Alliance Capabilities, Interpartner Attributes, and Performance Outcomes in International Strategic Alliances

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Abstract

This study tests, using a sample of cross-border alliances, how different alliance capability components intersect to develop resource complementarity and trust and how such interpartner attributes themselves intersect to enhance performance. We find that management capability allows firms to build resource complementarity and trust. High formulation capability is required for management capability to positively shape resource complementarity. Search capability is only positively linked to resource complementarity when formulation capability is low. International alliance experience drives resource complementarity. Trust has an inverted U-shaped relationship with performance, and resource complementarity drives trust and performance. Resource complementarity positively moderates the trust–performance link.

Keywords

Alliance capabilities, alliances, embeddedness, experience, resource complementarity, trust, performance.

INTRODUCTION

Scholars have devoted enduring attention to conditions under which firms can enhance the performance of their international strategic alliances (ISAs) (Contractor and Woodley, 2015). A dominant stream of research focuses on the performance relevance of interpartner attributes or ties (Lavie, Haunschild, and Khanna, 2012). In this stream, two major lines of investigation have been pursued. First, economic behavior studies (e.g., Jin, Zhou, and Wang, 2016) have centered on the value or costs of partners' resources accessed in an ISA. A second set of studies asserts that firms need to collaboratively exploit resources in their ISAs through relational ties based on trust (e.g., Christoffersen and Robson, 2017). Accordingly, in relation to the use of resources in an alliance, the literature has featured two key characteristics: *resource complementarity*, concerning the degree to which partners are able to complement each other's tasks in the alliance by supplying unique resources and capabilities (Sarkar *et al.*, 2001); and *trust*, defined as the degree of confidence shared by the partners regarding each other's honesty and benevolence (Aulakh, Kotabe, and Sahay, 1996; Kumar, Scheer, and Steenkamp, 1995).

Contrasting views exist on the feasibility of building both resource complementarity and trust between alliance partners. One school of thought (Tiwana, 2008) has asserted that there are tensions to resolve insofar as resourcing and trust ties in alliances tend toward incompatibility. Well-connected firms exploit their own resources by linking to those with valuable and complementary resources. Yet, the heterogeneity of resources available to ISAs can make productive resource integration challenging—*the action problem* (Tiwana, 2008). Partners' diverse insights and potential aversion to the dependence introduced, lead to more cautious trust building (Johnson *et al.*, 1996). Further, while trust within an ISA eases resource integration, it can reduce the chances of resource complementarity as trust encourages relational inertia, less-than-objective thinking, and redundant ideas—*the idea problem* (Scheer, Hibbs, and Trulaske, 2012).

Another school of thought has, instead, employed the logic of embeddedness to assert that higher levels of resource complementarity increase the depth of productive integration and cohesion between the partners, building trust (e.g., Gulati and Sytch, 2007). Partners focus such attention on one another, that they become "controlled by the relation itself" (Emerson, 1962: 37) and by trusting interactions that extend beyond contractual obligations. Accordingly, a holistic approach to ISA development and management would focus

on maximizing the economic value of resource complementarity and the likelihood that a trusting relationship will be formed within a social structure for the partnership (Saxton, 1997). Prima facie, this connects to the view that some firms are better at attending to the complexities of alliances than others; they possess *alliance capabilities*, or organizational processes and patterns of activities through which a firm systematically develops and manages its alliances (Sarkar, Aulakh, and Madhok, 2009).

A review of the literature indicates that various approaches have been followed in assessing the role of alliance capabilities. Researchers conceptualize such capabilities as a unidimensional construct (Gammoh and Voss, 2013), or as a multidimensional construct assessed either as a composite (Lambe, Spekman, and Hunt, 2002) or a higher-order construct comprising different dimensions (Schilke and Goerzen, 2010). Further, the bulk of research on alliance capabilities has focused on post-formation management aspects (e.g., Johnson, Sohi, and Grewal, 2004; Schreiner, Kale, and Corsten, 2009), as opposed to alliance formation facets that have been examined to a lesser extent, either separately or within a higher-order structure. Minimal empirical consideration has been given to the potentially varying effects of different alliance capability components, limiting understanding of their complementary and/or substitutive roles in shaping interpartner attributes and performance outcomes in ISAs (Wang and Rajagopalan, 2015).

Our study addresses these gaps in knowledge by examining how different alliance capability components intersect to drive resource complementarity and trust, and how these attributes themselves intersect to enhance ISA performance. We conceptualize alliance capability in terms of fundamental processes underpinning the building of any ISA: *search capability*, or processes wherein a firm evaluates strategic decisions to form alliances and identifies and approaches appropriate partners; *formulation capability*, or processes wherein a firm sets up governance structures, handles technical aspects of contracts, and negotiates deals; and *management capability*, or processes wherein a firm manages cooperation and coordination of the partners after alliances are up and running (Gulati, 1998; Schreiner *et al.*, 2009).

We contribute to the international alliances literature in two main ways. First, theorists have highlighted the difficulty of integrating resource complementarity and trust in alliances in a manner conducive to performance outcomes (Lavie *et al.*, 2012). The feasibility of integrating these attributes is largely unknown in cross-border alliances. ISAs usually lack prior collaborative experiences and a shared sense of

identification between the partners (Joshi and Lahiri, 2015), upon which to found trust. Our study shows for the first time how a set of alliance capabilities resolve tension between achieving complementarity, which increases resource synergies in the ISA, and establishing trust as a means of harnessing synergies. Although the resource-based perspective suggests firms use alliance capabilities to establish and manage ISAs that have the ability to provide them with needed resources, it overlooks the ISA partners' willingness to pool resources in a cooperative way. Extending work on resource interdependence as a form of embeddedness (Gulati and Sytch, 2007; Zhong *et al*., 2014), we deepen understanding of alliance functioning by showing that resource complementarity jumpstarts the sense of common ground, a key to developing trust in ISAs, and positively conditions the performance relevance of trust. We also provide new evidence that the difficulty of using trust in ISAs lies in that it has an inverted U-shaped relationship with performance.

Second, our study is novel in employing logic from the complements versus substitutes governance field (Bidault *et al.*, 2018; Li, Poppo, and Zhou, 2010) to decompose a firm's alliance capabilities into core processes that play different roles in ISAs. Notwithstanding the contribution of alliance capability research to the advancement of knowledge of alliance processes (Lambe *et al*., 2002; Schilke and Goerzen, 2010), the common use of higher-order conceptualizations of alliance capability potentially inhibits understanding of how individual capability components interact and work together, or the converse, in accumulating ISA-level resources (Niesten and Jolink, 2015). Our results show that management capability allows firms to build resource complementarity and trust. Yet, high formulation capability is required for management capability to positively shape resource complementarity. By contrast, search capability assists the development of resource complementarity when formulation capability is low. We thus reveal reinforcing effects between alliance capabilities with congruent activities and priorities, and crowding-out effects between capabilities with incompatible ones. Finally, consistent with our decomposed take on harnessing a firm's alliance know-how, we show that international alliance experience drives resource complementarity.

LITERATURE REVIEW

Resource complementarity and trust in ISAs

A paradox of ISA management is that disparate and seemingly contradictory interpartner attributes must be made to coexist. The performance benefits of resource complementarity in ISAs often are transient, as the

opportunities such fit provides fade when firms access each other's resources. By contrast, research has long suggested that high-trust exchanges between alliance partners create relational assets from which economic rents can be reliably derived. Still, as ISAs bring together partners from socio-cognitively incongruent environments and this can cause information overloads, developing trust in and of itself can be highly demanding (Abdi and Aulakh, 2014; Wong *et al*., 2017). Further, trust discourages diversity of thinking and contributions within tightly knit collaborative partnerships (Scheer *et al*., 2012).

Our thesis is that the challenges of interrelating partners' idiosyncratic resources, while building trust, are surmountable in well-designed ISAs. Although resource complementarity denotes diverse and synergistic ideas and expertise in an ISA, when trust is strong, the partners are likely to establish common ground in order to provide and absorb each other's knowledge and improve the goal attainment of both sides. The core idea is that effective ISAs avoid the knowledge redundancy and over-embeddedness of trust without resource complementarity (the idea problem), and minimize the poorly executed resource integration and over-cautiousness of complementarity without trust (the action problem) (cf. Obstfeld 2005). A thorough strategy would increase the synergistic value of resource complementarity (ability to pool expertise); and the likelihood that a trusting connection develops between the ISA partners (willingness to pool expertise) (Sampson 2007; Tiwana, 2008). Still, a key question remains unanswered: how can a firm overcome tensions between, and effectively produce, these dissimilar attributes?

Conceptual perspectives on alliance capabilities

Early ISA studies identified partner firms' alliance experiences as a driver of performance (Christoffersen, 2013). However, alliance capabilities work (e.g., Anand and Khanna, 2000) has since proven that there is an implicit flow of feedback from prior experiences—or dedicated functions responsible for capturing these—that enables the upgrading of a firm's ongoing alliance practices. The consensus is that basic knowledge assets and mechanisms (i.e., alliance experiences and functions) give rise to alliance capabilities and, hence, cannot guarantee effective alliance performance without explicitly considering a firm's expertise with processes through which it develops and manages alliance activities (Sarkar *et al*., 2009).

The alliance capabilities literature has asserted the need for improvement in a firm's capability to manage holistically its entire portfolio of alliances as well as its capability to manage individual alliances within the

portfolio (Wang and Rajagopalan, 2015). Empirical studies have focused on examining alliance capabilities at one, not both, of these levels, nonetheless. Assumptions about how value is created in alliances tend to drive this choice (Sarkar *et al*., 2009), that is, whether: a firm's alliances create valuable outcomes independent of one another; or the firm is able to achieve holistic outcomes across to its alliance portfolio.

The matter of how firms create and benefit from alliance portfolios has received greater attention in the literature than that of how alliance capability helps managers improve the performance of individual alliances (Schreiner *et al*., 2009). Yet, the thrust of the alliance performance literature seeks to explain individual alliance outcomes. Hence, our study seeks to provide new insights into cognitive and behavioral skills deployed by firms to enhance relationship and performance outcomes of a given ISA (Hoffmann, 2005; Simonin, 1997). There is conceptual overlap between capabilities to manage a portfolio of alliances and those required to develop and manage individual alliances. For instance, search capabilities help a firm enter the market for partners to select on the basis of portfolio fit, but also identify the optimal partner for a focal alliance (Wang and Rajagopalan, 2015).[1] Capabilities focusing on portfolios (e.g., Schilke and Goerzen's (2010) alliance portfolio coordination) are beyond the scope of this investigation.

Alliance capabilities can be viewed as a reflection of skills required to be successful in the main phases in the establishment and management of alliances (Simonin, 1997). Indeed, Gulati's early conceptual study (1998: 294) theorized that processes pertaining to the formation of alliances, governance structure of alliances, and evolution of alliances constitute the "key behavioral issues" arising in individual alliances. Pegging capabilities to specific phases of alliances has the advantage of affording more consistent conceptualizations; as opposed to the use of capabilities that are not linked to work in any one stage (e.g., alliance manager development capability (Lambe *et al.*, 2002)). This said, although Schreiner *et al*. (2009) similarly asserted three main process components in an alliance—formation, governance, and management capabilities—their empirical study focused on coordination, communication, and bonding dimensions of management capability. Despite the benefits of unpacking a single stage capability's intricate nomological network, we take the view that it is necessary to capture the interplay of search, formulation, and management capabilities. The logic is that an inherent challenge in any ISA lies in addressing uncertainties

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[1] We thank an anonymous reviewer for this insight.

associated with the cooperative motives and abilities of the overseas partner and firms' decision-makers may take steps to reduce such uncertainties across the sequence of events in ISAs.[2]

The interplay among contractual formulation and relational governance mechanisms in reducing behavioral uncertainty has received focal attention in the ISA performance literature (e.g., Abdi and Aulakh, 2014; Zhou and Xu, 2012). Still, studies are silent as to whether behavioral uncertainties facing an individual alliance can be addressed using a combination of alliance capabilities. We add to extant knowledge by providing a more holistic explanation of inter-ISA performance variations based on linkages and interactions among diverse alliance capabilities.

THEORY AND HYPOTHESES

Combining insights from resource-based and embeddedness perspectives (Gopalakrishnan, Scillitoe, and Santoro, 2008; Gulati and Sytch, 2007), we provide a solution to simultaneously developing and deploying resource complementarity and trust in ISAs. From a resource-based perspective, ISAs allow the development of valuable and distinctive resource combinations otherwise unavailable to the firm (Gopalakrishnan *et al.*, 2008). By participating in various ISAs, firms gain access to valuable resources that aid the discovery of new alliance opportunities and the deepening of existing alliance relationships (Shi *et al.*, 2014). The alliance relationship itself is a specialized resource that helps the partners realize value from a promising resource pooling (Baum, McEvily, and Rowley, 2012). However, individual ISAs need to be managed actively through partner firm-level resource deployments and adjustments (Robson, Schlegelmilch, and Bojkowszky, 2012). Alliance capabilities are socially complex practices directed toward learning, accumulating, and leveraging alliance know-how with the view to purposefully modifying, and extracting value from, an alliance's resource base (e.g., its interpartner attributes) (Kale and Singh, 2007).

We propose specific relationships of search, formulation, and management capabilities with resource complementarity and trust. A firm's search capability, which creates awareness of and access to the best

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[2] Our conceptualization of this sequence stops short of the end-game of the ISA. Most processual definitions and conceptualizations of alliance capability exclude exiting (Lambe *et al.*, 2002), even if this facet was included in Simonin's (1997) seminal empirical study. In particular, we did not include exit capability as a result of feedback from senior alliance executives in prestudy interviews. The consistent view was that, irrespective of industry, standard ISA contracts typically define each partner's rights and obligations in the event of termination (Luo, 2002). Such clauses are not seen as behavioral processes that help firms accumulate partnership ties in individual alliances (Gulati, 1998).

available partnering options, is a platform for improving resource complementarity in individual ISAs (see Figure 1). As ISAs present opportunities for deepening relationships, we argue that management capability enables the firm to collaboratively exploit resources through trust, but also is important in recognizing and adjusting to the need for resource complementarity. Formulation capability, which does not help the firm access or leverage ISA resources, serves as a boundary condition. We theorize that formulation capability negatively moderates the path of search capability to resource complementarity, but positively conditions the path of management capability to resource complementarity. We also posit that the knowledge resource, international alliance experience, provides an information advantage that drives resource complementarity.

Insert Figure 1 about here

The resource-based perspective suggests firms seek ISAs that can furnish them with resources necessary to strengthen their competitive positions, enhancing the ability of partners to share valuable resources. But it does not address the ISA partners' willingness to share desired resources in a noncoercive manner. Indeed, cross-border alliances pose a special problem for trust development in that partners unfamiliar with one another would perceive various relational and performance risks (Contractor and Woodley, 2015). Embeddedness logic holds that partners' expectations of high-quality interactions, based on the deployment of complementary resources in the ISA, facilitate the attitudinal convergence necessary for generating interpartner trust (Gulati and Sytch, 2007). In effect, interdependent alliance partner firms become controlled by the relationship and its value generating potential. We posit that while trust has an inverted U-shaped relationship with ISA performance (i.e., due to the over-embeddedness of strong trust),[3] resource complementarity positively conditions the performance relevance of trust. Positive associations of resource complementarity with trust and performance have been established in the ISA literature (cf. Lavie *et al*., 2012), and we include these links in our conceptual model for completeness purposes.

Search capability and resource complementarity

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[3] As the ISA partnership transitions from embeddedness stemming from structural patterns of interdependence to embeddedness based on rich and deep trusting relations, it may become less effective (e.g., if shared understanding of information challenging alliance decisions becomes too subjective or slow to change).

A difficulty facing the development of ISAs is the need to forge synergistic links with untried and untested foreign partners (Robson, Katsikeas, and Bello, 2008). Because national differences pose unique challenges as well as opportunities for firms seeking to create productive collaborations, firms commonly have more domestic than foreign alliance partners in their networks (Lavie and Miller, 2008). Establishing alliances with new overseas counterparts secures opportunities for novel syntheses of complementary expertise, irrespective of the partner's foreignness (Tiwana, 2008). We posit that search capability, which involves processes that allow the firm to proactively develop alliance links, is required to attach to overseas partners that have access to valuable resources.

Well-connected firms that exhibit significant alliance experiences are expected to have more sources of information about attractive resourcing opportunities (Gopalakrishnan *et al.*, 2008). Still, when firms lack direct historical ties to partners overseas, they must resort to alternative means to learn about potential alliance partners. In this context, firm-level processes involving ongoing diagnosis of resource requirements and the understanding of how to identify and approach partners, when applied to individual ISA ventures, would offer an improved fit of the partners' resources. Firms that possess search capability comprehend the strategic implications of ISAs for their resource base, and this understanding enables them to pursue a strategy of cultivating different potential resourcing solutions with multiple partners. Search capability also provides firms with an information advantage that helps them identify and gain access to complementary resources in situations where seemingly there is a shortage of attractive alliance partners (Lambe *et al.*, 2002). As the presence of geographical and cultural distance makes the establishment of ISAs problematic, firms need to deploy search processes that rigorously evaluate collaborative opportunities to identify and access the best fitting foreign partners. It is thus likely that a firm's search capability will facilitate the development of resource complementarity in any given ISA. As such:

Hypothesis 1: Search capability is positively related to resource complementarity.

Management capability and trust

Alliance management is a balancing act between controlling operations to maximize own outcomes and cooperating with partner firms to promote joint value-creation activities and mutual gains (Christoffersen, 2013). Not only are such conflicting tendencies inherent in alliance partnerships, but also the management of

interpartner tensions seems more important to ISA outcomes than the conflict itself (Ren, Gray, and Kim, 2009). Management capability directs, evaluates, controls, or otherwise implements alliance activities in a way that minimizes conflict and maximizes cooperation in the partnership. Such capability provides an advantage of knowing how to set up a flexible, self-enforcing approach to policing noncooperative behaviors, based on the amplification of trust between ISA partners.

Alliance scholars (Cuypers *et al.*, 2016) recognize the importance of firms' sophistication in diagnosing subtle differences between partners and devising workable solutions that make compromises and accommodate disparities over time. Managing relationship dynamics in cross-border alliances is fraught with difficulty, since the partners need to be able to reconcile their unique perspectives, procedures, cultures, and other differences, to engage in joint value-creation activities (Abdi and Aulakh, 2012, 2014). Post-formation, management capability involves processes pertaining to forward thinking in handling delicate issues concerning the balance between competition and cooperation in ISAs. Indeed, prior research (Johnson *et al.*, 2004) suggests that firms use effective interactional knowledge to build trusting bonds with a partner, which provides stability to the alliance entity. Because most ISA partnerships lack relational history, trust is unlikely to have emerged naturally through previous partner interactions (cf. Lioukas and Reuer, 2015). Instead, the partners would need to use their managerial expertise to coordinate behaviors and implement routines in a manner that dampens relationship risk perceptions of, and enhances confidence between, the two sides. Firm-level know-how that enables coping with ISA management complexities is required for a partner to integrate its agenda with that of the counterpart and establish trust. Thus:

Hypothesis 2: Management capability is positively related to trust.

Management capability and resource complementarity

Management capability is conducive to developing and maintaining resource complementarity in ISA settings. Managerially competent firms recognize that to create value in ongoing interactions with their ISA partners, there must be considerable resource complementarities and synergies at the outset of the alliance venture. Resourcing advantages based on a promising resource exchange are immediate, as firms seek to realize benefits from novel information and skills that the counterpart has. While trust accrues over time through repeated interactions between partners, resource complementarity's advantage is likely to be more

short-lived due to the partners' ongoing efforts to assimilate each other's ways of working and changing environmental conditions that might render such knowledge less important (Baum *et al*., 2012). Firms that exhibit high levels of alliance management capability are better able to build-in future conflict in setting up the ISA—the achievement of strong resource complementarity from the start increases the partners' interdependence, enhances understanding of mutual ways of working and requirements, and improves the long-term potential of the alliance (Shi *et al*., 2014).

Further, the possession of alliance management capability enables a partner to better handle relationship dynamics in ongoing ISAs because it connects to the alliance's ability and motivation to sustain resource complementarity between the partners. Managerially capable ISA partners understand the need to invest incrementally in alliances so as not to forsake a potentially fruitful resourcing tie (Robson *et al*., 2012). Since ISAs by definition are relatively enduring, cross-border business ventures, changes in the external environment and to the circumstances of the partners during an ISA's timeframe are highly likely. Such changes could weaken the perceived resource complementarity between the partners, precipitating noncooperative behaviors and the unraveling of the alliance agreement. A partner with substantial experiential knowledge of alliance management practices will be able to monitor the ISA's status and progress, achieve flexibility in its work coordination, and find ways of adding to its resource pick over time as required (Fang and Zou, 2009). We therefore hypothesize:

Hypothesis 3: Management capability is positively related to resource complementarity.

The moderating role of formulation capability

We predict that formulation capability contributes indirectly to the level of resource complementarity in the ISA. Indeed, our approach to understanding the influence of alliance capabilities on resource complementarity utilizes logic that formulation capability—which concerns a firm's ability to set up ISA governance via the contract and negotiate this—undermines and advances relationships of search capability and management capability with resource complementarity, respectively.

Impact on the search capability–resource complementarity link

Formulation capability and search capability involve consecutive activities that should dovetail in the lead up to ISA formation (Schreiner *et al.*, 2009). But instead, they may conflict overtly due to the characteristics and interplay of the processes they oversee in new alliances. They are very different mechanisms in the way they focus on the value of the resources accessed in the ISA. Search capability motivates firms to explore promising connections with others that can juxtapose valuable resources. Essentially, a firm's partnering proactiveness is associated with the achievement of first-mover advantages in imperfect factor markets for ISA partners (Sarkar *et al.*, 2009). However, as one focuses on introducing contractual specificities and negotiating to close the deal and finalize the formal structure of the alliance (i.e., based on formulation capability), the ISA agreement can move away from the optimal fit of partner resource contributions identified when the partnership opportunity was initially scoped and decided upon (i.e., based on search capability) (Ness, 2009). Indeed, a firm's strong emphasis on technical aspects and governance—inserting structural rigor to control potential relational risks—can distract from the task of setting up ISAs that are promising in their ability to create and use resource compatibilities to underpin goal achievement.

By contrast, a firm that places weak emphasis on alliance formulation aspects would be able to quickly realize the window of opportunity of the particular partnership's resource combination (Barkema *et al.*, 1997). When ISA partners are not preoccupied with processes paying focal attention to legal, tax, and other bureaucratic design provisions, the formation-related thinking and terms of the alliance agreement can more freely emphasize resource synergies. For example, the Chrysler Group decided to loosen the written terms of its supplier contracts in order to stimulate a genuine meeting of minds that had proven impossible under the traditional legalistic approach. The new contract with preferred suppliers emphasized long-term resource integration over structural rigor. Chrysler adopted a method of partnering with suppliers based largely on the fit of their advanced engineering and manufacturing capabilities (Fortgang, Lax, and Sebenius, 2003). A firm following such an approach is likely to be more dynamic and entrepreneurial in its ability to deploy search resources that prioritize forming ISAs with overt resource complementarity. Thus:

Hypothesis 4: Formulation capability moderates the search capability to resource complementarity relationship such that it becomes weaker as formulation capability increases.

Impact on the management capability–resource complementarity link

An enduring debate in the international alliances literature concerns the complementary versus substitutive roles of contractual and relational governance (Abdi and Aulakh, 2014; Li *et al*., 2010). Some studies (Uzzi, 1997) assert that the relationship-based approach that promotes interpartner cohesion and the contractual-based approach that formulates structure and controls are two incompatible and substitutive orientations for alliance management. As well as imposing unnecessary costs, use of formulation hampers trust and goodwill between alliance partners. One side's adoption of bureaucratic controls provides a signal to the other that they are not considered trustworthy. Others (e.g., Zhou and Xu, 2012) assert that relationship-based governance becomes a necessary complement to the adaptive limits of contracts by fostering bilateralism. Despite its many theoretical and pragmatic advances, the complements versus substitutes governance literature has yet to use resource-based logic. We contribute new thinking to the debate by examining the relative effects of partner firm-level formulation and management capabilities within individual ISAs.

We posit above that firms possessing management capabilities are able to use the ISA design process as a means of initially reconciling and integrating the resource requirements of the partners, and understand how to ensure continued reciprocal resource interdependence (Luo, 2002). A firm also with high formulation capability would be well placed to leverage management capability in these ways. ISAs require a certain level of structural formality, though it is important this can adjust to uncertain conditions over time. Firms that can harness experiential knowledge of alliance management and evolve alliance relationships are cognizant of the need to ensure that the ISA partnership has what it requires to fulfill ongoing task routines, roles, and responsibilities. Management capability implies that a firm uses capable alliance managers tasked with implementing the strategy (Lambe *et al*., 2002). More often than otherwise, in firms with alliance management know-how, actual alliance managers are responsible for securing agreement in the negotiations in order to ensure that the terms struck are fair to both sides. Formulation capability, channeled through such managers, can prove critical in helping them surface and achieve mutual negotiation aims. Only exponents of structuring and negotiating alliances possess the know-how to use the ISA's design process as the framework within which its resource base can be strengthened through competent alliance management.

Structuring alliances with partners from overseas is an onerous task due to dissimilar perceptions, behavioral styles, and goals (Zhou and Xu, 2012). A firm that lacks formulation capability may seek

sustainable resource complementarity with the counterpart, but struggle to create leeway for their resourcing

needs due to the complexity of contracting across borders and closing the deal. Irrespective of a firm's

sophistication in alliance management, cross-border negotiations are fraught with difficulty and firms with

low levels of formulation capability will often find the challenges insurmountable. Negotiators from diverse

national cultures bring different assumptions to the table, and cultural mismatches serve to impede careful

identification of shared perceptions. For instance, the case of Johns Hopkins Medicine International, the

health care provider, suggests that, even when armed with a highly flexible process for managing ISAs, the

firm must ensure during early communications that its foreign partner has a clear understanding of and

realistic expectations for the project (Thompson, 2012). In sum, we expect formulation capability to

complement the role of management capability in creating and sustaining resource complementarity:

> **Hypothesis 5:** Formulation capability moderates the management capability to resource
> complementarity relationship such that it becomes stronger as formulation capability increases.

International alliance experience and resource complementarity

We contend that organizational processes and patterns of activity in partner firms allow them to develop

superior interpartner attributes in ISAs (Sarkar *et al.*, 2009). While a firm's alliance capabilities are the best

means of internalizing and acting upon existing knowledge, direct experience with alliances is a resource

that can also be leveraged across alliances (Lambe *et al.*, 2002). Prior experiences with alliance success and

failure are an important part of the learning experience. Not only is it the case that alliance experiences lead

to repetitive activity patterns (i.e., capabilities), but also they may have a direct effect on alliance outcomes.

In situations where outcomes are highly uncertain (e.g., in cross-border alliances), experience likely matters

more, as it provides firms with a set of tool or metrics for analyzing ambiguous situations (Sampson, 2005).

Although a set of early ISA studies identified partner firms' alliance experiences as a possible driver of

performance, the empirical results are at best mixed (Christoffersen, 2013). Such an observation could imply

that experiences indirectly impact performance via intermediate outcomes, such as interpartner attributes;

and/or that only *relevant* experiences help partners to reduce mistakes and make the right decisions in ISAs,

both initially and in responding to challenges that arise. To this point, the alliance literature has maintained

the importance of distinguishing between various facets of experience (e.g., general vs. partner-specific and

domestic vs. international) that differentially impact gains across alliances (Gulati, Lavie, and Singh, 2009). By contrast, alliance capabilities research has taken the view that such capabilities act together (e.g., as a higher-order construct) in unlocking value from "the overall collaborative phenomenon" (Simonin, 1997: 1159). Indeed, empirical studies have shown that alliance capabilities collectively enhance the individual outcomes of domestic as well as international alliances (Lambe *et al*., 2002; Schreiner *et al*., 2009).

Here, we focus on a partner firm's international alliance experience as a driver of resource complementarity in its ISA. We define international alliance experience as the lessons learned and knowledge generated through the firm's recent ISAs (Gulati, 1995; Kale and Singh, 2007). The relevance of this experience facet is twofold. First, prior general experiences with foreign partners are more valuable than ones with domestic partners when firms seek to gain from the internationalization of their alliance activities. International alliance experience provides a double-learning opportunity, arising not just from having participated in alliances or doing business in an international context, but in doing both simultaneously (Christoffersen, 2013). Second, because requirements for alliance effectiveness change over time, the value of alliance experiences can depreciate (Sampson, 2005). Recent experiences are more likely to be relevant.

Firms with higher levels of international alliance experience would be more cognizant of the strategic implications of ISAs for their resource base, as they are likely to have a more precise understanding of what resource combinations are achievable with and valuable to overseas partners, and what combinations would allow them to generate optimal alliance returns (cf. Dyer and Singh, 1998). It is also conceivable that international alliance experiences provide an information advantage in the search for complementary overseas partners. A firm's strong reputation based on a track record of forging ISAs would furnish greater opportunities to build new links that would, in turn, yield valuable information on potential partners and their resources. As well as helping to set up initial conditions of complementary resources in the ISA, the firm's international alliance experience should also be conducive to its understanding of how to follow progress made against task-related criteria used to select the overseas partner (Nielsen, 2003). Accordingly:

Hypothesis 6: International alliance experience is positively related to resource complementarity.

Trust and ISA performance

The current study defines ISA performance as effectiveness, or the extent to which the ISA's goals and objectives are achieved (Robson *et al.*, 2008). The cross-border partnerships literature (Katsikeas, Skarmeas, and Bello, 2009) has observed that trust drives effective performance by altering social properties of the international exchange relationship. Such studies have advanced McEvily, Perrone, and Zaheer's (2003) theorization that high trust activates particular *structuring* and *mobilizing* mechanisms, which improve social properties for the network of managers and other employee–actors conducting alliance work. Structuring refers to connections among actors that constitute the interaction patterns within the alliance's internal network. Specifically, McEvily *et al.* (2003) contended that trust enhances the structure of relational connections by strengthening the density, thickness, and stability of links between the alliance partners. Density increases due to generalizing or transferring trust from a trusted organization or some of its members to previously unknown group members (i.e., filling structural holes within the ISA's internal network). Ties become thicker as additional content dimensions are added within a given link between actors, such as additional partner resources and capabilities. Ties become more stable as trust reduces the need for instant reciprocation of exchange benefits (Luo, 2002). Rather, trusting parties would expect equity to be balanced over time in the ISA.

Whereas structuring creates conduits for engaging in a broader scope of resource exchanges with a greater number of employee–actors within the ISA, a partner firm's actors may require motivating to this end. Mobilizing "involves motivating actors to contribute their resources to combine, coordinate, and use them in joint activities, and to direct them toward the achievement of organizational goals" (McEvily *et al.*, 2003: 97). In alliances, mobilizing creates organizational action by inducing employee–actors to contribute and integrate their resources as well as openly share the confidential information necessary to work effectively with their counterparts. Nevertheless, mobilized actions across unfamiliar (foreign) partners that lack shared interests and perspectives can be difficult to harness (cf. Obstfeld, 2005).

Substantial research on cross-border alliances (e.g., Zhou and Xu, 2012) suggests that partners experience dissimilar perceptions and cognitive styles that create difficulties in accurately evaluating each other's thinking, conduct, and behaviors. Indeed, Wong *et al.* (2017) observed that sociocognitive differences undermine the interpartner coordination process as, ultimately, coordination builds upon

common ground. For ISA partnerships lacking trust and a shared sense of the counterpart's honesty and benevolence, managers would not be willing to utilize structuring and mobilizing mechanisms to overcome sociocognitive difficulties and facilitate effective exchanges. When trust develops, structuring and mobilizing forces are set in motion, and these alter the social properties of the ISA to build necessary common ground between foreign partners and increase their goal achievement (Robson *et al*., 2008).

Though the above mechanisms imply a positive linear link between trust and performance, we also theorize a relational over-embeddedness condition suggestive of a curvilinear relationship. Beyond a threshold, trust produces no additional benefits, or even yields declining performance returns, in ISAs. High levels of trust can have hidden, negative consequences that limit the effectiveness of cooperative strategies generally and ISAs specifically (cf. Joshi and Lahiri, 2015). As interpartner trust increases to high levels, the ISA partners incur greater (objective) risk from their trusting behaviors, but perceive less relationship risk. Having trust in the partner encourages the firm to rely less on formal control mechanisms, as these can signal distrust. Such complacency is a natural by-product of trust, leading to underestimation of costs and blindness to unintended consequences (Scheer *et al*., 2012; Uzzi, 1997). Because the cross-border nature of ISAs often requires resourcing with an unfamiliar overseas partner, there is a realistic chance that the counterpart could act in a manner that puts their own alliance interests first.

Further, as trust builds to high levels, interpartner familiarity can breed relational inertia (Scheer *et al*., 2012). Under these conditions, the partners are less likely to search for, and respond to, internal and external information that challenges alliance-level decisions. Building structuring and mobilizing mechanisms in cross-border alliances is a significantly difficult undertaking. Once forged, the common identity and shared social values can render the firms oblivious to shifts in the conditions that originally gave rise to the need for trust and slow to engage in corrective actions that maintain performance effectiveness (Zhong *et al*., 2014). At the extreme, firms locked-in to their existing ISAs would be inhibited in their ability to explore new partner ties that could yield additional, novel resources. Taking the above arguments together, we hypothesize a nonlinear inverted U-shaped relationship as follows:

Hypothesis 7: The relationship between trust and ISA performance has an inverted U shape, such that the positive effect decreases after a threshold.

The moderating role of resource complementarity

We posit that resource complementarity is important in elevating the positive linear part of the relationship between trust and performance. Specifically, it elevates the performance relevance of structuring and mobilizing forces of trust in ISAs, as these mechanisms alter social properties of the ISA to better understand and use the partners' resources (Saxton, 1997). The over-embeddedness of high trust due to complacency and/or relational inertia remains a risk irrespective of the level of resource complementarity.

First, resource complementarity requires coordination through mutual adjustment, which can be achieved via social structuring. ISAs often involve a substantial resource pooling and close connections between the partners' associated responsibilities (Lavie *et al*., 2012). Where the embeddedness of the partners is such that they complete each other's task performance by supplying distinct resources and capabilities, coordination is difficult as the complexity associated with complementarity discourages coordination by standardization. Instead, the overlapping division of duties calls for coordination by mutual adjustment, precluding the use of standard rules to govern interactions between interdependent partners (Krishnan, Martin, and Noorderhaven, 2006). The greater the complementarity of the partners' resources, the more likely that any change one partner makes will affect the other partner in unplanned ways. The social structure resulting from high trust enables individuals to engage in broader resource exchanges with a wider number of actors, flexibly over time, leveraging the potential for mutual adjustment and effective value creation within the ISA partnership.

Second, resource complementarity in ISAs requires partners to share valuable knowledge-intensive resources. Exposing these proprietary resources to the counterpart is not without risk. Being hard to observe, value, and protect, knowledge-intensive resources increase the potential for misunderstandings concerning each partner's strategic intent and actual resource contributions in the ISA. The difficulty in discerning and appraising their closely intertwined knowledge contributions threatens the open sharing of resources and information among partners and, thus, magnifies coordination difficulties in high-interdependence ISAs (Krishnan *et al*., 2006). Against this backdrop, mobilizing, whereby trusted actors put fears of opportunism aside to share confidential information and work cooperatively, is necessary to surmount relational tensions that hold back joint efforts to coordinate inputs to value creation and goal attainment in the ISA.

Conversely, we expect structuring and mobilizing mechanisms not to play a significant role in enabling trust to enhance the ISA's performance effectiveness when resource complementarity is low, as there is less need for flexible work coordination and discerning the risks of open sharing of knowledge resources. In view of these points, and because the over-embeddedness condition is consistent across high and low levels of resource complementarity, we predict an inverted U-shaped relationship for both conditions. Specifically, for high resource complementarity, trust is expected to have a positive link to ISA performance, but to produce no additional benefits to performance beyond a threshold; and for low resource complementarity, the relationship should be flatter, with performance lowest at both low and high levels of trust. As such:

Hypothesis 8: The positive effect of trust on ISA performance is stronger when resource complementarity is high rather than low.

METHODS

Research setting

The empirical setting for this study is alliances of German and Austrian firms with a partner firm from a foreign country. Following established practice in the literature on alliance experiences (e.g., Gulati, 1995) and capabilities (e.g., Schreiner *et al*., 2009), attention was given to identifying a suitable alliance manager to report on the German or Austrian partner firm's alliance capabilities, and on the interpartner attributes and performance of the chosen ISA. We instructed managers to select a bona fide strategic alliance; that is, one connected to the focal partner firm's corporate goals and involving exchange flows and linkages of its resources with those of the counterpart (Robson *et al*., 2008). Hence, the sample ISAs are *strategically important* for the focal partner. Prestudy interviews suggested alliance resources are tracked closely if they are of high importance to a focal firm's overall resource base.[4] We controlled for the size of the foreign partner firm, thus taking account of its approximate level of alliance capability (Krishnan *et al*., 2006).

In terms of ISA eligibility, the current focus is on two-partner alliances as these represent the bulk of ISAs and have behavioral assumptions that differ from those of multi-party alliances. We focused on ISAs where focal partner firms had more than 250 employees and/or annual sales exceeding €50 million. Our

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[4] The overlap between an ISA's performance and the focal firm's alliance portfolio performance is increased by focusing on the firm's strategically important ISA. Further, 74.6 percent of the sample firms are involved in five or less ISAs, providing evidence of a link between the individual ISA and alliance portfolio performance levels.

study covered a range of manufacturing and service industries. Organizations operating in public, health, and social sectors were excluded as they are nonprofit driven and have idiosyncratic partnering characteristics. We studied only nonequity ISAs, as relational issues are most important in such alliances (Sarkar *et al*., 2001). Finally, we focused on ongoing ISAs established for at least one year, which enables relational sentiments to develop and variations in alliance performance to occur (Lambe *et al*., 2002).

Data collection

Due to the absence of a complete list for the study's ISA population, we used a combination of databases covering German and Austrian firms involved in alliance operations across a range of industries. The complementary sources were the AMADEUS, AURELIA, and ORBIS Internet databases, provided by Bureau van Dijk Electronic Publishing. We randomly selected 1500 firms for inclusion in the study. Each was first contacted by telephone to find out whether the firm itself and one of its ISAs met the study's criteria for inclusion. This screening process helped identify the most appropriate key informant and prenotify the execution of the study. Key informants are organizational members who are both able and willing to provide the information required for the phenomenon investigated. Pre-survey telephone contacts resulted in the identification of potential respondents in 640 firms eligible for the study; that is, they met the eligibility criteria and agreed to participate.

Data were collected through an online survey. Following the initial telephone call, a link to the online questionnaire was sent by email to each potential respondent in the 640 firms targeted. We also attached the questionnaire to the invitation email for those who preferred offline completion. After two weeks, a reminder email was sent out to all those who had not responded. One week later, nonrespondents were contacted by telephone and encouraged to participate. We received completed questionnaires from 199 firms. Despite our presurvey telephone contacts and explicit instructions at the beginning of the questionnaire, several cases did not meet the study criteria: 14 responses came from firms with fewer than 250 employees, seven others focused on equity alliances, and another five referred to ISAs established in the past 12 months. Eight more questionnaires were dropped as they failed a post hoc respondent competency check. An effective response rate of 26 percent (165 of the 640 eligible firms that received the survey link)

was achieved, which compares favorably to previous alliance studies using surveys of top executives (Walter, Lechner, and Kellermanns, 2008).

To test for potential nonresponse bias, we compared respondents with a group of nonresponding firms that had suggested they "do not participate" in surveys (n = 557) with regard to employee number and sales volume. Using a t-test procedure for two independent samples, no significant differences were detected. We also compared online versus offline responses concerning the study variables and employee size and sales. Again, we found no differences. Our sample ISAs have an average duration of five years. In 60 percent of the sample, the focal firm was German and in the remainder Austrian. The foreign alliance partners are based in Western Europe (54%), Central and Eastern Europe (15%), North America (17%), and South-East Asia (14%). A total of 49 percent of the focal firms are in manufacturing industries and 51 percent in services. For 80 percent of the ISAs, the focal and partner firms are in the same industry. As heterogeneity in industry can impact ISA processes, we compared mean responses on the study constructs for alliances where the focal (or partner) firm was in manufacturing versus services. No significant differences were revealed.

Informant evaluation

The key informant for the vast majority (98%) of sample firms was a senior alliance manager with board-level experience. Respondents thus have insights into both corporate-level alliance management and specific ISA operations. However, to identify and exclude any unsuitable informants, we employed a post hoc check on respondent competency. Respondents were asked to rate their "knowledge of the selected alliance's activities" and "knowledge of company-wide alliance activities", on a scale ranging from (1) "not at all knowledgeable" to (7) "very knowledgeable". In eight cases respondents scored lower than four on one or both questions, and these questionnaires were dropped (Katsikeas *et al.*, 2009).

Questionnaire and measure development

The questionnaire was first developed in English, next translated into German, and then back-translated into English by a separate party. To ensure full consistency, the two versions were cross-checked by three international management academicians. Measures of the study constructs were developed using prior research and then evaluated and revised in discussions with ten academic researchers specializing in the

areas of strategic alliances and international management who served as expert judges. Revisions were made and consensus reached on the representativeness of the items tapping each construct's domain. The relevance of the measures, clarity of instructions and questions, and flow of our questionnaire were established in prestudy, field interviews with six senior alliance executives.

The measures of alliance search (four items), formulation (five items), and management (five items) capabilities were based mainly on Simonin's (1997) assessment of a corporate process approach to alliances, as well as on scale items used by Kandemir, Yaprak, and Cavusgil (2006) and Schilke and Goerzen (2010). Our prestudy interviews with executives led to minor changes to the wording of these items, but also to the creation of new items—one for formulation capability and two for management capability—they felt were required to augment the scales' relevance.[5] Consistent with Schreiner *et al*. (2009), we excluded honesty and benevolence trust items from our measure of post-formation alliance management capability. We focus this measure instead on processes or activities wherein a partner firm is adept at managing cooperation and coordination in its alliances. Trust is an interpartner attribute induced at the alliance level by these activities. Indeed, to ensure that we captured alliance capabilities at the partner-firm level, we used the prompting sentence, "Please rate your company's (not your own) level of alliance management expertise in the following areas:" and the wording of the items did not focus on the chosen alliance (Simonin, 1997).

International alliance experience was captured by asking: "In how many international alliances has your firm been involved in the past 5 years? (All types including nonequity and joint ventures)." Use of alliance counts is established in the literature, as is the practice of focusing on experiences within the past five years as being especially relevant to alliance success (e.g., Kale and Singh, 2007).

We adapted our four-item scale of resource complementarity from three measures used by Lambe *et al*. (2002) and one from Sarkar *et al*. (2001). The six-item measure of trust integrated honesty and benevolence items (three for each), modified mainly from Voss *et al*. (2006), but also from Kumar *et al*. (1995). Further, in line with the ISA literature (e.g., Aulakh *et al.*, 1996; Sarkar *et al*., 2001), we relied on one partner to

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[5] While our prestudy interviews with senior alliance executives suggested minor modifications to the wording of the items generally, they also suggested the need to develop these new items to better capture the conceptual domain of alliance capabilities. For instance, an area that surfaced repeatedly was *structures*. The executives suggested the inclusion of an extra item tapping the setting up of formal governance structures during alliance-formation discussions ("setting up governance structures" in the formulation capability scale), and one on how structures, along with broader management processes, were implemented moving forwards ("implementation of processes and structures for managing an alliance" in the management capability scale).

report on both partners' (mutual) trust. Our measure thus adopts the etic view that fundamental trustworthiness characteristics (e.g., benevolence) are generally applicable across cultures (Ferrin and Gillespie, 2010). Such a view is widespread among ISA trust studies drawing focal partners from a particular national context (here, Germany and Austria). Although the counterpart firms were from diverse countries, the integrative nature of alliance work gives rise to partners continuously signaling their trust in the other and, on this basis, trust beliefs between the partners become well calibrated and understood (Krishnan *et al.*, 2006). Finally, our four-item ISA performance measure was modified primarily from Robson *et al.* (2008), but also from Bucklin and Sengupta (1993). Our resource complementarity, trust, and performance scales appeared in a section of the questionnaire focusing on the chosen ISA, and all used the general prompting sentence: "please rate to what extent you agree with the following statements".

Several control variables were included in the model to capture possible effects on interpartner attributes and ISA performance of basic mechanisms and characteristics of the alliance and partner firms. ISA duration was measured in years using the question: "How long has the alliance been in operation?" (Robson *et al.*, 2012). Whether or not there was an alliance function was assessed via the question: "The company has a separate unit (e.g., a managerial position or department) to coordinate all alliance-related activities?" (Kale and Singh, 2007). The presence of a prior relationship was also captured dichotomously by asking: "Did your company have any other alliance with this partner prior to this alliance?" (Parkhe 1993). The literature suggests prior, partner-specific experiences can be a useful counterpoint to general experiences (e.g., in driving trusting ties) (Gulati *et al.*, 2009), even if they would seem of less relevance to ISAs—as these commonly involve first-time partnerships. Partner size was assessed by asking for the "Company size of alliance partner (approximate number of employees)" (Schilke and Goerzen, 2010).

Using items asking for the "Nationality (country) of alliance partner" and "Industry of alliance partner", we developed a set of country and industry dummies: for three of the four main types of partner firm national origin (i.e., Western European partner, Central and Eastern European partner, and North American partner), and whether the focal firm was in the service sector as opposed to manufacturing. Finally, cultural distance was computed using the Euclidian distance measure of Kogut and Singh (1988), which is an aggregate of Hofstede's original four dimensions of culture (i.e., power distance, individualism, masculinity,

and uncertainty avoidance). Distance was calculated based on deviations from Germany's (or Austria's) scores on the four dimensions for each country of the partner. Deviations were corrected for differences in the variances of each dimension. Our measures and their validation statistics are reported in Table 1.

Insert Table 1 about here

ANALYSIS AND RESULTS

Measure validation

We estimated two measurement models (see Table 1). The first contained 17 items measuring the alliance capability components, international alliance experience, and the continuous-scale controls ISA duration and partner size. Error terms for the three single-item constructs were set at 0.10. The second model contained 14 items capturing resource complementarity, trust, and ISA performance. Our analyses were performed using elliptical reweighted least squares (ERLS) estimation in EQS, which yields unbiased parameter estimates for multivariate normal and nonnormal data (Sharma, Durasula, and Dillon, 1989).

In the alliance capabilities, experience, and controls measurement model, the chi-square statistic is significant ($\chi^2_{(107)} = 230.04$, $p = 0.00$) as might be expected because of its sensitivity to sample size. The other goodness-of-fit indices (normed fit index (NFI) = 0.94; comparative fit index (CFI) = 0.97; root mean square error of approximation (RMSEA) = 0.08; standardized root mean square residual (SRMR) = 0.05; and average off-diagonal standardized residual (AOSR) = 0.04) suggest that the model fits the data well. The interpartner attributes and ISA performance measurement model also yields a good fit to the data ($\chi^2_{(74)} = 156.47$, $p = 0.00$; NFI = 0.94; CFI = 0.97; RMSEA = 0.08; SRMR = 0.08; AOSR = 0.06). In both models, items load heavily on their posited constructs and have t-values greater than 7.93. Composite reliability and average variance extracted (AVE) scores of all multi-item constructs are well above recommended cutoffs 0.70 and 0.50, respectively (Fornell and Larcker, 1981). In sum, the measures have satisfactory convergent validity. They also possess discriminant validity, as the AVE for each construct was found to be greater than the squared correlation between that construct and any other construct in the model (Fornell and Larcker, 1981). Table 2 presents the correlation matrix and summary statistics of the measures.

Insert Table 2 about here

Hypothesis testing

The present study uses ordinary least squared (OLS) regression analysis to test the hypotheses. Separate regression models were estimated for the three dependent variables, resource complementarity, trust, and ISA performance (see Table 3). In line with Nielsen and Raswant's (2018: 962) call for international business, regression type studies to report "an empty model with control variables first", our Model 1, Model 3, and Model 5 included only control variables' effects on resource complementarity, trust, and ISA performance, respectively. The next step involved adding the predictors of interest, in Model 2, Model 4, and Model 6, in order to test the hypotheses. Mean-centering was used in the resource complementarity and ISA performance regressions as they involved interaction and/or quadratic terms. The distributions of all variables have been inspected and no serious departures from normality were found. For example, the Q-Q plots of all variables are straight (Lim, 2013). The residual patterns and collinearity diagnostics were also examined, and no evidence of multicollinearity or heteroskedasticity was detected. The largest variance inflation factor (VIF) in the regressions was 2.53, which is below even the strictest standard (e.g., < 3.3) given by statistical methodologists for the cutoff (Kock and Lynn, 2012). The presence of low VIF scores in our regressions (see Table 3) means that, for instance, correlations in the 0.55 to 0.68 range among the capabilities do not equate to multicollinearity and confound the results (Nielsen and Raswant, 2018).

<center>**Insert Table 3 about here**</center>

The results do not support H1, as the search capability → resource complementarity coefficient is nonsignificant ($\beta = 0.12$, t = 1.17, $p = 0.24$). Management capability is positively related to trust ($\beta = 0.30$, t = 2.78, $p = 0.01$) and resource complementarity ($\beta = 0.22$, t = 1.98, $p = 0.05$), as per H2 and H3, respectively. The results suggest search capability × formulation capability is negatively linked to resource complementarity ($\beta = -0.21$, t = -2.00, $p = 0.05$), providing support for H4. The management capability × formulation capability → resource complementarity relationship is positive ($\beta = 0.27$, t = 2.58, $p = 0.01$), in line with our H5 prediction. Formulation capability itself is not associated with resource complementarity ($\beta = -0.01$, t = -0.13, $p = 0.90$). H6 is supported, as international alliance experience is positively related to resource complementarity ($\beta = 0.18$, t = 2.24, $p = 0.03$). H7 is also supported, as trust squared is associated negatively with ISA performance ($\beta = -0.30$, t = -4.21, $p = 0.00$). The linear trust term is positively

associated with ISA performance ($\beta = 0.21$, t = 2.75, $p = 0.01$). Resource complementarity × trust is

positively linked to ISA performance ($\beta = 0.17$, t = 2.48, $p = 0.01$), as per H8. Resource complementarity is

positively linked to trust ($\beta = 0.38$, t = 4.82, $p = 0.00$), and to ISA performance ($\beta = 0.49$, t = 6.69, $p = 0.00$).

The control variables contributed just one significant effect in the models with the predictors of interest.

ISA duration is positively connected to ISA performance ($\beta = 0.21$, t = 3.66, $p = 0.00$). Alliance function,

prior relationship, partner size, the country and industry dummies, and cultural distance exert no significant

effects ($p < 0.05$). Prima facie, the lack of prior relationship effects may be attributed to that only a small

proportion of our sample ISAs (22%) were predated by another alliance with the particular partner, or that

our dichotomous measure of prior relationship did not focus on the recency of prior ties. Yet it would seem

that partner-specific experiences and basic functions responsible for capturing existing knowledge, are poor

proxies for capabilities in the development of ISA-level resources and performance (Simonin, 1997).

Figure 2 depicts the moderation effects identified (Aiken and West, 1991). Plot (A) reveals that search

capability enhances resource complementarity when formulation capability is low rather than high.

Formulation capability thus interrupts search capability's task of producing a fundamental fit of partners'

resources. Plot (B) suggests high formulation capability is required for management capability to positively

shape resource complementarity. In the absence of formulation capability, management capability lacks the

capacity to enhance resource complementarity. Plot (C) depicts the resource complementarity moderation of

the quadratic performance effect of trust.

Insert Figure 2 about here

Supplementary analyses

We performed a set of supplementary tests to examine the sensitivity of our findings and rule out alternative

explanations. First, although previous studies have asserted that cultural distance between the partners leads

to interaction problems in ISAs and can dampen interpartner attributes (Nielsen and Gudergan, 2012; Ren *et

al.*, 2009), we found no such effects. Still, this finding could be linked to our distance measure. Following

recommendations for using multiple, objective distance measures when studying the management of cross-

border operations (Ambos and Hakanson, 2014), we employed three other distance measures. As noted

above, our control variable, cultural distance was computed using the Euclidian distance measure specified

by Kogut and Singh (1988) and Hofstede's original four dimensions of culture (CD4). We used the same approach to create a cultural distance measure that only included power distance and long-term orientation (CD2); the latter is a more recent addition to Hofstede's dimensions. The ISA literature (Choi and Contractor, 2016) has treated these two as the most closely related to governance issues. We then developed a measure including all five dimensions (CD5). Finally, we tapped geographic distance (GD) using CEPII's pair-wise measure based on the log of kilometer distances between the countries' most important cities.

As dealing with cultural distance is a facet of alliance management capability (Simonin, 1997) and such a capability can help overcome distance issues generally, the role of management capability might be more important under conditions of high distance. We thus reran our resource complementarity and trust regression models adding distance and management capability × distance for each distance measure (i.e., CD2, CD4, CD5, and GD) in turn, due to multicollinearity issues. We did not observe any significant effect of distance on resource complementarity or trust. The largest direct effect coefficient was for CD2 → trust (β = -0.12, t = -1.38, p = 0.17). The largest interaction effect coefficient was for management capability × CD4 → resource complementarity (β = 0.11, t = 1.45, p = 0.15). Further, we theorized that both search capability and international alliance experience provide an information advantage in the search for complementary overseas partners. Because distance creates an information barrier between ISA partners, it could play a moderating role here. We reran our resource complementarity regression adding distance, search capability × distance, and international alliance experience × distance for each distance measure in turn, due to multicollinearity issues. The largest interaction effect coefficient was for search capability × GD → resource complementarity (β = 0.15, t = 1.71, p = 0.09). Hypothesized paths remained stable across all these models.

Second, although alliance scholars have equated strong relational ties with the level of trust specifically (Lioukas and Reuer, 2015), others (e.g., López-Duarte *et al.*, 2016) have argued that trust and commitment beliefs are essential threads in the fabric of any ISA relationship. Hence, we reran our regressions using a higher-order relational capital construct, comprising the average of trust and affective commitment (four-item scale based on Skarmeas, Katsikeas, and Schlegelmilch, 2002) scales. We found that the path coefficients for relational capital are consistent with those observed for trust, with two exceptions. The results do not support that resource complementarity × relational capital is positively linked to performance

($\beta = 0.12$, t = 1.46, $p = 0.15$). The control variable partner size becomes influential in that it has a negative connection to relational capital ($\beta = -0.16$, t = -2.20, $p = 0.03$).

Third, the alliance governance literature argues that partner firms may deliberately opt not to build trust as a means of achieving satisfactory performance levels (Zhou and Xu, 2012). Since trust exists between partner firms, it could be a choice of the partners that is not randomly assigned across the sample. On this basis, it is possible that development of trusting ties is susceptible to the self-selection bias source of endogeneity (Christoffersen and Robson, 2017; Robson *et al.*, 2008).[6] By contrast, it is highly unlikely that there would be the deliberate taking of a high or low position of resource complementarity in an ISA, since these partnerships by definition necessitate resource flows and linkages (Makino and Delios, 1996). Following Garen's (1984) approach to selectivity-bias correction with a continuous control variable, we first constructed a correction term from a trust regression equation and, in a second stage, included the correction term in the ISA performance regression (Carson and John, 2013). Measures of alliance capabilities, international alliance experience, resource complementarity, ISA duration, alliance function, prior relationship, partner size, and the other controls were deployed as regressors in the first-stage model. The output from this model was used to calculate that a firm with a certain set of attributes would opt for a trust approach. Using a weighted least squares procedure, we estimated the second-stage ISA performance equation: $Y = \beta_0 + \beta_1\chi + \beta_2 S + \gamma_1\eta + \gamma_2 S\eta + \zeta$, where β_0 is the intercept, χ is resource complementarity, S is trust, η is the predicted error from the trust equation (stage one), and ζ is the error term. The results revealed that the trust coefficient remains positive and significant ($\beta_2 = 0.28$, t = 2.04, $p = 0.04$), while the terms involving trust residuals were nonsignificant ($\gamma_1 = -0.04$, t = -0.32, $p = 0.75$ and $\gamma_2 = -0.21$, t = -1.34, $p = 0.18$), which suggests unobserved factors have no significant effects on the trust–performance link. Thus, trust does not appear to be subject to selection bias-related endogeneity, and it is appropriate to use more efficient, OLS regression procedures to test the study hypotheses.

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[6] We acknowledge that identification of the source of endogeneity is a matter of judgement (Ketokivi and McIntosh, 2017). Indeed, a second source could be the simultaneous causality of trust and ISA performance (Mohr and Puck, 2013). This is unlikely to be the case here for three reasons: (1) our conceptualization of ISA performance focuses on effectiveness, which has been theorized consistently as an outcome of trust in the partnerships literature (Palmatier *et al.*, 2006); (2) the honesty and benevolence items we used to tap trust are removed from competence and reliability forms of trust that could more easily be driven by ISA performance; and (3) shadow of the future, not the past, is more strongly linked to willingness to rely on trust in partnerships (Bidault *et al.*, 2018).

Fourth, gathering cross-sectional data from key informants using perceptual measures creates the potential for common method bias (CMB) to be an explanation for relationships observed in this study. Therefore, we employed ex ante procedural controls limiting CMB, but also ex post statistical analyses of its effects (MacKenzie and Podsakoff, 2012). We used procedures to increase: the ability of respondents to answer questions accurately (e.g., reducing item ambiguity via pretests and recruiting senior alliance managers with board-level experiences as key informants); their motivation to answer questions accurately (e.g., selling the importance of the study in its cover letter); and the effort they face when answering stylistically (e.g., mixing up question response formats in the questionnaire).

We used the common method factor technique, via EQS, to assess the extent to which CMB influences results. Such a procedure is conceptually rigorous when one cannot identify the specific source of CMB (MacKenzie and Podsakoff, 2012). Complicated moderation and quadratic effects are unlikely to be artefacts of CMB since they do not readily form part of respondents' theory-in-use (Abdi and Aulakh, 2014). Because tests for CMB using structural equation models require direct effects, but also multi-item construct measures (Robson *et al*., 2008), we estimated the impact of such bias on management capability → trust and management capability → resource complementarity; that is, our accepted direct effects hypotheses, involving multi-item measures. The path estimates for management capability → trust and management capability → resource complementarity are 0.33 (t = 3.47 $p = 0.00$) and 0.24 (t = 2.73, $p = 0.01$), respectively, in the constrained model, and 0.33 (t = 3.33, $p < 0.00$) and 0.27 (t = 2.13, $p < 0.03$), respectively, in the unconstrained (method factor) model. Hence, CMB does not explain the two paths and appears not to be an issue of major concern in this study.

Fifth, due to the complexity of our conceptual model—the lower-order representation of alliance capabilities and their separate interaction effects produced a relatively large number of hypotheses, on top of the control variable effects—we used OLS regression analyses to test the hypotheses. However, regressions cannot test all the hypothesized links and control effects simultaneously, or take account of correlations among exogenous variables. As the measurement models fitted the data well, we tested the proposed model using the path analysis option in EQS. Path analysis increases the sample size to parameter estimates ratio in order to produce reliable results. The path coefficients in the path analysis (see Web Appendix) are fully

consistent with those of the OLS regressions. The goodness-of-fit statistics (e.g., $\chi^2_{(10)}$ = 43.47; NFI = 0.96; SMRM = 0.03) are satisfactory for a complex model with many structural links.

DISCUSSION

There is agreement in the alliances literature that a partner firm's alliance capabilities can positively influence the resources and performance of individual ISAs (cf. Schreiner *et al*., 2009). However, little research has considered the nexus between the alliance capability and interpartner attributes or ties literatures, an issue that we are concerned with in the present study. In addressing this gap, our study reveals dissimilar direct and contingent effects of different types of alliance capabilities in shaping resource complementarity and trust in ISAs. We also observe that resource complementarity and trust intersect in a manner that enhances ISA performance. The findings add to theory development in important ways.

Prior alliance research has argued that a mixture of resource complementarity and trust is required in an ISA to enhance partnership outcomes, but stops short of unveiling how partners might achieve this (Baum *et al*., 2012). Specifically, interpartner attributes research (e.g., Tiwana, 2008) has asserted that the potential for producing novel resource combinations in partnerships is neglected by strong trust, whereas the potential for integrating novel resources is undermined by strong resource complementarity. Resource complementarity's benefits are unstable over time due to learning effects and the cost of maintaining complementary resources (Contractor and Woodley, 2015). Moreover, developing trust in cross-border alliances is challenging, as the partners need to be able to reconcile their unique perspectives, procedures, and cultures to engage fully in joint value creation (Abdi and Aulakh, 2012, 2014). As is evident from the study sample, ISAs often lack prior relationships through which to stimulate trust development; firms cannot easily turn to their existing alliances for potential partners (cf. Zhong *et al*., 2014). Compared with domestic alliances, ISAs add idiosyncratic resource profiles to participating firms but require greater effort to support interactions between remote exchange partners (Joshi and Lahiri, 2015). Thus, developing resource complementarity and trust in order to form a complementary resource mix and then leverage pooled resources, is a particularly challenging undertaking in ISAs (Lavie *et al*., 2012).

In response, the present study departs from extant interpartner attributes research (Nielsen and Gudergan, 2012; Tiwana, 2008) by showing that firms possessing alliance capabilities are better able to *develop* both

resource complementarity and trust in their ISAs and *deploy* them in a coordinated and performance-enhancing manner. While the resource-based perspective suggests firms use alliance capabilities to establish and manage ISAs that have the ability to furnish them with resources needed to strengthen their competitive positions, it does not address the ISA partners' willingness to share desired resources in a cooperative way. We maintain that a firm's alliance capabilities are pivotal in the development of an embedded ISA, with high resource interdependence. Such ISAs stimulate partners' expectations of high-quality interactions, based on the deployment of complementary resources, facilitating the attitudinal convergence (Gulati and Sytch, 2007) necessary for generating trust and leveraging its performance relevance. We add to the extant literature by showing that resource complementarity jumpstarts the stronger cooperative orientation and sense of common ground important to developing trust in ISAs (cf. Bidault *et al.*, 2018), and positively conditions the performance relevance of trust. The study observes, for the first time, that the difficulty of deploying trust in ISAs also lies in that it has an inverted U-shaped relationship with performance.

Much of the literature on alliance know-how has emphasized basic assets and mechanisms (e.g., types of alliance experience and the alliance function), with relative disregard of the processual aspects of capabilities (Sarkar *et al.*, 2009). Unlike such resources, alliance capabilities are socially complex routines that purposefully extract value from alliance work. The relatively few alliance performance studies that directly capture (i.e., explicitly measure) the role of alliance capability processes, conceptualize them as a higher-order factor or as a composite aggregating across dimensions (e.g., Lambe *et al.*, 2002; Schilke and Goerzen, 2010). Indeed, conceptualization of firm-level alliance capability as a dynamic process, in particular, promotes the notion of a meta-capability that builds new first-order resources at the ISA level (Fang and Zou, 2009). Further, alliance capability studies have more often focused on post-formation management processes than on alliance formation processes (Johnson *et al.*, 2004; Schreiner *et al.*, 2009).

The dominance of higher-order and aggregated conceptualizations of alliance capability in the literature (Lambe *et al.*, 2002; Schilke and Goerzen, 2010) is predicated on the assumption that capability processes act together in enhancing alliance outcomes. However, such thinking could underestimate the difficultly of harnessing capabilities to advance a given ISA business (Wang and Rajagopalan, 2015). While there are reinforcing effects among alliance capabilities, there can also be crowding-out effects between capabilities

with different strategic priorities that make the simultaneous achievement of resource complementarity and trust in an ISA difficult. Our novel theorization builds from the complements versus substitutes, interfirm relationship governance literature (e.g., Bidault *et al.*, 2018; Zhou and Xu, 2012), which has yet to utilize a resource-based rationale. The present study contributes new knowledge by disaggregating alliance capabilities into core processes that variably flow together in building interpartner attributes in an ISA. The results suggest not only that alliance search, formulation, and management capabilities have dissimilar patterns of effects to the attributes, but also that formulation capability complements *and* offsets the other capabilities in resolving *and* creating tensions from deploying both resource complementarity and trust to strengthen the ISA. That formulation capability has this double-sided effect reinforces the importance of decomposing alliance capability into components in order to unpack their interplay (Sarkar *et al.*, 2009). Lastly, consistent with our disaggregated view of a firm's alliance know-how, we observe that lessons learned through international alliance experience can drive resource complementarity, specifically.

Managerial implications

The findings have important implications for ISA management. Firms have long faced the difficulty of developing holistic approaches to alliances that simultaneously utilize resource complementarity and trust to enhance performance. Such an endeavor is even more challenging in cross-border alliances that, more often than otherwise, lack the context of prior collaboration between the partners. Accordingly, the most straightforward strategy for firms to follow is to focus either on exploiting their own resources through linking to an overseas partner that possesses scarce and valuable resources critical for their prosperity (i.e., resource complementarity), or on exploiting resources in an ISA through close relational bonds (i.e., trust). Managers should however note that such a strategy is suboptimal as we find that both resource complementarity and trust drive ISA performance, and these effects are not independent of one another.

We unveil that trust affects performance of the ISA through structuring and mobilizing mechanisms (McEvily *et al.*, 2003), which serve to improve social properties for the network of managers and other actors conducting alliance work. Nonetheless, as trust builds to high levels, interpartner familiarity can breed relational inertia. Firms that are over-embedded in their ISAs would be inhibited in their ability to explore new partner ties that could yield additional resources. Managers should note that the nature of the inverted

U-shaped relationship of trust with ISA performance depends on the level of resource complementarity. We reveal that structuring and mobilizing mechanisms play a stronger role in enabling trust to achieve superior performance outcomes when resource complementarity is at a high level, since there is more need for flexible work coordination and discerning the risks of open sharing of knowledge resources. In the case of low resource complementarity, because there is less need for mutual adjustment and fear of open sharing of resources and information among partners, the observed trust–ISA performance relationship is flatter. The results also indicate that resource complementarity drives trust—hence, underscoring the crucial role that resource complementarity plays in enabling trust to create value in ISAs—and is the stronger predictor of variability in ISA performance. In sum, partner firms that focus on the performance relevance of both interpartner attributes, despite the complexities of doing so, can expect to see superior ISA outcomes.

Firms can become better at building and managing across resourcing and trusting bonds by using their alliance capabilities. It is vitally important for firms to appreciate that different alliance capabilities play nonequivalent roles in developing interpartner attributes in individual ISAs. As well as cautioning managers against over-aggregating alliance capabilities' effects on attributes, we assert that divorcing these effects from each other is injudicious given their possible interplay. Management capability positively links to resource complementarity as well as trust, and seems the best solution to tensions between them. High formulation capability is required for management capability to positively shape resource complementarity, in particular. Firms with formulation capabilities are well placed to leverage management capabilities to build valuable resource combinations in ISAs. Such firms are able to use the ISA design process as a means of initially reconciling and integrating the resource requirements of the partners, and as a mechanism for ensuring continued resource interdependency. By contrast, search capability has a nonsignificant main effect on resource complementarity, but a positive link exists when formulation capability is low. Firms capable at setting up governance structures, handling technical aspects of contracts, and negotiating deals might find that ISA agreements move away from the best fitting combination of partners' resources, identified when scoping the alliance opportunity. Managers' emphasis on alliances' technical aspects and governance structures seems to have hidden costs, insofar as disappearing into the details of formulating an ISA can distract from the strategic priority of using search capability's information advantage to identify partners

with complementary resources and set up new ISAs that create and deploy resource compatibilities to underpin goal achievement.

In sum, firms need to comprehend potential tradeoffs of formulation capability with other capabilities when developing ISAs—acknowledging that it complements the role of management capability, but crowds-out the role of search capability, in building resource complementarity. This nuanced interplay of formulation capability with the other capabilities complicates its deployment as a meaningful tool for augmenting key interpartner attributes. Yet, firms should not treat formulation capability as a risky investment and withdraw from using it, unless it has good cause for doing so (e.g., a relevant skills gap or weak legal institutions), since management capability requires it to drive resource complementarity and this is the stronger of the two moderation effects. Pragmatic responses are needed to the problem of formulation capability undermining search capability's role in producing fruitful ISA resource combinations. This could involve using international alliance experience to replace the information advantage mechanism underpinning the search capability to resource complementarity relationship. The study results suggest international alliance experience is a driver of resource complementarity, in support of our assertions that such experience can help to set up initial conditions of complementary resources in the ISA, and to follow progress made against task-related criteria used to choose the overseas partner (Nielsen, 2003).

Limitations and further research

Caution should be exercised in attempts to generalize from our findings. The study was conducted within the context of nonequity ISAs of German and Austrian partners with counterparts from Western Europe, Central and Eastern Europe, North America, and South-East Asia. We maintain that developing resource complementarity and trust to form a potentially synergistic resource mix and then leverage these resources, is markedly problematic in ISAs as these arrangements often require linking to unfamiliar overseas partners. Testing the external validity of our findings requires replication studies. Comparing ISAs with a sample of domestic alliances would add variation to the data and enable further scrutiny of our assertions. It would also be valuable to replicate or refute the study results in equity ISAs, and in cross-border alliances involving a prior relationship. For instance, given their contrasting formality levels, it is possible that equity and nonequity ISAs differ in how they use formulation and management capabilities. Repeated ISAs between

the same partners can become inert to outside options and struggle to leverage resource complementarity (cf. Scheer *et al.*, 2012).

The resource-based, ISA formation argument is that firms pursue these partnerships to achieve resource configurations in which the value of their idiosyncratic resources is maximized. The literature suggests firms form cross-border alliances with the purpose of developing resource synergies with dissimilar partners (Makino and Delios, 1996); as confirmed by the high and low mean scores of resource complementarity and prior relationship, respectively, in our study. Indeed, 97 percent of the ISAs covered more than one functional area, suggesting the potential for complementary resource contributions to distinct value activities. Unlike these evidently complementary alliances, a second type of alliance emphasizes obtaining economies of scale for partners pooling similar resources. Future work might aim to unveil whether alliance capabilities also lead to better ties with scale partners.

Another limitation concerns the cross-sectional nature of the study, which restricts our ability to make causal inferences. Although the ordering of the variables in our model reflects the likely chain of events in ISA development and is anchored by resource-based theory (e.g., partner firm-level capabilities leading to alliance-level resources with performance benefits), certain of the relationships portrayed (e.g., trust–performance (cf. Mohr and Puck, 2013)) may be reciprocal. Still, robust longitudinal research in ISA contexts involves significant sustained cooperation by executives serving as key informants over time. Our prestudy interviews revealed that the senior alliance managers targeted commonly are unwilling or unable to participate in the study on multiple occasions. Further, the results may be biased as a result of using single-informant data to test the hypothesized links; which is a common problem in studies on cross-border, interfirm relations. We would ideally have added a second source from the overseas counterpart to tap our mutual trust construct. However, we deployed procedural controls to limit CMB and our ex post statistical analyses indicated that such bias is not a major concern in the study.

Although there is much to learn from this early study of how alliance capabilities intersect in yielding diverse interpartner attributes in ISAs, important issues require further work. Based on the relationship governance literature (Abdi and Aulakh, 2014), it would be interesting to investigate whether external factors (e.g., country institutional factors) condition how different capability components work together, or

the converse, in augmenting key partnership attributes. Given the lack of a main-effect relationship between search capability and resource complementarity, future research might derive insights from examining alternative conceptualizations of search capability. It is unclear whether and how resource complementarity (and even trust) effects of search capability change across proactive versus reactive search processes, or specific domains of search such as horizontal versus vertical exchange linkages. Similarly, future research could usefully expand upon our complements versus substitutes framing of alliance capability effects by unpacking formal and relational governance capabilities (e.g., contractual governance, centralized control, communication, and bonding processes) (Schreiner *et al.*, 2009; Zhou and Xu, 2012).

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Search Capability

Formulation Capability

Management Capability

International Alliance Experience

H1 +
H4 -
H5 +
H3 +
H2 +
H6 +

Resource Complementarity

Trust

H8 +
H7 ∩

ISA Performance

Control Variables:

ISA Duration
Alliance Function
Prior Relationship
Partner Size
Western European Partner
Central and Eastern European Partner
North American Partner
Service Industry
Cultural Distance
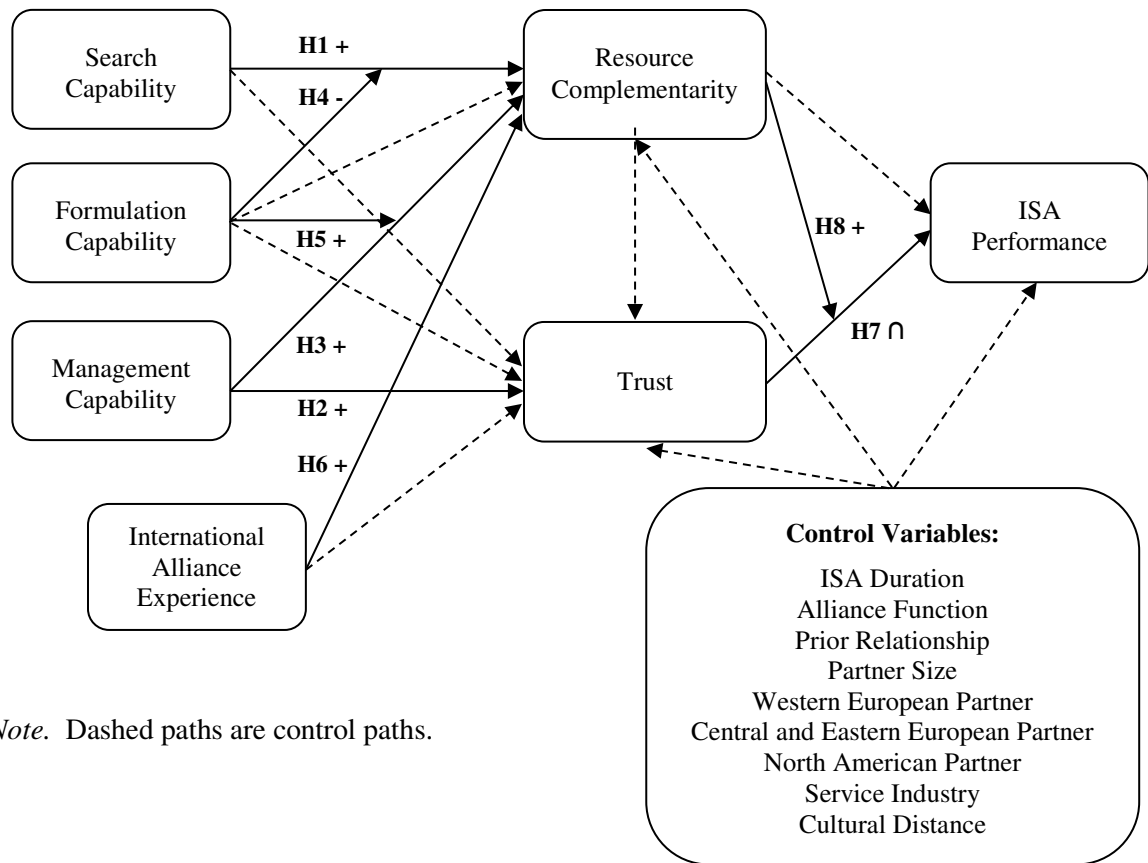
Note. Dashed paths are control paths.

Figure 1 Conceptual Model of Alliance Capabilities, Interpartner Attributes, and ISA Performance

Table 1 Measures and Validation Statistics

Factors and Items	Stand. Loading	t-value
Measurement Model 1: Alliance Capabilities, Experience, and Controls[a]		
Search Capability (CR = 0.89, AVE = 0.68);[b] items from Kandemir *et al.* (2006), Schilke and Goerzen (2010), and Simonin (1997)		
Understanding strategic implications of strategic alliances	0.75	10.37
Monitoring the environment for potential alliance partners	0.87	12.75
Identification of potential alliance partners	0.90	13.44
Proactively approaching firms with alliance proposals	0.77	10.81
Formulation Capability (CR = 0.90, AVE = 0.63);[b] items from Simonin (1997)		
Dealing with legal aspects of strategic alliances	0.81	11.52
Estimation of financial return	0.75	10.36
Setting up governance structures[c]	0.78	10.92
Understanding tax aspects of collaboration	0.76	10.52
Closing the deal	0.87	12.79
Management Capability (CR = 0.91, AVE = 0.66);[b] items from Schilke and Goerzen (2010) and Simonin (1997)		
Implementation of processes and structures for managing an alliance[c]	0.81	11.48
Managing conflict in strategic alliances	0.85	12.52
Coordination of activities between alliance partners	0.85	12.44
Managing cross-cultural aspects in strategic alliances	0.74	10.18
Monitoring of alliance progress[c]	0.82	11.75
International Alliance Experience		
In how many international alliances has your firm been involved in the past 5 years? (All types…)	0.94	14.84
ISA Duration		
For how long has the alliance been in operation?	0.95	15.25
Partner Size		
Company size of alliance partner (approximate number of employees)	0.99	16.61
Goodness-of-Fit Statistics:		
$\chi^2_{(107)}$ = 230.04, *p* = 0.00; NFI = 0.94; CFI = 0.97; RMSEA = 0.08; SRMR = 0.05; AOSR = 0.04		
Measurement Model 2: Interpartner Attributes and ISA Performance		
Resource Complementarity (CR = 0.84, AVE = 0.57);[d] items from Lambe *et al.* (2002) and Sarkar *et al*. (2001); In this alliance, the partners…		
…contribute different resource and/or capabilities to the relationship that help to achieve mutual goals	0.66	7.94
…have complementary strengths that are useful to our relationship	0.75	9.39
…each have separate abilities that, when combined together, enable us to achieve goals beyond our individual reach	0.79	10.06
…highly value the resources and/or capabilities brought into the venture by the partner	0.82	10.70
Trust (CR = 0.89, AVE = 0.58);[d] items from Kumar *et al.* (1995) and Voss *et al.* (2006); In this alliance, both partners…		
…would go out of their way to make sure the other party is not damaged or harmed in this relationship	0.74	9.18
…look out for the interest of the other party	0.74	9.47
…feel that the other party is on their side and vice versa	0.76	9.75
…are always frank and truthful in dealing with the other party	0.82	10.80
…usually keep the promises they make to the other party	0.67	8.34
…can count on the other party to be sincere	0.85	11.48
ISA Performance (CR = 0.87, AVE = 0.63);[d] items from Bucklin and Sengupta (1993) and Robson *et al*. (2008)		
Overall, the alliance has achieved its set goals or is on the right track to achieve its goals	0.80	10.41
The time and effort spent by the partners in developing and maintaining the alliance has been worthwhile	0.84	11.26
The working relationship with our alliance partner has been effective	0.82	10.75
This alliance has not been effective enough [Reversed]	0.73	9.18
Goodness-of-Fit Statistics:		
$\chi^2_{(74)}$ = 156.47, *p* = 0.00; NFI = 0.94; CFI = 0.97; RMSEA = 0.08; SRMR = 0.08; AOSR = 0.06		

Note. CR = composite reliability; AVE = average variance extracted; [a] Includes controls assessed in the questionnaire using continuous measures; [b] Scale anchored by (1) "No expertise" and (7) "Extensive expertise"; [c] New item; [d] Scale anchored by (1) "Strongly disagree" and (7) "Strongly agree".

Table 2 Correlations and Summary Statistics[a]

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Search Capability																
2 Formulation Capability	0.55															
3 Management Capability	0.56	0.68														
4 International Alliance Experience[b]	0.30	0.18	0.29													
5 Resource Complementarity	0.32	0.23	0.32	0.29												
6 Trust	0.10	0.11	0.30	0.11	0.40											
7 ISA Performance	0.19	0.13	0.30	0.15	0.60	0.55										
8 ISA Duration[b]	0.09	0.12	0.15	0.12	0.16	0.03	0.25									
9 Alliance Function[c]	0.22	0.17	0.19	0.21	0.08	-0.02	-0.05	-0.01								
10 Prior Relationship[c]	0.16	0.04	0.02	0.13	0.00	-0.08	0.04	0.08	-0.04							
11 Partner Size[b]	0.31	0.12	0.10	0.22	0.22	-0.07	0.10	0.11	0.30	0.17						
12 WE Partner[c]	-0.15	-0.12	-0.03	-0.18	-0.03	0.09	0.10	-0.04	-0.10	-0.02	-0.12					
13 CEE Partner[c]	-0.09	-0.01	-0.06	0.04	-0.12	-0.06	-0.15	-0.07	-0.11	-0.02	-0.16	-0.39				
14 NA Partner[c]	0.28	0.12	0.19	0.24	0.14	0.09	0.08	0.08	0.21	0.03	0.23	-0.41	-0.19			
15 Service Industry[c]	0.27	0.14	0.02	0.06	0.02	-0.08	-0.05	-0.21	0.21	0.12	0.17	0.04	0.11	0.06		
16 Cultural Distance	-0.15	-0.02	-0.09	-0.08	-0.11	-0.13	-0.13	-0.03	-0.12	-0.05	-0.06	-0.28	0.50	-0.27	-0.21	
Summary Statistics																
Range	1.5– 7.0	1.4– 7.0	1.4– 7.0	0.0– 3.9	2.0– 7.0	1.2– 7.0	2.2– 7.0	0.0– 4.6	0/1	0/1	2.3– 12.8	0/1	0/1	0/1	0/1	0.04– 6.06
Number of Items	4	5	5	1	4	6	4	1	1	1	1	1	1	1	1	1
Mean	4.81	4.47	4.33	1.48	5.43	4.85	5.26	1.62	0.42	0.22	6.71	0.45	0.15	0.17	0.51	1.63
Standard Deviation	1.26	1.26	1.20	0.91	0.91	1.17	1.05	1.02	0.49	0.42	2.46	0.50	0.36	0.38	0.50	1.45

Note. WE = Western European; CEE = Central and Eastern European; NA = North American; [a] n = 165; [b] A logarithmic transformation was used to reduce the variance; [c] Dichotomous measure.
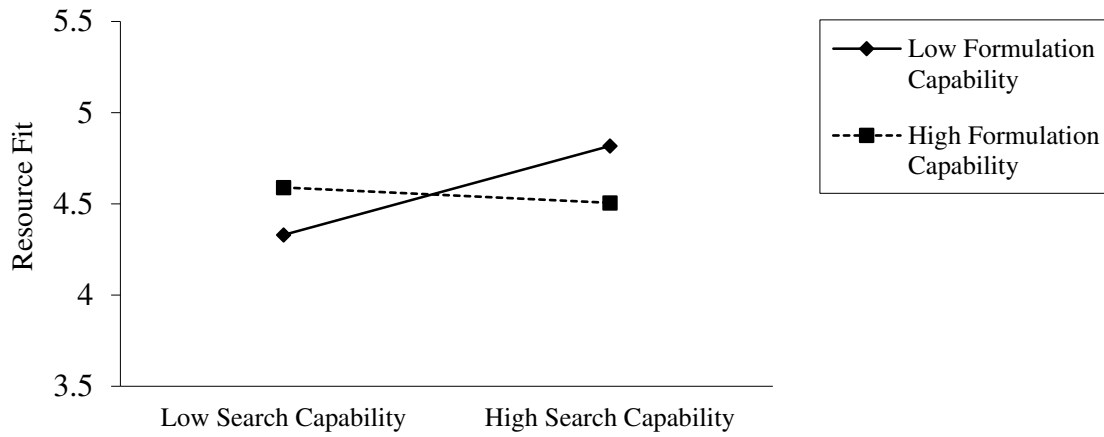
Table 3 Regression Analyses

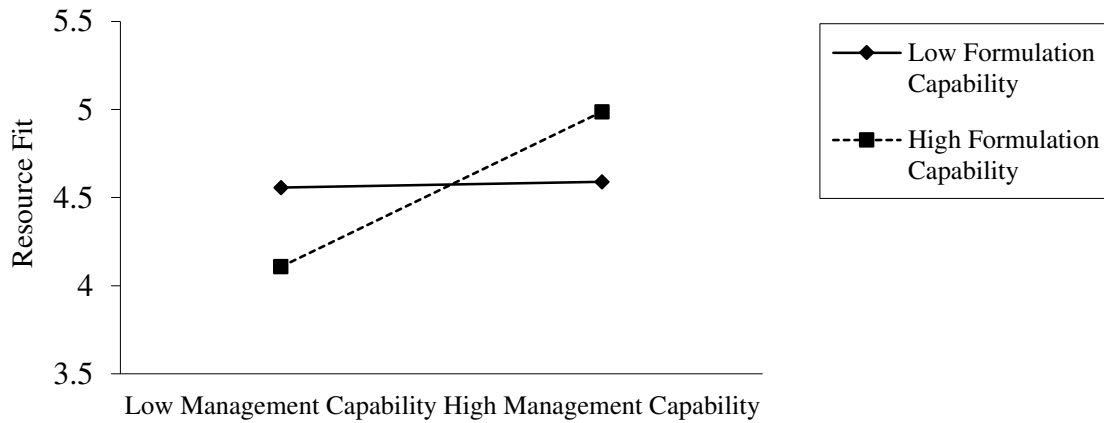| Independent Variables	Determinants of Resource Complementarity[a]		Determinants of Trust[a]		Determinants of ISA Performance[a]	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control variable effects						
ISA Duration	**0.13**	**0.08**	**0.02**	**-0.05**	**0.23**	**0.21**
	(1.65) [0.10]	(1.11) [0.27]	(0.25) [0.80]	(-0.68) [0.50]	(2.94) [0.00]	(3.66) [0.00]
Alliance Function	**-0.08**	**-0.07**	**-0.02**	**-0.04**	**-0.09**	**-0.09**
	(-0.10) [0.92]	(-0.94) [0.35]	(-0.18) [0.86]	(-0.57) [0.57]	(-1.10) [0.27]	(-1.42) [0.16]
Prior Relationship	**-0.06**	**-0.08**	**-0.07**	**-0.04**	**-0.00**	**0.02**
	(-0.70) [0.48]	(-1.06) [0.29]	(-0.85) [0.39]	(-0.55) [0.58]	(-0.05) [0.96]	(0.43) [0.67]
Partner Size	**0.19**	**0.14**	**-0.50**	**-0.11**	**0.09**	**-0.02**
	(2.18) [0.03]	(1.72) [0.09]	(-0.58) [0.56]	(-1.34) [0.18]	(1.07) [0.29]	(-0.28) [0.78]
Western European Partner	**-0.02**	**-0.01**	**0.14**	**0.11**	**0.12**	**0.06**
	(-0.21) [0.84]	(-0.06) [0.96]	(1.35) [0.18]	(1.10) [0.27]	(1.16) [0.25]	(0.84) [0.40]
Central and Eastern European Partner	**-0.56**	**-0.08**	**0.08**	**0.08**	**-0.03**	**-0.04**
	(-0.54) [0.59]	(-0.82) [0.41]	(0.80) [0.43]	(0.82) [0.41]	(-0.33) [0.74]	(-0.57) [0.57]
North American Partner	**0.06**	**-0.01**	**0.15**	**0.09**	**0.09**	**0.01**
	(0.58) [0.56]	(-0.12) [0.90]	(1.47) [0.14]	(0.94) [0.35]	(0.92) [0.36]	(0.13) [0.89]
Service Industry	**0.20**	**-0.01**	**-0.10**	**-0.07**	**-0.02**	**0.04**
	(0.23) [0.82]	(-0.01) [0.99]	(-1.14) [0.26]	(-0.84) [0.40]	(-0.21) [0.84]	(0.67) [0.51]
Cultural Distance	**-0.06**	**-0.03**	**-0.12**	**-0.09**	**-0.06**	**0.03**
	(-0.57) [0.57]	(-0.27) [0.79]	(-1.20) [0.23]	(-1.04) [0.31]	(-0.64) [0.53]	(0.44) [0.66]
Main effects						
Search Capability		*H1*: **0.12**		**-0.09**		**-0.00**
		(1.17) [0.24]		(-0.84) [0.40]		(-0.01) [0.99]
Formulation Capability		**-0.01**		**-0.09**		**-0.12**
		(-0.13) [0.90]		(-0.86) [0.39]		(-1.55) [0.12]
Management Capability		*H3*: **0.22**		*H2*: **0.30**		**0.14**
		(1.98) [0.05]		(2.78) [0.01]		(1.67) [0.10]
International Alliance Experience		*H6*: **0.18**		**-.01**		**0.02**
		(2.24) [0.03]		(-0.14) [0.89]		(0.33) [0.74]
Resource Complementarity				**0.38**		**0.49**
				(4.82) [0.00]		(6.69) [0.00]
Trust						**0.21**
						(2.75) [0.01]
Moderating and quadratic effects						
Search Cap.×Formulation Cap.		*H4*: **-0.21**				
		(-2.00) [0.05]				
Management Cap.×Formulation Cap.		*H5*: **0.27**				
		(2.58) [0.01]				
Trust^2						*H7*: **-0.30**
						(-4.21) [0.00]
Resource Complementarity×Trust						*H8*: **0.17**
						(2.48) [0.01]
Resource Complementarity×Trust^2						**-0.02**
						(-0.18) [0.86]
F-statistic	1.58 [0.13]	3.11 [0.00]	0.98 [0.46]	3.79 [0.00]	2.06 [0.04]	11.31 [0.00]
Adj. R^2	0.03	0.16	0.01	0.19	0.06	0.53
Highest VIF	1.83	2.40	1.83	2.38	1.83	2.53

Note. [a] Standardized β coefficient in bold with t-value in parentheses and *p*-value (two-tailed) in square brackets.
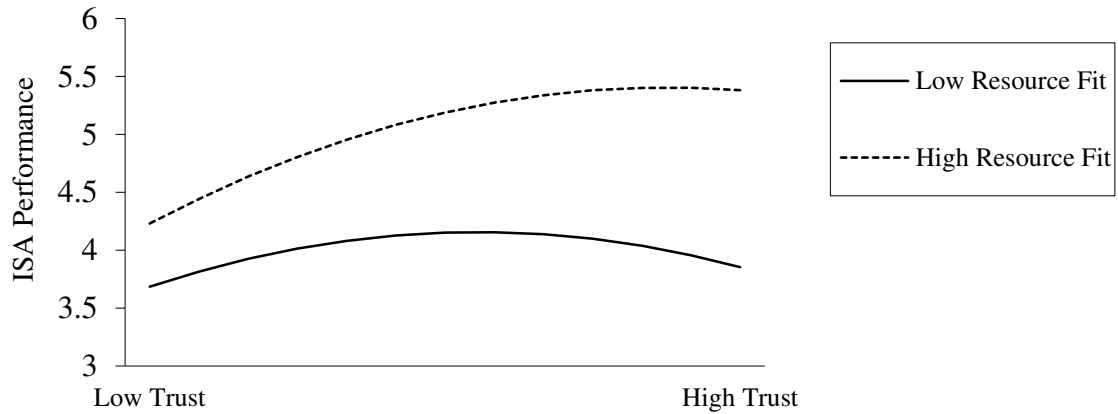
Figure 2 Moderation Plots

(A) Formulation Capability Moderating the Search Capability → Resource Complementarity Path

(B) Formulation Capability Moderating the Management Capability → Resource Complementarity Path

(C) Resource Complementarity Moderating the Trust → ISA Performance Path

Web Appendix: Path Analysis

Independent Variables	Determinants of Resource Complementarity[a]	Determinants of Trust[a]	Determinants of ISA Performance[a]
Control variable effects			
ISA Duration	**0.08**	**-0.05**	**0.21**
	(1.17) [0.24]	(-0.74) [0.46]	(3.89) [0.00]
Alliance Function	**-0.07**	**-0.04**	**-0.08**
	(-0.98) [0.33]	(-0.57) [0.57]	(-1.49) [0.14]
Prior Relationship	**-0.08**	**-0.04**	**0.02**
	(-1.11) [0.27]	(-0.55) [0.58]	(0.47) [0.64]
Partner Size	**0.14**	**-0.11**	**-0.02**
	(1.80) [0.07]	(-1.44) [0.15]	(-0.27) [0.79]
Western European Partner	**-0.01**	**0.11**	**0.06**
	(-0.06) [0.95]	(1.16) [0.25]	(0.86) [0.39]
Central and Eastern European Partner	**-0.08**	**0.08**	**-0.04**
	(-0.86) [0.39]	(0.88) [0.38]	(-0.62) [0.54]
North American Partner	**-0.01**	**0.09**	**0.01**
	(-0.13) [0.90]	(0.99) [0.32]	(0.12) [0.90]
Service Industry	**-0.00**	**-0.07**	**0.04**
	(-0.01) [0.99]	(-0.88) [0.38]	(0.72) [0.47]
Cultural Distance	**-0.03**	**-0.06**	**0.03**
	(-0.29) [0.77]	(-0.75) [0.45]	(0.48) [0.63]
Main effects			
Search Capability	*H1*: **0.12**	**-0.09**	**0.00**
	(1.23) [0.22]	(-0.92) [0.36]	(0.02) [0.98]
Formulation Capability	**-0.01**	**-0.09**	**-0.12**
	(-0.14) [0.89]	(-0.90) [0.37]	(-1.62) [0.11]
Management Capability	*H3*: **0.22**	*H2*: **0.30**	**0.14**
	(2.06) [0.04]	(2.87) [0.00]	(1.70) [0.09]
International Alliance Experience	*H6*: **0.18**	**-0.02**	**0.02**
	(2.35) [0.02]	(-0.21) [0.83]	(0.34) [0.73]
Resource Complementarity		**0.40**	**0.48**
		(6.10) [0.00]	(6.67) [0.00]
Trust			**0.22**
			(3.35) [0.00]
Moderating and quadratic effects			
Search Cap.×Formulation Cap.	*H4*: **-0.21**		
	(-2.09) [0.04]		
Management Cap.×Formulation Cap.	*H5*: **0.27**		
	(2.69) [0.01]		
Trust^2			*H7*: **-0.30**
			(-4.47) [0.00]
Resource Complementarity×Trust			*H8*: **0.17**
			(2.70) [0.01]
Resource Complementarity×Trust^2			**-0.01**
			(-0.11) [0.91]

Goodness-of-Fit Statistics:
$\chi^2_{(10)} = 43.47$, p = 0.00; NFI = 0.96; CFI = 0.97; SMRM = 0.03; AOSR = 0.01

Note. [a] Standardized coefficient in bold with t-value in parentheses and *p*-value (two-tailed) in square brackets; RMSEA was excluded from fit statistics due to its sensitivity to low degrees of freedom and small n.