* senior management. An illustration of the impact of the TMT commitment has also been nicely illustrated by Hoffmann (2005). He describes how Siemens initiated an alliance management system, after top management decided alliances became of strategic importance to the firm. The shift in alliance policy led to a sound and elaborate management system with communities of practice and centers of competence.

Based on the above, we hypothesize that the commitment of the top management team towards its alliances will positively influence the level of alliance capability of the firm because it can provide the necessary resources, policies and motivation for developing an elaborate alliance management knowledge system. All four of the mentioned learning processes which lead to the development of alliance capability are quite costly (time and money-wise) to develop, execute and constantly improve. Ritter (1999) states that the “availability of internal resources” (referring to financial, human and informational resources) are necessary to conduct proper alliance management. The support and involvement of the TMT is of great significance as they will allow company resources to be devoted to the development of these learning processes which will enhance alliance capability.

Therefore, we expect both the direct effect of TMT on alliance outcome as well as an indirect effect, through the impact on the alliance learning process, to be positive. Firms with a highly involved TMT will develop better and more elaborate alliance management processes which enables them to improve their alliance results.

Hypothesis 4a: The support of the top management team will increase the alliance learning processes of the firm

Hypothesis 4b: The alliance learning processes will partially mediate the effect of the support of the top management team on alliance outcome

2.5 Culture as a moderating variable

Möller and Svahn (2003) state that differences in the cultural orientation of the firms participating in a network can have a significant impact on the ease with which knowledge

is shared both *within* and *between* firms. They argue that culture influences the kind of information people prefer and the manner in which that information is processed. With regard to research on the relation between organizational culture and alliance capability, only the first very few steps have been mapped. The alliance literature offers many insights on the importance of an “open” attitude towards collaboration and its effect on learning *between* firms. Less research has been conducted on the impact of culture on internal learning and more specifically on alliance capability development. Here, we analyze whether organizational culture has an impact on the relationship between the drivers and the development of alliance capability. We argue that the development of alliance capability is associated with certain cultural characteristics, more specifically with an open organisation culture. Ritter (1999, p.472) describes openness of corporate culture as: “*emphasizing, flexibility, spontaneity, and individuality (as typical characteristics of the ad-hocracy culture) in contrast to control, regulation, and stability (as typical characteristics of a hierarchy culture)*”. We argue that within an open culture the external orientation, innovation, knowledge sharing and creativity are driving forces behind the development of a sound alliance learning system.

Hypothesis 5: An open, innovative organizational culture will positively moderate the relation between the determinants of alliance capability and the alliance processes

3 Study design and methodology

In figure 1 an overview of our research model is being presented. For reasons of clarity the control variables (firm age and size) are not included in the figure. We have also simplified the figure by drawing just one arrow between each of the independent variables and the mediators instead of four (to each separate learning mechanism).

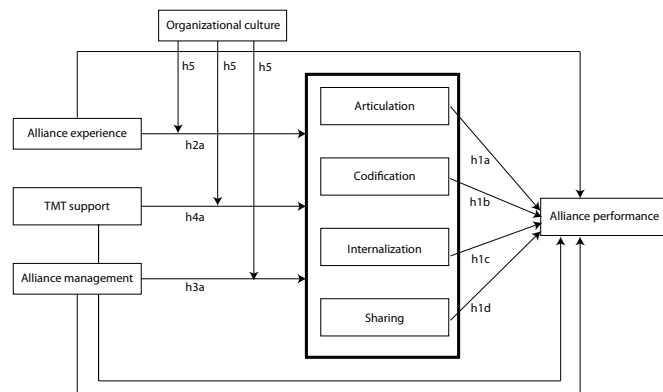


Figure 1: Research Model

3.1 Sample description

The sample consists of Belgian companies with more than 100 employees. We chose this criterion in order to address companies that were very likely to have had strategic alliances during the five-year-period 2003-2008. The population was selected using a database that was composed by Spectron, a supplier of database business solutions. The database contained the e-mail addresses of the CEOs of 1346 companies. The survey was e-mailed to the CEO of each of the companies in the list, with the request to fill in the questionnaire in person or to forward it to a person within the company who was responsible for the management of the alliance portfolio of the firm. We sent out the survey and e-mail in Dutch, French and English. After the first round of e-mails we received 138 fully completed questionnaires. A follow-up e-mail that was sent two weeks later resulted in an additional 97 completed responses, which makes a total of 235 completed questionnaires (17.5% response rate). We left out cases with missing values and selected only those companies that verified they had at least 1 previous alliance experience over the past 5 years, which narrowed our dataset down to 189 valid cases.

3.2 Variable measurement and constructs

For the measurement of the different variables, we used as many validated scales as possible. This increases the internal validity of the constructs being used. Table 2 offers an overview of the variables and their measurement. For a detailed overview of all items of our main variables, the learning processes, we refer to the appendix. It is important to notice that careful analysis of the items of *TMT support* revealed two sub-constructs: *TMT commitment* and *TMT incentives*. The former refers to the (emotional) involvement of the TMT with the firm's strategic alliances, whereas the latter refers to the linkage of the TMT's financial bonuses to the outcomes of the alliance. Two control variables, age and firm size were added to the model.

3.3 Method

Our research model encompasses both direct of the independent variables on the outcome variable as indirect effects through the alliance learning processes. Our hypotheses clearly indicate mediation effects, which leads us to two possible methods (Nambisan and Baron 2009): the Structural Equation Modelling (SEM) approach or the mediation approach of Baron and Kenny (1986), which is usually applied in hierarchical regression. Structural equation modeling is a confirmatory approach in which the model being tested represents the hypothesized relationships among an independent variable, a mediator, and a dependent variable, and the relationships between all these variables are tested simultaneously (Schneider et al. 2005), whereas Baron and Kenny (1986) propose four sequential steps. Although both methods share a lot of similarities, there are also some important differences. First, the Baron and Kenny approach is not suited for testing full mediation and

Table 1: Variable measurement

Concept	Number of items	Likert	Source	Chronbach alpha	Remarks	Sample mean/modus
Alliance performance	5	7	Kale(2007)	0.869	Managers were asked to assess the performance of their alliance portfolio of the past five years, based on 5 criteria	
Alliance learning process	19	7	Kale(2007)	Above	Factor analysis revealed four factors. Each of these corresponds with one of the four learning processes: articulation, sharing, codification and internalization. Each of the four constructs was developed using the factor loadings. For a list of the items, please check the appendix.	
<i>Codification</i>	4	5		0.892		
<i>Articulation</i>	4	5		0.787		
<i>Sharing</i>	7	5		0.842		
<i>Internalization</i>	3	5		0.784		
Strategic alliance experience	1		Heimeriks(2007)		Number of strategic alliances 2003-2008 period.5 answer categories	4-6
TMT commitment	6	5	Cooper(1995,2007)		Factor analysis with Varimax rotation revealed two factors:	
<i>TMT incentives</i>	3	5	Cooper(1995,2007)	0.744	Bonuses and rewards of TMT that are linked to alliance performance	
<i>TMT commitment</i>	3	5	Cooper(1995,2007)	0.812	Personal involvement of TMT in key alliance decisions	
Culture	16		Cameron and Quinn (2006)		We use the adhocracy/ clan/ hierarchy/ market framework	
Firm Age	1				Continuous variable expressed in years	49
Firm size	1				Number of employees. 5 answer categories.	

second, MacKinnon et al. (2002) have shown that in order to test simultaneously path between the independent variable to the mediator, and from the mediator to the outcome variable, SEM provides better results with regard to statistical power and type I error rates.

There are several programs to conduct SEM such as Amos, Lisrel and EQS. Here, we have opted for the partial least squares (PLS) method to test our mediated model. PLS allows simultaneous assessment of the measurement and the structural parameters of the model and places less stringent demands on sample size and residual distributions (Nambisan and Baron Forthcoming). The rationale of the choice for this method is threefold. First, PLS Path Modeling allows us to model formative measurement models. Second, as our data consist of both metric and nonmetric variables the condition of multivariate normality cannot be met. Third, given the explanatory nature of our model we our main objective is to optimize the amount of variance explained. SmartPLS 2.0 (Ringle et al. 2005) was used to conduct the analysis. The model parameters were estimated using 2500 iterations of the bootstrapping technique.

4 Results

4.1 Measurement model

The relationships between the constructs *Alliance performance*, *TMT support*, *TMT incentives*, the four *learning processes* and their respective items (measures) are tested in a formative way. Decisions regarding the direction of the relationships between indicators and their accompanying latent construct, that is a formative or reflective measurement model, need to be carefully made as they impact the validity of the empirical results of the entire structural equation model (MacKenzie et al. 2005). As Hulland (1999, p.8) states: “*The researcher needs to think carefully about whether it is more correct to think of the underlying construct as ‘causing’ the observed measures (i.e., a reflective relationship) or of the measures as ‘causing’ (or defining) the construct (i.e., a formative relationship).*” Evaluating the contents of the scales used to tap the various constructs under study by means of the guidelines suggested by MacKenzie and Jarvis (2005) leads us to conclude that all measurement models should be specified as formative. The estimation results concerning the measurement model provide sufficient information to assess several critical psychometric properties (see appendix B).

First of all, with the exception of one of the indicators assessing alliance performance, all indicators appear to be relevant in explaining the accompanying latent construct as evidenced by the magnitude and significance of the loadings. The particular insignificant indicator is disregarded in the remainder of the analysis. Second, discriminant validity is supported as all confidence intervals of the inter-construct correlations do not contain the value of 1.

4.2 Structural model

Overall, our model is well supported by the data as the R^2 values of all endogenous constructs are significantly different from zero at the 95% confidence level (codification $R^2 = 0.248$, articulation $R^2 = 0.276$, internalization $R^2 = 0.240$, sharing $R^2 = 0.293$, performance $R^2 = 0.207$). Below, we start with the discussion of the empirical results pertaining to the direct relationships (see also figure 2). After that, we pay attention to the hypothesized mediated effects.

Starting at the left hand side of our conceptual model, we see that the level of experience has a small positive effect on codification and articulation, but does not have a significant impact on two other alliance capability development processes or alliance performance. Turning to the level of financial incentives managers may earn based on their performance in managing strategic alliances our results point out that it has a significant influence on all four alliance capability development processes. However, we fail to find support for a direct relationship between financial incentives and alliance performance. The influence

Figure 2: Structural Model

Relationship	Coefficient
Codification → Performance	0.259*
Articulation → Performance	-0.065
Internalization → Performance	-0.039
Sharing → Performance	0.286**
Experience → Codification	0.053*
Experience → Articulation	0.111*
Experience → Internalization	-0.007
Experience → Sharing	0.020
Experience → Performance	0.063
Alliance function → Codification	0.258**
Alliance function → Articulation	0.060
Alliance function → Internalization	0.125
Alliance function → Sharing	0.097
Alliance function → Performance	-0.073
TMTCommitment → Codification	0.243**
TMTCommitment → Articulation	0.190**
TMTCommitment → Internalization	0.056
TMTCommitment → Sharing	0.345**
TMTCommitment → Performance	0.021
TMTFinancial incentive → Codification	0.261**
TMTFinancial incentive → Articulation	0.406**
TMTFinancial incentive → Internalization	0.422**
TMTFinancial incentive → Sharing	0.314**
TMTFinancial incentive → Performance	0.076
Size → Performance	0.035
Age → Performance	-0.087

* p<0.1 **p<0.05

management’s commitment to strategic alliances has on the different capability development processes follows a comparable pattern as financial incentives, with the exception that there is evidence for a significant relationship between the level of commitment and the extent to which information is shared. In a similar vein, the hypothesized direct relationship between commitment and alliance performance is not reflected by the data. Contrary to our expectations our data indicate that the presence of a specific alliance management department has only a very limited impact on learning processes and performance. More specifically, we only find a significant relationship for codification. Turning to the right hand side of our conceptual model where we try to explain alliance performance as a function of the different capability development processes, we find that alliance performance is positively related to two of the four alliance capability process, namely, codification and sharing.

We now proceed with the discussion of the hypothesized mediator effects put forward in our model. In assessing these effects we adhere to the work on multiple mediation models by Preacher and Hayes (2008). Figure 3 summarizes the statistics on the indirect and direct relationships essential to the evaluation of the mediator effects. The following two conditions apply in evaluating mediation effects. First, there should be a statisti-

Figure 3: Mediation and indirect effects

Antecedent	Learning process	Estimate
Experience	Codification	0.014
	Articulation	-0.009
	Internalization	0.000
	Sharing	0.005
TMTCommitment	Codification	0.064*
	Articulation	-0.012
	Internalization	-0.002
	Sharing	0.098*
TMT Incentive	Codification	0.067*
	Articulation	-0.028
	Internalization	-0.018
	Sharing	0.090*
Alliance function	Codification	0.067*
	Articulation	-0.002
	Internalization	-0.006
	Sharing	0.027

* p<0.1 **p<0.05

cally significant relationship between the mediator variable and the dependent variable. Thus, only mediation effects involving codification and sharing are of interest. Second, there should be a relationship between the antecedents in our model and the relevant learning processes. This implies that the hypothesized mediated impact of experience via codification and of the presence of an alliance department via sharing on performance will not be examined. For commitment and financial incentive our results indicate that their impact on performance is mediated by both codification and sharing. Moreover, as there is no direct significant relationship between the antecedents and performance we can conclude that the learning processes codification and sharing fully mediated the effect of commitment and financial incentives on alliance performance.

5 Discussion

In this paper we have focused on the role of different alliance learning processes to achieve higher alliance success. We have analyzed the effect on alliance performance of having codification, articulation, sharing and internalization processes in place to enhance the creation and dispersion of alliance management know-how within the firm. Our paper adds to the strategic and industrial marketing literature on alliance success, alliance capability and alliance management. We answer to the call for more research on the importance, the development process and the role of alliance capability to successfully manage the business network of the firm, one of the firm's most valuable intangible assets. (Ritter et al. 2002,

Möller and Svahn 2003, Ritter and Gemunden 2004, Järvensivu and Möller 2009, Ivens et al. 2009).

Previous studies on alliance capability have adopted the view that in order to become more adept in the management of alliances, hence have a high level of alliance capability, firms can install different kinds of learning mechanisms. Alliance learning mechanisms, such as evaluation tools, alliance training, feedback reports, alliance metrics or manuals, allow the firm to develop a superior knowledge on alliance management by gathering, creating and spreading knowledge on the process of alliance management (Draulans et al. 2003, Hoffmann 2005, Heimeriks and Duysters 2007, Heimeriks et al. 2009, e.g.). In line with Zollo and Winter (2002) and Kale and Singh (2007) we distinguished four types of learning mechanisms: alliance codification, articulation, sharing and internalization learning mechanisms. In the past, most studies have tested the effect of different learning mechanisms as one aggregated construct, but we analyzed the effects of the four separate types of learning mechanisms on alliance performance and find that only two types have a significant positive effect on alliance outcome, namely alliance codification (0.259*) and sharing processes (0.286**). Codification tools such as alliance checklists, guidelines or manuals allow the firm to facilitate the dispersion of existing knowledge and helps to replicate best-practices within the firm. Through sharing mechanisms such as seminars, job rotation or task forces, employees are encouraged to exchange alliance-relation information, best-practices and know how to peers. We find that practices such as formal official reports or debriefings and alliance trainings do not have a significant effect on alliance performance. Our results are in line with the findings of Heimeriks et al. (2009) who state that only *some* of the available learning mechanisms are actually beneficial for alliance performance.

We also analyzed the possibility that the two other processes, articulation and internalization, might not be determinant factors to explain alliance performance, but might be important prerequisites to support sharing and codification processes. It could be that internalization for example is a necessary condition to be able to share knowledge afterwards. We therefore tested the interaction effects of the learning processes to see whether they have a reinforcing effect on each other. Although the interaction effects were positive, they were not significant, indicating that the interplay between the learning processes is maybe less important than expected. Our results suggest that companies should not just invest in any kind of practice or tool in order to improve alliance outcome, but should carefully consider which tools are appropriate (*more* is not always better). Based on our results it is more useful to provide opportunities for employees to work and spend time together, to expand their external as well as their internal network (*within* the firm) so they can learn from each other and share ideas, and maybe less important to invest in expensive training sessions and workshops. Bringing together best-practices in a manual, providing some rules on how to handle certain alliance processes or encouraging job-rotations prove to be more efficient than trying to get people to articulate their knowledge through official briefings or reports.

Second, we can refine earlier results on the direct positive effect of the alliance function on

alliance performance (Spekman et al. 1998, Dyer et al. 2001, Kale et al. 2002, Hoffmann 2005, e.g.). We find that an alliance department or manager improves the performance of the firm's alliance portfolio by enhancing the alliance management *codification* processes and not through the direct effect on alliance performance. In alignment with Heimeriks et al. (2009), we find that an alliance department can establish an infrastructure to support the management of alliances and to enhance the process. Through the creation of guidelines and manuals the alliance department codifies important alliance know-how that is then spread throughout the company. The alliance department can serve as a collector of lessons-learned over various alliances and units. We find that in most companies the level of knowledge *sharing*, which also has an important effect on alliance performance, is not significantly related to the alliance management function. It might be that sharing mechanisms such as the level of informal information exchange are anchored in other parts of the company's organisation, such as its human resource-policy which might encourage the creation of internal ties with peers. Job rotation, one of the tested sharing mechanisms, might be a part of the normal organisation in a project team structure more than it is evoked by the alliance manager. Our findings provide further insight in the relationship between the alliance manager and the alliance outcome and refines the results of Kale and Singh (2007), who stated that the global alliance learning process (the sum of the four learning processes) mediated the impact of the alliance function on alliance success. We show that this conclusion should be considered more carefully, in the sense that the impact mainly works through the development of *codification* processes and not through the other learning processes. However, organization could probably improve their alliance outcome further, by orienting their alliance function towards the development and encouragement of both *codification* and *sharing* tools as they can both improve alliance outcome.

Remarkably, we do not find a significant result with regard to the effect of alliance experience on alliance outcome. In the model where we test the direct effect of alliance experience on alliance performance (without any other variables taken into account), a positive, significant relation is found. However, as soon as we include the other variables in the model, the impact of experience on alliance outcome becomes insignificant. Other studies in the field of alliance experience which showed a significant relation between both variables, usually have tested the isolated effect of alliance experience on alliance outcome (Anand and Khanna 2000, Sampson 2005, Rothaermel and Deeds 2006, e.g.). Our results indicate that these models might be overestimating the impact that experience has on alliance performance. Alliance experience does have a positive, although rather limited, effect on the development of *codification* (0.053*) and *articulation* (0.111*) processes. Additional testing to explain our result, showed that alliance experience is positively and significantly related to the existence of the alliance function. It might be that a major part of the effect of experience on alliance performance is actually mediated through the presence of an alliance manager or department. Firms with more alliance experience are more likely to introduce a separate alliance manager or department who initiates several learning mechanisms that can improve the alliance results.

Our fourth finding pertains to the importance of the involvement of the top management

team with the company's strategic alliances and their management. We clearly find evidence that the involvement of the top management team is of crucial importance for the development of the alliance learning mechanisms which supports the development of alliance capability. We find that these mechanisms mediate the positive effect of the involvement of the TMT on the alliance performance of the firm. This finding adds new insights to the literature on alliance capability as, to the authors' knowledge, this is the first time that the role of the TMT is investigated in this context. In line with Prevot and Spencer (2006), we conclude that if the TMT signals its interest in a certain area (here, the outcome of its strategic alliances), more accurate and elaborate capability transfer mechanisms are being put into place. The results show that especially when the TMT's financial rewards are linked to the alliance outcome, more attention is being spent on the development of the appropriate management techniques by adopting several alliance learning mechanisms.

Finally, in contrast with the work of Ritter (1999,2003), we do not find a significant effect of corporate culture on alliance capability. We do not find support for hypothesis 5, which stated that companies with an open culture would moderate the effect of the independent variables on alliance learning processes. It could be that the general organisational culture does not reflect enough the "alliance mindset" which is present in the company. The variables mainly relate to overall characteristics of the firm's culture and do not treat the specific "attitude" towards alliances or knowledge sharing separately.

6 Limitations and future research

This research, like any other research, has a couple of limitations which could be addressed in further research. First, we have investigated the alliance capability of the focal firm only. It would be interesting to investigate the concept of "alliance capability match" in dyadic research. It is worth analyzing whether alliance performance can benefit from the "fit" between partners with regard to their alliance management approach. Do both companies need a high level of alliance capability to make the alliance work, or can one company which has the necessary skills and capabilities to manage an alliance, act as a facilitator throughout the alliance process? In addition to other "fit" measures which are used more often in alliance research (for example cultural fit), we think an alliance management fit can also explain the alliance performance in an important way. Understanding of each other's processes, routines, working schedules, evaluation methods and so, can enhance the understanding between companies creating mutual trust and commitment.

Second, we have used a large scale quantitative survey, which gives us the opportunity to test our hypotheses with an acceptable degree of external validity. Nevertheless, this method also has its shortcomings as it forces the researcher to use proxy's to capture certain concepts which are hard to measure (alliance capability, alliance performance). The authors have tried to counter this problem by using validated scales, but additional

qualitative research might reveal other or deeper insights in the alliance capability building process. The management process was captured here mainly through variables that measure the existence of certain tools or processes, but case-study research might shed more light on more specific qualitative aspects of the alliance management process.

Finally, we have investigated the general alliance capability of the firm, taken over its overall portfolio of alliances. Future research could look further into the management requirements of different types of strategic alliance networks. According to Möller and Rajala (2007), competition in the 21st century mostly takes place through the effective management of various types of nets (“current business nets”, “business renewal nets” and “new business nets”). The management requirements of each of these nets might differ somewhat. It would be interesting to analyze whether firms develop different alliance learning tools according to the type of net. Can capabilities be built more quickly in certain types of nets or do different netw need different types of capabilities? It is also worth studying how firms can transfer the knowledge and capabilities which are developed during the management of one type of net to another type of net.

Appendix A: Alliance capability measurement items

The measurement items for the alliance learning processes which were all measured on a 7 point likert scale. The questions are derived from Kale and Singh (2007). The factor analysis that we conducted, revealed four factors, each of which are presented in the table below. 1 of the items of the original questionnaire (“The company maintains a directory or contact list”) was left out of the model because of insignificant loading on either one of the factors.

Table 2: Alliance learning processes: measurement items

Articulation
1. Managers involved with the companys alliances are regularly debriefed about their prior and/or current alliance experience
2. Managers responsible for the companys alliances maintain a record (in the form of a memo, note, report, or presentation) of all major incidents, decisions, or actions associated with their respective alliance(s)
3. Alliance managers regularly report on the progress and performance of their respective alliance(s)
4. The company maintains a repository or database containing factual information of each of its alliances (e.g., date and purpose of alliance formation, name of the alliance partner, names of managers/executives who manage that alliance, etc.)

Codification
5. Company managers follow a well-defined process to guide the formation or management of any alliance
6. Resources such as checklists or guidelines are developed and used to assist managerial decision making and actions while forming or managing strategic alliance
7. Resources such as alliance manuals (containing tools, templates, or frameworks) are developed and used to assist managerial decision making and/or actions while forming or managing alliance
8. The company updates the alliance checklists, guidelines or manuals that have been developed and are in use

Sharing
9. Alliance managers participate in forums such as committees or task forces to share their alliance management experience and practices
10. Company managers participate in forums such as meetings, seminars, or retreats to exchange alliance-related information, experiences, war stories, etc.
11. Company managers engage in informal sharing and exchange of alliance-related information and know-how with peers or colleagues within the organization
12. Company managers with substantial prior experience in managing alliances are usually rotated across some of the companys key alliances
13. The company provides managers access to documented and codified information and know-how on its prior and ongoing alliance experience
14. The company provides opportunities for on-the-job alliance training to individuals who are relatively new to managing alliances. Here, individuals are assigned to work in existing alliances, especially with managers who have substantial experience in managing such relationships
15. The company management collects a collective review to assesses the progress and performance of its strategic alliances.

Internalization
16. Managerial incentives are used to encourage individual managers to share their personal alliance management experience and know-how with other managers within the company
17. Company managers attend in-house training programs on alliance management whenever they are assigned to manage or work with any alliance
18. Company managers attend externally conducted training programs on alliance management whenever they are assigned to manage or work with any alliance

(Source: Kale et al. 2007)

Appendix B: Measurement model

Figure 4: Measurement Model (part 1)

	Artic01	Artic02	Artic03	Artic04
Mean	0,782	0,788	0,681	0,75
Standard deviation	0,1	0,089	0,117	0,11
Percentile 5 bootstrap	0,588	0,623	0,47	0,545
Percentile 95 bootstrap	0,916	0,911	0,848	0,898
Percentile 10 bootstrap	0,647	0,673	0,527	0,604
Percentile 90 bootstrap	0,894	0,889	0,819	0,876
	Codif01	Codif02	Codif03	Codif04
Mean	0,956	0,742	0,715	0,67
Standard deviation	0,053	0,115	0,102	0,111
Percentile 5 bootstrap	0,886	0,549	0,54	0,481
Percentile 95 bootstrap	0,995	0,901	0,861	0,831
Percentile 10 bootstrap	0,913	0,6	0,592	0,534
Percentile 90 bootstrap	0,991	0,869	0,836	0,801
	Commit01	Commit02	Commit03	
Mean	0,726	0,852	0,757	
Standard deviation	0,154	0,115	0,144	
Percentile 5 bootstrap	0,433	0,657	0,512	
Percentile 95 bootstrap	0,933	0,983	0,943	
Percentile 10 bootstrap	0,522	0,718	0,576	
Percentile 90 bootstrap	0,902	0,969	0,919	
	Finan01	Finan02	Finan03	
Mean	0,708	0,835	0,853	
Standard deviation	0,099	0,07	0,069	
Percentile 5 bootstrap	0,536	0,708	0,729	
Percentile 95 bootstrap	0,848	0,928	0,952	
Percentile 10 bootstrap	0,584	0,743	0,763	
Percentile 90 bootstrap	0,823	0,914	0,936	
	Intern01	Intern02	Intern03	
Mean	0,767	0,811	0,833	
Standard deviation	0,136	0,116	0,102	
Percentile 5 bootstrap	0,521	0,599	0,653	
Percentile 95 bootstrap	0,937	0,954	0,962	
Percentile 10 bootstrap	0,59	0,663	0,708	
Percentile 90 bootstrap	0,908	0,937	0,945	

Figure 5: Measurement Model (part 2)

	Perform01	Perform02	Perform03	Perform04	Perform05		
Mean	0,562	0,36	0,504	0,774	0,494		
Standard deviation	0,218	0,252	0,269	0,251	0,233		
Percentile 5 bootstrap	0,14	-0,092	-0,011	0,364	0,067		
Percentile 95 bootstrap	0,843	0,75	0,86	0,963	0,824		
Percentile 10 bootstrap	0,273	0,024	0,123	0,581	0,164		
Percentile 90 bootstrap	0,794	0,665	0,812	0,946	0,772		
	Sharing01	Sharing02	Sharing03	Sharing04	Sharing05	Sharing06	Sharing07
Mean	0,404	0,551	0,579	0,52	0,697	0,728	0,801
Standard deviation	0,141	0,134	0,139	0,137	0,102	0,109	0,108
Percentile 5 bootstrap	0,174	0,327	0,337	0,29	0,537	0,554	0,625
Percentile 95 bootstrap	0,61	0,738	0,782	0,728	0,828	0,872	0,926
Percentile 10 bootstrap	0,235	0,394	0,403	0,347	0,58	0,595	0,678
Percentile 90 bootstrap	0,566	0,701	0,747	0,686	0,808	0,847	0,908

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