Firm performance and alliance capability: the mediating role of culture

Dave Luvison
*Sellinger School of Business and Management,
Loyola University Maryland, Baltimore, Maryland, USA, and*
Ard-Pieter de Man
*Faculty of Economics and Business Administration,
VU University Amsterdam, Amsterdam, The Netherlands*

Abstract

Purpose – Extant literature has looked at the effect of alliance capability and organizational culture on alliance portfolio performance, but the relationship between the two has not been explored. The purpose of this paper is to explore the hypothesis that an alliance supportive culture is not only fostered by a firm's alliance capabilities, but that it mediates the relationship between capabilities and performance.

Design/methodology/approach – Survey responses from 190 alliance managers, collected using a two-stage process, were analyzed to investigate the interrelationship of firm-level alliance capability, alliance supportive culture and portfolio performance.

Findings – Alliance supportive culture was found to mediate the relationship between alliance capability and alliance portfolio performance. This finding suggests that in order to effectively manage a firm's portfolio of alliances, the benefits of alliance capability must be transferred broadly into the organization's cultural orientation toward alliances.

Research limitations/implications – Further research may extend this analysis to explore the effect of subcomponents of alliance capability and alliance culture to better understand fine-grained influences on alliance performance. The findings of this study also may be extended to inform how supportive culture orientation affects partner selection, negotiation and time to performance.

Practical implications – Managers should utilize culture-building actions as a way of extending the value of their firms' alliance capabilities in order to improve their effectiveness across the portfolio.

Originality/value – Extant studies have considered the discrete effects of capability and cultural orientation on alliance portfolio success, but the mediation effect has not previously been investigated. The findings also identify a boundary condition for the benefit of alliance capabilities on portfolio performance.

Keywords Strategic alliances, Organizational culture, Alliance capability, Alliance portfolio performance, Alliance supportive culture

Paper type Research paper

1. Introduction

With the increasing interest in strategic alliances has come increasing attention to firms' ability to manage them. Strategic alliances have been defined as voluntary relations between organizations designed to facilitate market entry, technological exchange or learning (Buckley and Casson, 1988; Dacin *et al.*, 2007; Gulati and Singh, 1998). How they are managed has been reflected in the alliance capability literature, which describes the firm-level ability "to capture, share, disseminate and apply alliance management knowledge" (Heimeriks *et al.*, 2009, p. 97) enabling the firm to create successful alliances through its ability to learn and leverage that knowledge (Draulans *et al.*, 2003). To this end scholars have investigated alliance capability from the perspective of how prior alliance experience (Anand and Khanna, 2000; Draulans *et al.*, 2003; Hoang and

Rothaermel, 2005; Simonin, 1997) as well as how the presence of dedicated alliance management departments (Hoffmann, 2005; Kale *et al.*, 2001, 2002), specialized processes, (Heimeriks and Duysters, 2007) and the institutionalization of associated know-how (Heimeriks *et al.*, 2009) contribute to the firm's overall capabilities. This organizational capability has, in turn, been shown to have a positive effect on alliance portfolio performance (Sarkar *et al.*, 2009; Schilke and Goerzen, 2010).

In addition, many scholars have acknowledged the influence of organizational culture on alliance performance through studies focussing on cultural fit and the challenges of interpreting partners' distinctly different cultures (Das and Kumar, 2010b; Kumar and Patriotta, 2011; Vlaar *et al.*, 2006). Moreover, there is evidence that some types of organizational culture are more likely to produce successful alliances than others (Leisen *et al.*, 2002; Sambasivan and Yen, 2010). Although the literature has not investigated it, there is likely a relationship between alliance capability and organizational culture. Capability represents the firm's ability to apply its knowledge in a way that better enables it to achieve its alliance objectives (Heimeriks *et al.*, 2009) whereas organizational culture reflects the "values, beliefs and behavior patterns" (Ortega-Parra and Sastre-Castillo, 2013, p. 1072) that influence achievement of those objectives (Denison and Mishra, 1995). As a result, one could infer that culture would play an integral role in determining how alliance capability is enacted across the "multiple simultaneous strategic alliances with different partners" (Wassmer, 2010, p. 141) that constitute its alliance portfolio in order to better enable the firm to achieve its objectives.

In this paper we investigate this likely relationship and propose that the influence of alliance capabilities on a firm's alliance portfolio performance is mediated by its alliance supportive culture, i.e., a culture encapsulating behaviors such as communication about alliances, mutuality and trustworthiness that are conducive to collaboration. As individuals in the firm interpret the logic behind the tools and processes that constitute alliance capability, they begin to develop values and ways of behaving that are congruent with that logic (Hatch, 1993). Such behaviors should subsequently engender organization-wide cultural values that are conducive to alliances.

The results of this analysis make two primary contributions to the literature. Our finding that alliance supportive culture partially mediates the relationship between alliance capability and portfolio performance extends the existing literature on alliance capability. Although capability is instrumental in improving alliance performance, its effect appears to be bounded at the portfolio level by the firm's alliance supportive culture. This suggests that a firm's culture will dictate whether capability is translated into portfolio performance. A second theoretical contribution of this study is that it provides new insight into the interrelationship between alliance capability and organizational culture. We find that alliance capability helps to develop the specific cultural values and underlying assumptions (Schein, 2010) that support alliances.

The remainder of this paper is divided in three parts. First, we develop the theoretical basis for the relationships between alliance capability, culture and portfolio performance. After that we review both the methodology and results of this study. Finally, we discuss the implications for research and practice.

2. Hypotheses development
Alliance capability
The main focus of the alliance capability literature has been to understand why some firms have a better alliance performance than others (Ireland *et al.*, 2002). Inquiries into a firm's alliance capability can be traced back to studies describing the role of individuals

responsible for overseeing those relationships and the procedures required to manage them (Spekman, 1979). Scholars subsequently found that experience with alliances was significantly related to their success (e.g. Anand and Khanna, 2000; Simonin, 1997), which in turn led to studies of how firms institutionalized this experience (e.g. Heimeriks *et al.*, 2007; Kale and Singh, 2007). Capability has been investigated at three levels of analysis, firm (the ability to manage specific alliances), portfolio (the ability to coordinate across all the firms' alliances) and dyadic (the relational capability of a dyad) (Wang and Rajagopalan, 2015). In this paper we focus on the portfolio view of alliance capability.

A firm's alliance capability influences its ability to select, negotiate and manage these relationships effectively (Khanna, 1998; Lambe *et al.*, 2002). While the extant literature has outlined a number of elements that make up alliance capability (for a review of the literature see Niesten and Jolink, 2015; Wang and Rajagopalan, 2015), the predominant operationalization of the construct has involved the role of a designated alliance manager (Spekman *et al.*, 1998), which has subsequently been expanded to include the role of an alliance management function (Kale *et al.*, 2001, 2002; Kale and Singh, 2007), and the use of specialized tools and procedures that augment the alliance management process (Draulans *et al.*, 2003; Heimeriks and Duysters, 2007). Various studies have found that the presence of these components of alliance capability improves the firm's ability to manage its alliances (e.g. Heimeriks and Duysters, 2007; Heimeriks *et al.*, 2007; Hoffmann, 2005; Kale *et al.*, 2002).

In addition to such performance effects, alliance capability produces a number of benefits for a firm. These include facilitating knowledge transfer, execution of alliance strategy, signaling a firm's commitment to alliance strategy, promoting the development of new best practices and helping ensure the successful execution of the alliance operation (de Man *et al.*, 2010). Because such benefits are firm-level effects, high levels of alliance capability have been found to also improve performance across the entire alliance portfolio (Schilke and Goerzen, 2010). In keeping with previous literature we propose a similar relationship as a foundation for studying subsequent mediational relationships discussed as follows:

   H1. A firm's alliance capability relates positively to its alliance portfolio performance.

Alliance supportive culture
An organization's culture reflects its "values, beliefs and behavior patterns" (Ortega-Parra and Sastre-Castillo, 2013, p. 1072), or what some have loosely referred to as "How we do things" (Zaheer *et al.*, 2003, p. 185). The study of organizational culture emerged from an anthropological tradition, with early studies noting that firms are characterized by common, observable elements such as vocabulary, myths and stories (Deal and Kennedy, 1982; Pettigrew, 1979) as well as unique tendencies and practices that positioned them to best deal with their market environments (Peters and Waterman, 1982; Schein, 1985). Cultures emerge through a number of specific influences, such as founders' values (Murphy *et al.*, 2013; Schein, 1984), but more importantly through the shared accumulated experiences of all members (Hatch, 1993; Hatch and Schultz, 2002; Jelinek *et al.*, 1983; Kavanagh and Ashkanasy, 2006). While scholars have proposed that organizations have subcultures (Jermier *et al.*, 1991; Martin, 1992), such as professional, administrative and customer interface subcultures (e.g. Bloor and Dawson, 1994; Hofstede, 1998), most have tended to focus on culture as an organization-level construct (Cameron and Quinn, 2011).

Various general studies have found that organizational cultures enable firms to achieve their objectives (Chatman *et al.*, 2014; Givens, 2012). In addition, many of these

studies show how organizational culture significantly affects the types of behaviors called upon in alliances. For example, organizational culture influences individual-level behaviors such as commitment (Ortega-Parra and Sastre-Castillo, 2013), cooperativeness (Murphy *et al.*, 2013), relationship skills (Beugelsdijk *et al.*, 2006) and leadership (Amagoh, 2009) that are instrumental in the collaborative interactions required in alliances. Furthermore, scholars find that organizational culture has a significant effect on areas such as learning (Danish *et al.*, 2014; Kao *et al.*, 2011), conflict management (Di Pietro and Di Virgilio, 2013), innovation (Naranjo-Valencia *et al.*, 2011) and change (Adil, 2014), all of which can occur at the firm level in alliances.

Alliance-specific studies have found that a firm's cultural orientation can affect its ability to collaborate with other firms (Mohr and Spekman, 1994; Spekman *et al.*, 2000). Alliance managers must interpret their partners' actions rather than simply take them at face value; as a result, cultural sensitivity is a critical ingredient for alliance success (Das and Kumar, 2010a, b). For instance, members of a firm who are inclined to act opportunistically are likely to be predisposed to make false assumptions about the contribution and value of the partner (Das, 2006), despite the fact that the firm possesses structure and processes that would facilitate coordination (Gulati *et al.*, 2012). In such cases the alliance will be strained by lack of trust and relational conflict (Barney and Hansen, 1994).

We propose that the proliferation of capability within the firm promotes culture development in a number of ways. The use of formal processes and tools contributes to firm members' awareness that appropriate behaviors are necessary to benefit from them. Alliance capability also fosters the emergence of values that occur as part of firm members' interpretative processes (Flores *et al.*, 2012). As firm members repeatedly encounter and utilize the tools and processes that are a part of a firm's capability they are more likely to understand the importance of those behaviors (Bloor and Dawson, 1994; Lægreid *et al.*, 2011). Finally, the presence of formalized capability provides implicit and explicit senior management endorsement of its importance, which fosters the development of underlying assumptions across the firm. When leaders visibly support alliance projects (Jassawalla and Sashittal, 1999) and alliance learning mechanisms (Sluyts *et al.*, 2011) they signal that alliances are important for the firm. Culture is strongly influenced by organizational leaders' modeled behaviors (Bloor and Dawson, 1994; Santos *et al.*, 2012), so leaders' implicit endorsement of capabilities conveys the need to adopt commensurate values.

Scholars have suggested that firms can be categorized in terms of a single culture (e.g. Leisen *et al.*, 2002; Sambasivan and Yen, 2010; Sluyts *et al.*, 2011). Because culture is embedded and transmitted through processes and tools (Daymon, 2000), the presence of an alliance capability also affects the development of an alliance supportive organization culture. An alliance supportive culture contains the visible symbols, values and underlying assumptions (Schein, 2010) that support a company's ability to effectively manage its alliances with other organizations (de Man and Luvison, 2014). For instance, members of a firm that have participated in different types of alliances may become more appreciative and tolerant of the fact that partners' reasons for entering the alliance will differ. Rather than single mindedly and aggressively negotiating to meet its own objectives, the firm is more likely to prioritize the importance of the partners' objectives (Luvison *et al.*, 2011). As a result, we propose that as firms develop their alliance capability they will also develop cultural values and assumptions that are more supportive of collaboration across its portfolio.

Alliance departments are a case in point (Kale and Singh, 2007). If company leaders support the creation of such a department that is a clear signal to the organization

that alliances will be an important part of the company strategy (Atkins, 2007; Sims *et al.*, 2001). This should stimulate the adoption of related values and affect the underlying assumptions of the organization. For example, people will begin to assume that partnering is a better way to gain competitive advantage than going it alone. The day to day use of other tools like alliance evaluation techniques or alliance databases will, over time, shape alliance culture in a similar way by highlighting behaviors and ideas that are productive in an alliance:

H2. Better firm alliance capabilities promote the development of an alliance supportive firm culture.

A firm's cultural sensitivity to a partner is a critical ingredient for alliance success (Das and Kumar, 2010a, b). However, some types of culture are more likely to affect alliance performance than others (Leisen *et al.*, 2002; Sambasivan and Yen, 2010), suggesting the need for a cultural model that better reflects an alliance supportive orientation (Sluyts *et al.*, 2011; Spekman *et al.*, 2000). Scholars have found that organizations with a culture that embodies characteristics such as open and consistent internal communication about alliances, mutual respect and trustworthiness are more likely to enjoy alliance success (Barney and Hansen, 1994; Casey, 1996; Clegg *et al.*, 2002; de Man and Luvison, 2014; Martínez-Sánchez *et al.*, 2009; Sambasivan and Yen, 2010). Following this we propose these to be core elements of an alliance supportive culture.

Such characteristics are essential for success in individual alliances, and they emerge through the sense-making activities occurring inside and between alliances (Das and Kumar, 2010b; de Man and Luvison, 2014; Vlaar *et al.*, 2006). When qualities such as open internal communication about alliances, mutual respect and trustworthiness are part of a firm's organizational culture, its members are less likely to impulsively judge a partner's actions and misinterpret its motives, thereby improving relational quality (Bouncken, 2011). Given the variety of partners in a firm's alliance portfolio, the more broadly these qualities occur across an organization the more likely its members will be to apply them universally to its alliances. Consequently, we hypothesize that organizations with a high level of alliance supportive culture will have greater success across the alliance portfolio than those with less supportive cultures:

H3. A firm's alliance supportive culture relates positively to its alliance portfolio performance.

Given that alliance failure rates remain high (Gulati *et al.*, 2012) one must infer that mere awareness or exposure to capability elements is not sufficient to ensure portfolio performance. Alliance capability has traditionally been operationalized in terms of the presence of an alliance management function (e.g. Kale *et al.*, 2002) or the use of specialized tools and processes (e.g. Heimeriks *et al.*, 2007). In theory it should be relatively straightforward for a firm to copy these practices to develop an effective level of alliance capability. The high incidence of strategic alliance activity across a range of industries suggests that most firms are exposed to these best practices; such awareness would be further facilitated by practice sharing across the interlocking network of multiple firms' alliances. Moreover, such knowledge exchange can be facilitated through the actions of industry consultants and professional associations (e.g. the Association of Strategic Alliance Professionals (ASAP), Licensing Executives Society). In light of this, one would expect failure rates to be lower.

One potential explanation for this is that the relationship between capability and performance, especially at the portfolio level, is more complex than has previously been

postulated. We suggest that the beneficial effects of alliance capabilities will be diluted at the portfolio level if an alliance supportive culture is absent. Alliance capability may actually impede the overall organization's ability to partner effectively because the alliance management function carries the burden of partnering on behalf of the organization (Sarkar *et al.*, 2009). In doing so the rest of the firm's members are absolved from having to act in an alliance supportive manner.

On the other hand, the presence of a widespread alliance supportive culture in firms should help its members better manage large numbers of alliances. To achieve this, the know-how represented by alliance capability would need to be interpreted across the organization into cultural values in order to result in portfolio-level performance. Consequently, we hypothesize that alliance supportive organizational culture mediates the relationship between alliance capability and portfolio performance:

H4. An alliance supportive culture mediates the relationship between alliance capability and portfolio performance.

3. Methodology
3.1 Sample
Alliance managers are typically responsible for overseeing and coordinating their firm's strategic alliances. Because they provide an informed perspective on the operations and performance of these relationships they have been used as a source in previous studies that assess alliance performance (Heimeriks *et al.*, 2007; Heimeriks and Duysters, 2007) as well as characteristics associated with alliances (Arino, 2003; Johnson *et al.*, 2002). The sample for this study consists of alliance managers who are members of ASAP. This group, which is made up of global alliance managers and executives representing a variety of industries, was established in 1998.

We employed a two-stage survey methodology. For the first stage, we asked alliance managers to complete a questionnaire regarding their firm's alliance capability, culture and demographic information. We sent e-mails to the 5,932 valid e-mail addresses in the ASAP database and received a total of 272 responses (4.6 percent response rate). To evaluate non-response biases we compared the industries of the respondents in our sample with those found in the ASAP member database (Capron, 1999; Dillman *et al.*, 1974), finding no differences ($\chi^2 = 7.865$, df $= 8$, $p = 0.45$). For the second stage of the survey, we sent e-mails requesting information about the performance of their alliance portfolios to the 272 managers who had responded in the first stage. A total of 190 of the 272 completed the second survey (69.9 percent of the respondents to the first survey). These 190 responses constituted the sample used for this study.

Respondents completing both stages of the survey came from a cross-section of industries, with service industries (information technology, financial and other, 29.5 percent), high technology (25.3 percent) and pharma/biotech (23.8 percent) being the most-represented industries. Managers representing larger firms made up the larger part of the sample with 60.1 percent coming from organizations having more than 1,000 employees and 41.1 percent from organizations larger than 10,000 employees. Roughly half the firms had revenues greater than $1.0 billion, and 13.7 percent had revenues exceeding $50.0 billion. We measured portfolio size by the number of alliances that were currently operational in these firms. Approximately one-third of the respondent firms currently had five or fewer alliances, 27.4 percent had six to 15 alliances, 9.5 percent had 16-25 alliances, 6.8 percent had 26-40 alliances and 22.6 percent had 40 or more alliances.

3.2 Measures

Dependent variable. Various scholars have noted the difficulty in using objective measures of alliance performance such as revenue and profitability. Because they are internal projects, objective measures are generally not directly available (Krishnan *et al.*, 2006). Moreover, financial measures are not always appropriate to assess the success of strategic objectives such as co-development and research milestones (Geringer and Hebert, 1991) or longevity (Krishnan *et al.*, 2006). For this reason there has been a precedent in the literature to use qualitative performance measures (Kale and Singh, 2007), and these measures are highly correlated with objective success measures when those have been available (Geringer and Hebert, 1991). Moreover, they capture both process and outcome performance (Arino, 2003).

Numerous scholars have used this qualitative approach to evaluate alliance portfolio performance (e.g. Kale and Singh, 2007; Neyens and Faems, 2013; Sarkar *et al.*, 2009; Schilke and Goerzen, 2010). Because both capability and organizational culture are conceptualized at the firm level of analysis, we use alliance portfolio performance as our dependent variable in order to determine whether heterogeneity in performance outcomes is attributable to firm-level mechanisms (Heimeriks *et al.*, 2007).

We sent respondents to the initial survey a second survey capturing performance information one month after they submitted their survey collecting responses on capability and culture. The resurvey contained a five-item scale from Kale and Singh (2007) that was rewritten to ask respondents about overall portfolio performance (e.g. "Over the past five years, our alliances were characterized by a strong and harmonious relationship between us and our alliance partners", "Over the past five years, our company's competitive position has been greatly enhanced due to our alliances"). We asked respondents to reply to each question using a Likert scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree). The five-item performance measure, which was both temporally separated from the initial survey and a methodologically different measure (i.e. it was not asked in the initial survey) was aggregated and used as our measure of portfolio success ($\alpha = 0.78$). The use of temporal and methodological separation of measurement aims to control for common method bias (Podsakoff *et al.*, 2003) and has been used in previous alliance studies (Schreiner *et al.*, 2009).

Independent variables. We assessed alliance capability using a total of five items indicating the presence of an alliance management function and 14 items reflecting procedures. Previous studies used these items to assess the presence of alliance capability (Heimeriks *et al.*, 2009; Heimeriks and Duysters, 2007). However, those studies measured the presence of capability rather than the extent to which capability elements were utilized within the firm. Since capability is only useful when it is applied (Cohen and Levinthal, 1990), if a firm is not consistently utilizing alliance managers and alliance management processes across its entire portfolio there is the potential for uneven performance. In such cases it would not be clear whether performance shortfalls were due to the ineffectiveness of the firm's capability elements or the evenness by which they were applied. Therefore, respondents were asked to indicate the extent to which their organization utilized each element using the following scale: 1 = not used, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = continuously. The responses were aggregated into a single measure ($\alpha = 0.73$). The capability scale items are shown in Appendix 1.

The measure for alliance supportive culture was developed using standard scale development procedures (Churchill, 1979). Following a literature review identifying the various dimensions that constitute alliance supportive culture mentioned above,

we conducted interviews with nine executives whose firms pursued an active alliance strategy. We analyzed the transcripts of the interviews to substantiate the use of elements mentioned in the literature. We subsequently adapted questions from a number of sources (Cannon *et al.*, 2000; Kaufmann and Stern, 1988; Lopez *et al.*, 2004; Sanz-Valle *et al.*, 2011; Sarkar *et al.*, 2009) and where appropriate modified them to offer greater clarity and consistency across measures. When we did not find potential dimensions in the literature we developed questions, accepting them only when there was total agreement on meaning, wording and relevance. Subsequently we tested the questions for face validity and clarity using a pilot group of six alliance managers. The resulting scale corresponded to our three-dimension definition of organizational culture related to cultural artifacts (e.g. communication prominence and frequency), values (e.g. responsiveness) and underlying beliefs (e.g. mutuality and trustworthiness) (Schein, 1990).

We performed confirmatory factor analysis to assess model fit and psychometric properties of this scale. The results indicated a second-order factor model displaying good overall fit (χ^2/df $= 2.7$, CFI $= 0.96$, IFI $= 0.96$, RMSEA $= 0.08$) based on guidelines for stability and robustness used in similar studies (e.g. Schreiner *et al.*, 2009) as well as accuracy and consistency to assess different models (Heide, 1994; Heide and John, 1990). In order to serve as the dependent variable for *H2* we aggregated the eight items into a single scale ($\alpha = 0.77$). All items exceeded the recommended minimum item loadings of 0.40 (Ford *et al.*, 1986), and reliabilities met the recommended minimum of 0.70 (Nunnally, 1978), indicating item and scale reliability. Convergent validity was indicated by significant factor loadings ($p < 0.001$) for all first- and second-order factors. Average variance extracted exceeded the recommended threshold of 0.50 (Fornell and Larcker, 1981) for alliance language (0.58) and alliance values (0.56); alliance assumptions fell slightly below that level with an AVE of 0.43. The culture scale items are shown in the Appendix 2.

Control variables. We created indicator variables for three measures captured in the survey: industry, number of employees and organizational revenue following Heimeriks and Duysters (2007). Annual worldwide sales and total employees, both represented by a categorical variable, were used to control for firm size.

Method of analysis. We used multiple regression to evaluate relationships between alliance capability and alliance portfolio performance; alliance capability and alliance supportive culture and alliance supportive culture and portfolio performance. We tested mediation using a four-step series of regressions to measure whether the influence of alliance capability is transmitted through alliance supportive culture to affect portfolio performance (Alwin and Hauser, 1975; Baron and Kenny, 1986).

4. Results

Table I shows the descriptive statistics.

Table II summarizes the results of the analyses. In Model I performance is regressed on the control variables. None of these variables were significant, indicating that they had no effect on portfolio performance. Model II shows the regression of performance on alliance capability. The model's R^2 value increased to 0.21 ($F = 1.91$, df $= 23,166$, $p < 0.05$) and the effect of alliance capability on portfolio performance was significant ($\beta = 0.36$, $p < 0.001$), indicating support for *H1*. In Model III alliance supportive culture was regressed on alliance capability. Alliance capability had a highly significant effect on culture ($\beta = 0.41$, $p < 0.001$), with this model explaining 30 percent of the variance in alliance supportive culture ($F = 3.07$, df $= 23,166$, $p < 0.001$). Consequently, *H2* is supported.

	Mean	SD	1	2	3
1 Performance	3.62	0.63	1.00		
2 Alliance capability	3.21	0.74	0.22**	1.00	
3 Alliance supportive culture	3.68	0.62	0.56***	0.32***	1.00
4 No. of alliances[a]	3.58	1.52			
5 No. of employees[b]	5.61	2.51			
6 Sales volume[c]	5.41	2.39			

Notes: [a]Mean and SD for no. of alliances based on following scale; $1 = 0$, $2 = 1$-5, $3 = 6$-15, $4 = 16$-25, $5 = 26$-40, $6 = 40+$; [b]mean and SD for no. of employees based on following scale; $1 = <10$, $2 = 10$-<50, $3 = 50$-<250, $4 = 250$-<500, $5 = 500$-$<1,000$, $6 = 1,000$-$<5,000$, $7 = 5,000$-$<10,000$, $8 = 10,000+$; [c]mean and SD for sales volume based on the following scale; $1 = <\$1m$, $2 = \$1$-$\$2m$, $3 = \$2$-$\$10m$, $4 = \$10$-$\$50m$, $5 = \$50$-$\$100m$, $6 = \$100$-$\$1b$, $7 = \$1b$-$\$50b$, $8 = \$50b+$; $*p < 0.05$ level (two-tailed); $**p < 0.01$ level (two-tailed); $***p < 0.001$ level (two-tailed)

Table I.
Descriptive statistics

	Model I	Model II	Model III[a]	Model IV	Model V
Controls					
No. of employees	0.00 (0.26)	0.06 (0.24)	−0.01 (0.23)	0.04 (0.21)	0.06 (0.21)
Revenue	−0.02 (0.29)	0.03 (0.27)	0.15 (0.25)	−0.07 (0.24)	−0.05 (0.24)
Industry	−0.03 (0.24)	−0.03 (0.22)	−0.07 (0.21)	0.01 (0.20)	0.01 (0.20)
Alliance capability		0.36 (0.07)***	0.41 (0.06)***		0.15 (0.07)[b]
Alliance supportive				0.58 (0.07)***	0.52 (0.07)***
Culture					
R^2	0.12	0.21	0.30	0.39	0.40
F	1.00	1.91	3.07	4.56	4.59
	df = 22.167	df = 23,166	df = 23,166	df = 23,166	df = 24,165
	ns	$p < 0.05$	$p < 0.001$	$p < 0.001$	$p < 0.001$

Notes: Values for variables are standardized. SE is shown in parentheses; [a]Alliance supportive culture is DV. DV for remaining models is performance; [b]p-value is marginally significant at 0.06. $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

Table II.
Results of analyses

In Model IV we regressed portfolio performance on alliance supportive culture. This showed a highly significant effect on performance ($\beta = 0.58$, $p < 0.001$), and alliance supportive culture accounted for 39 percent of the overall variance in portfolio performance ($F = 4.56$, df = 23,166, $p < 0.001$). Therefore *H3* is supported. In Model V we tested the mediation hypothesis. Alliance supportive culture continued to have a highly significant effect on portfolio performance ($\beta = 0.52$, $p < 0.001$), but alliance capability dropped to marginal significance ($\beta = 0.15$, $p < 0.10$). This shows that alliance supportive culture partially mediates the relationship of alliance capability to portfolio performance, accounting for 40 percent of the variance in performance ($F = 4.59$, df = 24,165, $p < 0.001$). As a result, *H4* is supported. Figure 1 shows the final model.
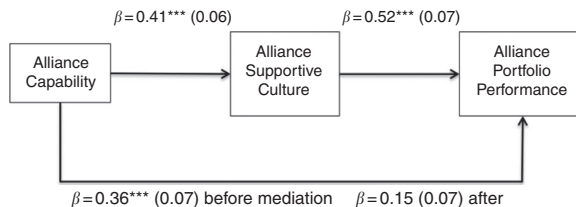
5. Discussion
In this paper we have explored the effects of alliance capability and organizational culture on alliance portfolio performance. There has been a compelling amount of evidence that presence of an alliance management function and use of appropriate processes lead to alliance success (e.g. Draulans *et al.*, 2003; Heimeriks and Duysters, 2007;

Hoffmann, 2005); our findings here offer further support for that. However, the link between capability and portfolio performance also appears to be influenced by the culture of the organization, such that an alliance supportive culture mediates that relationship. Capabilities provide a means to stimulate the interpretative reflection that can lead to the development of commensurate cultural values, assumptions and visible artifacts. Our analysis suggests that the development of such values, what we have termed an alliance supportive culture, is instrumental for alliance portfolio success. In essence, capabilities need to be translated into an alliance supportive culture in order for them to be effective at the portfolio level.

The finding of the mediation effect of alliance supportive culture is the first contribution to the literature. While an alliance manager may effectively manage an individual alliance , one individual will have difficulty handling larger numbers of relationships. The literature suggests that large organizations, which are most likely to have extensive alliance portfolios, do not scale up their alliance management functions in a one-for-one ratio (e.g. Klee, 2004). Therefore, it is incumbent on a broad base of members across the organization to learn from the lessons of preceding alliances, as captured by the firm's alliance tools and processes, and to subsequently develop values that allow them to apply those lessons appropriately to all the alliances in the portfolio. The finding that the effect of capabilities is transferred through culture provides an insight into that process.

The partial mediation effect found here indicates that both capability and culture have an influence on performance. We suggest that the direct effect of alliance capability on performance shows the clear value of structural elements such as an alliance management function and procedural elements such as best practices. By designating individuals with specific responsibility for overseeing alliances and outlining specific procedures for those participating in them to follow, a high level of alliance capability ensures that formal elements are in place to guide interaction. Without these facilitating mechanisms there is reduced likelihood that alliances will operate smoothly.

However, the presence of a mediation effect suggests that individuals in the firm also need to have a culture that induces them to apply these mechanisms in an effective manner, suggesting an important boundary condition for alliance capability. As the size of the firm's portfolio increases, the number of stakeholders involved becomes larger and more diverse. Placing too much responsibility on alliance managers can increase both coordination costs and the potential for conflict as their ability to oversee all the intricate interworkings of the alliance across a broad portfolio becomes overstretched (Sarkar *et al.*, 2009). Moreover, without a commitment to mutuality and trustworthiness found in an alliance supportive culture, there is a stronger likelihood that stakeholders would ignore or change previously agreed-upon routines, and in so doing subvert formally established practices to achieve their own ends (e.g. Arino and de la Torre, 1998; Huxham and Vangen, 2000).

$\beta = 0.41^{***}$ (0.06)   Alliance Capability → Alliance Supportive Culture $\beta = 0.52^{***}$ (0.07)   Alliance Supportive Culture → Alliance Portfolio Performance

$\beta = 0.36^{***}$ (0.07) before mediation $\beta = 0.15$ (0.07) after

Note: $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

Figure 1.
Capability-supportive culture model

A second contribution regards the interrelationship between alliance capability and the type of organizational culture. While previous studies discuss the importance of culture in alliances (e.g. Fedor and Werther, 1995), they tend to focus on the direct relationship of organizational culture to performance (Leisen *et al.*, 2002; Sambasivan and Yen, 2010; Sanz-Valle *et al.*, 2011). However, in this paper we suggest that a firm's alliance capability contributes to the experiential learning processes that shape the artifacts, values and assumptions of its culture. Cultural development occurs as individuals in the firm adapt their behaviors to meet the requirements of the environment, ultimately solidifying normative values that are held by its members (Schein, 2010). Because stabilizing routines help shape the culture of an organization (Beugelsdijk *et al.*, 2006), the consistent routines represented by alliance capability encourage the development of values and assumptions across the firm that promote effective alliance behaviors.

5.1 Research implications

There are a number of research implications that stem from this study. The first concerns the effect of capability and culture on alliance dynamics (Kumar and Nti, 1998). As firms interact in alliances their members learn about one another and subsequently develop trust (Inkpen and Currall, 2004; Parkhe, 1998), which ultimately promotes the alignment of the partners' interests and development of an effective system of governance (Ness, 2009). We would propose that the level of alliance supportive culture of the respective firms influences this relational development process. Members of firms having a high level of alliance supportive culture should be more adept at setting the conditions for productive relational norms earlier in the alliance lifecycle, thereby influencing the time to performance across the entire portfolio. By the same token, we might expect individuals at firms with a low level of supportive culture to take longer to navigate this process. It would therefore be worthwhile to study the potential interaction between alliance capability and alliance supportive culture and how that influences the processes that constitute alliance dynamics.

Additional research implications stem from a limitation of this study. Although a firm's interpretive processes are stimulated by the routines it employs (Flores *et al.*, 2012), we are unable to conclude at what stage alliance capability produces an "effective" level of alliance supportive culture because this study was conducted as a cross-sectional analysis. Consequently, there is an opportunity for longitudinal study of this relationship to investigate a number of interesting phenomena. An immediate question is how much time is necessary to produce a significant change in the supportiveness of the culture. This may also be related to the age of alliances in the portfolio. A long running alliance may affect the alliance culture in a deeper way than a short running alliance. The alliance culture of companies with a fast changing alliance portfolio may therefore have developed differently than the alliance culture of companies with a few, long running alliances. Alliance age may affect both the depth of cultural change and the type of culture that develops. Future studies should more directly investigate the temporal effects of capability on culture development and portfolio performance by considering the levels of capability and alliance supportive culture in relation to average age of alliances in the portfolio over time.

A related question is whether the "starting" level of capability influences the capability-supportive culture relationship. Studies of alliance experience have noted that the ability to learn from alliances diminishes after a firm has engaged in a certain number of alliances (Draulans *et al.*, 2003; Rothaermel and Deeds, 2006). Scholars might ask

whether the same effects occur between capability and culture development. Perhaps firms with lower levels of alliance capability will be more strongly influenced initially, so greater changes in culture will occur sooner. Conversely, the culture altering effects produced by capability may act as a threshold function, requiring the build-up of prolonged and pervasive use of capability processes to register significant effects on the level of supportive culture.

There are other limitations to this study that can be addressed in future research. We used a number of measures to eliminate the possibility of common method bias, but nevertheless wherever possible future studies may utilize objective measures of performance. Also, the finding that alliance capability influences the development of a supportive culture does not rule out the possibility that under some conditions a firm's culture will determine the development of its alliance capability. For example, scholars have found that the culture of some firms caused them to eschew formal alliance management but still be successful (e.g. Bamford *et al.*, 2003). While there is empirical evidence to argue for the sequencing we put forth in this paper (e.g. Kale and Singh, 2007; Luvison *et al.*, 2011), it would be appropriate to test the alternate hypothesis. Finally, our respondents represented three primary industries (information technology, biotech and service organizations), suggesting that the findings may not adequately reflect cultural values of the larger population. Moreover, invitations to participate in the study were directed to members of ASAP. Although this organization has been used for various other studies of alliance capability (e.g. Arino, 2003; de Man, 2005; Duysters *et al.*, 2012; Heimeriks *et al.*, 2012), we recognize that its use here may suggest a restriction of range limitation since its members are more likely to have greater awareness of and proficiency with alliance best practices and alliance-conducive values. Future studies should therefore ensure that the mix of respondents more accurately reflects the industry distribution of the broader firm population as well as a cross-section of alliance proficiency.

5.2 Managerial implications

This study has three managerial implications. The first is that alliance capability, in and of itself, is not sufficient to create sustainable alliance success. Because culture mediates the effect of capability on performance, attention must be paid to ensuring that the values necessary for effective alliance behaviors emerge. Even though, as was suggested above, alliance supportive culture is influenced by alliance capability, leaders should actively work to stimulate culture development. This will help them to accelerate the benefits from their investment in alliance capability. Because values may be the most difficult element of an alliance supportive culture to change, managers should start such a cultural change process by addressing their use of communication and language related to alliances. They can do this by framing stories and other forms of communication that highlight both the value and importance of alliances (Casey, 1996), as well as encouraging behaviors that conform to principles of an alliance supportive culture. Over time this process should start to influence the organization's values.

The second implication for practice is that, even though they can target cultural change directly, managers should also use tools and processes to stimulate cultural change. Because common practices, repeated over time in an organization, help build its culture, there is a greater opportunity to affect cultural awareness through the conscientious endorsement and reinforcement of the use of tools and processes. If directly targeting cultural change through language, values and assumptions is not possible, the longer route via alliance capability may be necessary. This would require

managers to increase the visibility of alliance capability and thus indirectly shape individuals' attitudes toward alliances.

The final managerial implication deals with the cultivation of a supportive culture at the organizational level. As the portfolio of alliances expands across a firm into diverse areas, it will become increasingly likely that stakeholders who have never been involved with alliances will be chartered with their operation. These new stakeholders will, by definition, lack the benefit of prior experience with the collaborative concepts that are embodied in a supportive culture. Therefore, the firm's leaders will be advised to train on these concepts broadly across the organization. Given the influence that an alliance supportive culture has on alliance success, such comprehensive development programs, while costly and time consuming, should payback in the way of better financial returns and reduced managerial effort for the alliance portfolio.

References

Adil, M.S. (2014), "Impact of leader's change-promoting behavior on readiness for change: a mediating role of organizational culture", *Journal of Management Sciences*, Vol. 1 No. 2, pp. 102-123.

Alwin, D.F. and Hauser, R.M. (1975), "The decomposition of effects in path analysis", *American Sociological Review*, Vol. 40 No. 1, pp. 37-47.

Amagoh, F. (2009), "Leadership development and leadership effectiveness", *Management Decision*, Vol. 47 No. 6, pp. 989-999.

Anand, B.N. and Khanna, T. (2000), "Do firms learn to create value? The case of alliances", *Strategic Management Journal*, Vol. 21 No. 3, pp. 295-315.

Arino, A. (2003), "Measures of strategic alliance performance: an analysis of construct validity", *Journal of International Business Studies*, Vol. 34 No. 1, pp. 66-79.

Arino, A. and de la Torre, J. (1998), "Learning from failure: towards an evolutionary model of collaborative ventures", *Organization Science*, Vol. 9 No. 3, pp. 306-325.

Atkins, H. (2007), "The impact of alliances: perspectives from Endo Pharmaceuticals, Eli Lilly, Pfizer & Biogen Idec", *Specialty Pharma*, Vol. 3 No. 1, pp. 28-33.

Bamford, J.D., Gomes-Casseres, B. and Robinson, M.S. (2003), *Mastering Alliance Strategy: A Comprehensive Guide to Design, Management, and Organization*, Wiley, San Francisco, CA.

Barney, J.B. and Hansen, M.H. (1994), "Trustworthiness as a source of competitive advantage", *Strategic Management Journal*, Vol. 15 No. S1, pp. 175-190.

Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Beugelsdijk, S., Koen, C.I. and Noorderhaven, N.G. (2006), "Organizational culture and relationship skills", *Organization Studies*, Vol. 27 No. 6, pp. 833-854.

Bloor, G. and Dawson, P. (1994), "Understanding professional culture in organizational context", *Organization Studies*, Vol. 15 No. 2, pp. 275-295.

Bouncken, R.B. (2011), "Innovation by operating practices in project alliances – when size matters", *British Journal of Management*, Vol. 22 No. 4, pp. 586-608.

Buckley, P.J. and Casson, M. (1988), "A theory of cooperation in international business", in Contractor, F.J. and Lorange, P. (Eds), *Comparative Strategies in International Business*, Lexington Books, Lexington, MA, pp. 31-53.

Cameron, K.S. and Quinn, R.E. (2011), *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*, Jossey-Bass, San Francisco, CA.

Cannon, J.P., Achrol, R.S. and Gundlach, G.T. (2000), "Contracts, norms, and plural form governance", *Academy of Marketing Science. Journal*, Vol. 28 No. 2, pp. 180-194.

Capron, L. (1999), "The long-term performance of horizontal acquisitions", *Strategic Management Journal*, Vol. 20 No. 11, pp. 987-1018.

Casey, C. (1996), "Corporate transformations: designer culture, designer employees and 'post-occupational' solidarity", *Organization*, Vol. 3 No. 3, pp. 317-339.

Chatman, J.A., Caldwell, D.F., O'Reilly, C.A. and Doerr, B. (2014), "Parsing organizational culture: how the norm for adaptability influences the relationship between culture consensus and financial performance in high-technology firms", *Journal of Organizational Behavior*, Vol. 35 No. 6, pp. 785-808.

Churchill, G.A.J. (1979), "A paradigm for developing better measures of marketing constructs", *Journal of Marketing Research*, Vol. 16 No. 1, pp. 64-73.

Clegg, S.R., Pitsis, T.S., Rura-Polley, T. and Marosszeky, M. (2002), "Governmentality matters: designing an alliance culture of inter-organizational collaboration for managing projects", *Organization Studies*, Vol. 23 No. 3, pp. 317-337.

Cohen, W.M. and Levinthal, D.A. (1990), "Absorptive capacity: a new perspective on learning and innovation", *Administrative Science Quarterly*, Vol. 35 No. 1, pp. 128-152.

Dacin, M.T., Oliver, C. and Roy, J.P. (2007), "The legitimacy of strategic alliances: an institutional perspective", *Strategic Management Journal*, Vol. 28 No. 2, pp. 169-187.

Danish, R.Q., Munir, Y., Kausar, A., Jabbar, M. and Munawar, N. (2014), "Impact of change, culture and organizational politics on organizational learning", *Review of Contemporary Business Research*, Vol. 3 No. 1, pp. 115-126.

Das, T.K. (2006), "Strategic alliance temporalities and partner opportunism", *British Journal of Management*, Vol. 17 No. 1, pp. 1-21.

Das, T.K. and Kumar, R. (2010a), "Interpartner sensemaking in strategic alliances", *Management Decision*, Vol. 48 No. 1, pp. 17-36.

Das, T.K. and Kumar, R. (2010b), "Interpretive schemes in cross-national alliances: managing conflicts and discrepancies", *Cross Cultural Management*, Vol. 17 No. 2, pp. 154-169.

Daymon, C. (2000), "Culture formation in a new television station: a multi-perspective analysis", *British Journal of Management*, Vol. 11 No. 2, pp. 121-135.

de Man, A.P. (2005), "Alliance capability: a comparison of the alliance strength of European and American companies", *European Management Journal*, Vol. 23 No. 3, pp. 315-323.

de Man, A.P. and Luvison, D. (2014), "Sense-making's role in creating alliance supportive organizational cultures", *Management Decision*, Vol. 52 No. 2, pp. 259-277.

de Man, A.P., Duysters, G.M. and Saebi, T. (2010), "Alliance capability as an emerging theme: past, present, future", in Das, T.K. (Ed.), *Researching Strategic Alliances: Emerging Perspectives*, Information Age Publishing, Charlotte, NC, pp. 57-76.

Deal, T.E. and Kennedy, A.A. (1982), *Corporate Cultures: The Rites and Rituals of Corporate Life*, Addison-Wesley, Reading, MA.

Denison, D.R. and Mishra, A.K. (1995), "Toward a theory of organizational culture and effectiveness", *Organization Science*, Vol. 6 No. 2, pp. 204-223.

Di Pietro, L. and Di Virgilio, F. (2013), "The role of organizational culture on informal conflict management", *International Journal of Public Administration*, Vol. 36 No. 13, pp. 910-921.

Dillman, D.A., Christenson, J.A., Carpenter, E.H. and Brooks, R.M. (1974), "Increasing mail questionnaire response: a four state comparison", *American Sociological Review*, Vol. 39 No. 5, pp. 744-756.

Draulans, J., de Man, A.P. and Volberda, H.W. (2003), "Building alliance capability: management techniques for superior alliance performance", *Long Range Planning*, Vol. 36 No. 2, pp. 151-166.

Duysters, G., Heimeriks, K.H., Lokshin, B., Meijer, E. and Sabidussi, A. (2012), "Do firms learn to manage alliance portfolio diversity? The diversity-performance relationship and the moderating effects of experience and capability", *European Management Review*, Vol. 9 No. 3, pp. 139-152.

Fedor, K.J. and Werther, W.B.J. (1995), "Making sense of cultural factors in international alliances", *Organizational Dynamics*, Vol. 23 No. 4, pp. 33-48.

Flores, L.G., Zheng, W., Rau, D. and Thomas, C.H. (2012), "Organizational learning: subprocess identification, construct validation, and an empirical test of cultural antecedents", *Journal of Management*, Vol. 38 No. 2, pp. 640-667.

Ford, J.K., MacCallum, R.C. and Tait, M. (1986), "The application of exploratory factor analysis in applied psychology: a critical review and analysis", *Personnel Psychology*, Vol. 39 No. 2, pp. 291-314.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Geringer, J.M. and Hebert, L. (1991), "Measuring performance of international joint ventures", *Journal of International Business Studies*, Vol. 22 No. 2, pp. 249-263.

Givens, R.J. (2012), "The study of the relationship between organizational culture and organizational performance in non-profit religious organizations", *International Journal of Organization Theory and Behavior*, Vol. 15 No. 2, pp. 239-263.

Gulati, R. and Singh, H. (1998), "The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances", *Administrative Science Quarterly*, Vol. 43 No. 4, pp. 781-814.

Gulati, R., Wohlgezogen, F. and Zhelyazkov, P. (2012), "The two facets of collaboration: cooperation and coordination in strategic alliances", *The Academy of Management Annals*, Vol. 6 No. 1, pp. 531-583.

Hatch, M.J. (1993), "The dynamics of organizational culture", *Academy of Management Review*, Vol. 18 No. 4, pp. 657-693.

Hatch, M.J. and Schultz, M. (2002), "The dynamics of organizational identity", *Human Relations*, Vol. 55 No. 8, pp. 989-1018.

Heide, J.B. (1994), "Interorganizational governance in marketing channels", *Journal of Marketing*, Vol. 58 No. 1, pp. 71-85.

Heide, J.B. and John, G. (1990), "Alliances in industrial purchasing: the determinants of joint action in buyer-supplier relationships", *Journal of Marketing Research*, Vol. 27 No. 1, pp. 24-36.

Heimeriks, K.H. and Duysters, G. (2007), "Alliance capability as a mediator between experience and alliance performance: an empirical investigation into the alliance capability development process", *The Journal of Management Studies*, Vol. 44 No. 1, pp. 25-49.

Heimeriks, K.H., Duysters, G. and Vanhaverbeke, W. (2007), "Learning mechanisms and differential performance in alliance portfolios", *Strategic Organization*, Vol. 5 No. 4, pp. 373-408.

Heimeriks, K.H., Klijn, E. and Reuer, J.J. (2009), "Building capabilities for alliance portfolios", *Long Range Planning*, Vol. 42 No. 1, pp. 96-114.

Heimeriks, K.H., Schijven, M. and Gates, S. (2012), "Manifestations of higher-order routines: the underlying mechanisms of deliberate learning in the context of post acquisition integration", *Academy of Management Journal*, Vol. 55 No. 3, pp. 703-726.

Hoang, H. and Rothaermel, F.T. (2005), "The effect of general and partner-specific alliance experience on joint R&D project performance", *Academy of Management Journal*, Vol. 48 No. 2, pp. 332-345.

Hoffmann, W.H. (2005), "How to manage a portfolio of alliances", *Long Range Planning*, Vol. 38 No. 2, pp. 121-143.

Hofstede, G. (1998), "Identifying organizational subcultures: an empirical approach", *The Journal of Management Studies*, Vol. 35 No. 1, pp. 1-12.

Huxham, C. and Vangen, S. (2000), "Ambiguity, complexity and dynamics in the membership of collaboration", *Human Relations*, Vol. 53 No. 6, pp. 771-806.

Inkpen, A.C. and Currall, S.C. (2004), "The coevolution of trust, control, and learning in joint ventures", *Organization Science*, Vol. 15 No. 5, pp. 586-599.

Ireland, R.D., Hitt, M.A. and Vaidyanath, D. (2002), "Alliance management as a source of competitive advantage", *Journal of Management*, Vol. 28 No. 3, pp. 413-446.

Jassawalla, A.R. and Sashittal, H.C. (1999), "Building collaborative cross-functional new product teams", *The Academy of Management Executive*, Vol. 13 No. 3, pp. 50-63.

Jelinek, M., Smircich, L. and Hirsch, P. (1983), "Introduction: a code of many colors", *Administrative Science Quarterly*, Vol. 28 No. 3, pp. 331-338.

Jermier, J.M., Slocum, J.W.J., Fry, L.W. and Gaines, J. (1991), "Organizational subcultures in a soft bureaucracy: resistance behind the myth and facade of an official culture", *Organization Science*, Vol. 2 No. 2, pp. 170-194.

Johnson, J.P., Korsgaard, M.A. and Sapienza, H.J. (2002), "Perceived fairness, decision control, and commitment in international joint venture management teams", *Strategic Management Journal*, Vol. 23 No. 12, pp. 1141-1160.

Kale, P. and Singh, H. (2007), "Building firm capabilities through learning: the role of the alliance learning process in alliance capability and firm-level alliance success", *Strategic Management Journal*, Vol. 28 No. 10, pp. 981-1000.

Kale, P., Dyer, J.H. and Singh, H. (2001), "Value creation and success in strategic alliances: alliancing skills and the role of alliance structure and systems", *European Management Journal*, Vol. 19 No. 5, pp. 463-471.

Kale, P., Dyer, J.H. and Singh, H. (2002), "Alliance capability, stock market response, and long-term alliance success: the role of the alliance function", *Strategic Management Journal*, Vol. 23 No. 8, pp. 747-767.

Kao, S.C., Wu, C. and Su, P.C. (2011), "Which mode is better for knowledge creation?", *Management Decision*, Vol. 49 No. 7, pp. 1037-1060.

Kaufmann, P.J. and Stern, L.W. (1988), "Relational exchange norms, perceptions of unfairness, and retained hostility in commercial litigation", *Journal of Conflict Resolution*, Vol. 32 No. 3, pp. 534-552.

Kavanagh, M.H. and Ashkanasy, N.M. (2006), "The impact of leadership and change management strategy on organizational culture and individual acceptance of change during a merger", *British Journal of Management*, Vol. 17 No. 1, pp. S81-S103.

Khanna, T. (1998), "The scope of alliances", *Organization Science*, Vol. 9 No. 3, pp. 340-355.

Klee, K. (2004), "Lilly's prescription for growth", *Corporate Dealmaker*, Summer, pp. 12-20.

Krishnan, R., Martin, X. and Noorderhaven, N.G. (2006), "When does trust matter to alliance performance?", *Academy of Management Journal*, Vol. 49 No. 5, pp. 894-917.

Kumar, R. and Nti, K.O. (1998), "Differential learning and interaction in alliance dynamics: a process and outcome discrepancy model", *Organization Science*, Vol. 9 No. 3, pp. 356-367.

Kumar, R. and Patriotta, G. (2011), "Culture and international alliance negotiations: a sensemaking perspective", *International Negotiation*, Vol. 16 No. 3, pp. 511-533.

Lægreid, P., Roness, P.G. and Verhoest, K. (2011), "Explaining the innovative culture and activities of state agencies", *Organization Studies*, Vol. 32 No. 10, pp. 1321-1347.

Lambe, C.J., Spekman, R.E. and Hunt, S.D. (2002), "Alliance competence, resources, and alliance success: conceptualization, measurement, and initial test", *Journal of the Academy of Marketing Science*, Vol. 30 No. 2, pp. 141-158.

Leisen, B., Lilly, B. and Winsor, R.D. (2002), "The effects of organizational culture and market orientation on the effectiveness of strategic marketing alliances", *The Journal of Services Marketing*, Vol. 16 Nos 2/3, pp. 201-222.

Lopez, S.P., Peon, J.M.M. and Ordas, C.J.V. (2004), "Managing knowledge: the link between culture and organizational learning", *Journal of Knowledge Management*, Vol. 8 No. 6, pp. 93-104.

Luvison, D., de Man, A.P. and Pearson, J. (2011), "Building an alliance culture: lessons from Quintiles", in Das, T.K. (Ed.), *Behavioral Perspectives in Strategic Alliances*, Information Age Publishing, Charlotte, NC, pp. 51-81.

Martin, J. (1992), *Cultures in Organizations: Three Perspectives*, Oxford University Press, New York, NY.

Martínez-Sánchez, A., Vela-Jiménez, M.J., Pérez-Pérez, M. and de-Luis-Carnicer, P. (2009), "Inter-organizational cooperation and environmental change: moderating effects between flexibility and innovation performance", *British Journal of Management*, Vol. 20 No. 4, pp. 537-561.

Mohr, J.J. and Spekman, R.E. (1994), "Characteristics of partnership success: partnership attributes, communication behavior, and conflict resolution techniques", *Strategic Management Journal*, Vol. 15 No. 2, pp. 135-152.

Murphy, P.J., Cooke, R.A. and Lopez, Y. (2013), "Firm culture and performance: intensity's effects and limits", *Management Decision*, Vol. 51 No. 3, pp. 661-679.

Naranjo-Valencia, J.C., Jiménez-Jiménez, D. and Sanz-Valle, R. (2011), "Innovation or imitation? The role of organizational culture", *Management Decision*, Vol. 49 No. 1, pp. 55-72.

Ness, H. (2009), "Governance, negotiations, and alliance dynamics: explaining the evolution of relational practice", *The Journal of Management Studies*, Vol. 46 No. 3, pp. 451-480.

Neyens, I. and Faems, D. (2013), "Exploring the impact of alliance portfolio management design on alliance portfolio performance", *Managerial and Decision Economics*, Vol. 34 Nos 3-5, pp. 347-361.

Niesten, E. and Jolink, A. (2015), "The impact of alliance management capabilities on alliance attributes and performance: a literature review", *International Journal of Management Reviews*, Vol. 17 No. 1, pp. 69-100.

Nunnally, J. (1978), *Psychometric Theory*, McGraw-Hill, New York, NY.

Ortega-Parra, A. and Sastre-Castillo, M. (2013), "Impact of perceived corporate culture on organizational commitment", *Management Decision*, Vol. 51 No. 5, pp. 1071-1083.

Parkhe, P. (1998), "Building trust in international alliances", *Journal of World Business*, Vol. 33 No. 4, pp. 417-437.

Peters, T.J. and Waterman, R.H. (1982), *In Search of Excellence: Lessons From America's Best-run Companies*, Harper & Row, New York, NY.

Pettigrew, A.M. (1979), "On studying organizational cultures", *Administrative Science Quarterly*, Vol. 24 No. 4, pp. 570-581.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.

Rothaermel, F.T. and Deeds, D.L. (2006), "Alliance type, alliance experience, and alliance management capability in high-technology ventures", *Journal of Business Venturing*, Vol. 21 No. 4, pp. 429-460.

Sambasivan, M. and Yen, C.N. (2010), "Strategic alliances in a manufacturing supply chain: influence of organizational culture from the manufacturer's perspective", *International Journal of Physical Distribution & Logistics Management*, Vol. 40 No. 6, pp. 456-474.

Santos, A., Hayward, T. and Ramos, H.M. (2012), "Organizational culture, work and personal goals as predictors of employee well-being", *Journal of Organizational Culture, Communication and Conflict*, Vol. 16 No. 1, pp. 25-48.

Sanz-Valle, R., Naranjo-Valencia, J.C., JimÈnez-JimÈnez, D. and Perez-Caballero, L. (2011), "Linking organizational learning with technical innovation and organizational culture", *Journal of Knowledge Management*, Vol. 15 No. 6, pp. 997-1015.

Sarkar, M.B., Aulakh, P.S. and Madhok, A. (2009), "Process capabilities and value generation in alliance portfolios", *Organization Science*, Vol. 20 No. 3, pp. 583-600.

Schein, E.H. (1984), "Coming to a new awareness of organizational culture", *Sloan Management Review*, Vol. 25 No. 2, pp. 3-16.

Schein, E.H. (1985), *Organizational Culture and Leadership*, (1st ed.), Jossey-Bass, San Francisco, CA.

Schein, E.H. (1990), "Organizational culture", *American Psychologist*, Vol. 45 No. 2, pp. 109-119.

Schein, E.H. (2010), *Organizational Culture and Leadership*, (4th ed.), Jossey-Bass, San Francisco, CA.

Schilke, O. and Goerzen, A. (2010), "Alliance management capability: an investigation of the construct and its measurement", *Journal of Management*, Vol. 36 No. 5, pp. 1192-1219.

Schreiner, M., Kale, P. and Corsten, D. (2009), "What really is alliance management capability and how does it impact alliance outcomes and success?", *Strategic Management Journal*, Vol. 30 No. 13, pp. 1395-1419.

Simonin, B. (1997), "The importance of collaborative know-how: an empirical test of the learning organization", *Academy of Management Journal*, Vol. 40 No. 5, pp. 1150-1174.

Sims, N., Harrison, R. and Gueth, A. (2001), "Managing alliances at Lilly", *In Vivo: The Business and Medicine Report*, Vol. 19 No. 6, pp. 1-6.

Sluyts, K., Matthyssens, P., Martens, R. and Streukens, S. (2011), "Building capabilities to manage strategic alliances", *Industrial Marketing Management*, Vol. 40 No. 6, pp. 875-886.

Spekman, R.E. (1979), "Influence and information: an exploratory investigation of the boundary role person's basis of power", *Academy of Management Journal*, Vol. 22 No. 1, pp. 104-117.

Spekman, R.E., Isabella, L.A. and MacAvoy, T.C. (2000), *Alliance Competence: Maximizing the Value of Your Partnerships*, John Wiley & Sons, New York, NY.

Spekman, R.E., Forbes, T.M.I., Isabella, L.A. and MacAvoy, T.C. (1998), "Alliance management: a view from the past and a look to the future", *The Journal of Management Studies*, Vol. 35 No. 6, pp. 747-772.

Vlaar, P.W.L., Van den Bosch, F.A.J. and Volberda, H.W. (2006), "Coping with problems of understanding in interorganizational relationships: using formalization as a means to make sense", *Organization Studies*, Vol. 27 No. 11, pp. 1617-1638.

Wang, Y. and Rajagopalan, N. (2015), "Alliance capabilities: review and research agenda", *Journal of Management*, Vol. 41 No. 1, pp. 236-260.

Wassmer, U. (2010), "Alliance portfolios: a review and research agenda", *Journal of Management*, Vol. 36 No. 1, pp. 141-171.

Zaheer, S., Schomaker, M. and Genc, M. (2003), "Identity versus culture in mergers of equals", *European Management Journal*, Vol. 21 No. 2, pp. 185-191.

Appendix 1

Alliance management functions ($\alpha = 0.73$)
Please indicate to what extent you use these functions
Local alliance managers
Alliance department
Alliance managers
Alliance specialist
Vice president of alliances/chief alliance officer
Alliance management procedures ($\alpha = 0.87$)
Please indicate to what extent you use these tools
Best practices
Alliance database
Alliance metrics
Cross-alliance evaluation
Industrial evaluation
Internet
Joint business planning
Joint evaluation
Partner portal
Partner programs
Standard partner selection approach
Social media
Portfolio management
Approval processes

Notes: Scales: 1, not used; 2, rarely; 3, sometimes; 4, frequently; 5, continuously

Appendix 2

	CFA standardized regression weights
Alliance language (*CR = 0.97, AVE = 0.58*)	
In our organization alliances are frequently mentioned in internal communications such as newsletters	0.75
Our leaders clearly support alliances in their statements	0.84
Our senior executives often speak about the importance of alliances to our organization	0.76
Statements about alliances are prominently mentioned in our press releases and on our web site	0.68
Alliance values (*CR = 0.93, AVE = 0.56*)	
We always act in a timely manner toward our partners and their requirements	0.67
We fully honor our commitments to our partners in a timely manner	0.82
Alliance assumptions (*CR = 0.76, AVE = 0.43*)	
Our partners' gains are our loss (R)	0.49
We structure our contracts to ensure that we obtain the majority of an alliance's benefits for ourselves (R)	0.79
Notes: Scales: respondents were asked to respond using a five-point Likert scale (1, strongly disagree; 2, disagree; 3, neither agree nor disagree; 4, agree; 5, strongly agree)	

Table AII.
Alliance supportive culture scales

Corresponding author
Dr Dave Luvison can be contacted at: dave@luvison.com