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We keep moving forward, opening new doors, and doing new things, because we're curious and curiosity keeps leading us down new paths.

~Walt Disney

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Abstract

This dissertation responds to calls for more extensive understanding of the role of process in shaping alliance outcomes. I weave together multiple threads of research to examine whether and how perceptions of the alliance context by boundary spanners, the individual actors who carry out partnership day-to-day activities, influence collaboration dynamics and partner effectiveness. In doing so, I highlight the importance of two collaborative dynamics: transactive memory systems (TMS) and conflict processes. Based on a sample of 126 individuals embedded in a focal organization with two strategic codevelopment alliances, I found that when boundary spanners believe the alliance relationship is symbiotic, such that they feel their organization can trust the partnering organization, has power to influence decisions within the arrangement, and has goals aligned with the partnering organization, boundary spanners are less likely to experience conflicts over how to organize their work, more likely to engage in task-based debate, and able to develop higher quality systems for recognizing, relying upon, and coordinating knowledge with their partnering collaborators. I also considered whether collaborative dynamics mediate the relationship between the alliance context and partner effectiveness. I found that more developed TMS between partnering collaborators mediates the relationship between boundary spanners' attitudes on both the degree of goal alignment and trust among alliance organizations, and their attitudes regarding partner-firm effectiveness. In this work, I established and extended theory to illuminate the

importance of the link between the relational qualities of the alliance context and

collaborative dynamics to develop deeper understanding of alliance partner effectiveness.

Keywords: alliance partner effectiveness, alliance, transitive memory systems, conflict,

interorganizational boundary spanners

Chapter 1: Introduction

Globalization, rapid technological change, and the transition from a material- to a knowledge-based economy have created the conditions for the rapid growth of interfirm cooperative arrangements. The economic era of mass production was predicated on internalized ownership, and the focus was on control and vertical integration. In today's knowledge economy, the pressures for innovation (Sivadas & Dwyer, 2000), the increased costs of research and development, and customer expectations of variety and speed (Smith & Barclay, 1997) favor an economy based on customization, flexibility, rapid response, and disinternalization of organizations (Contractor & Lorange, 2002), ultimately fostering and necessitating the creation of interorganizational arrangements.

In their study of over 2,000 alliances, Anand and Khanna (2000) reported higher than normal returns on stock market valuations following alliance announcements. Interorganizational relationships are perceived as a way to add to firm value, and seen as important strategic tools for accessing new or critical resources (Rothaermel & Boeker, 2008), entering new markets (Beamish & Lupton, 2009), and managing knowledge (Doz, 1996; Hamel, 1991) and competitors (Duysters, Kok, & Vaandrager, 2000). Thus, it is not surprising that alliances are growing rapidly and are seen as a strategy for creating competitive advantage (Hagedoorn, 1993).

Most research on alliances has focused on the strategies behind them: why firms decide to form an alliance, what type of governance structures are best, and how firms choose partners (Kale & Singh, 2009; Ren, Gray, & Kim, 2009). Despite the conventional and theoretical justification for the formation of interorganizational

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relationships, the termination rate is extremely high, often exceeding 50% (Kale, Dyer, & Singh, 2002; Kogut, 1989; Lunnan & Haugland, 2008; Park & Russo, 1996; Park & Ungson, 1997). Consequently, there remains an unexplained incongruence between the theoretical and expected strategic advantages of alliances and their high failure rate.

In his initial review of the alliance literature, Gulati (1998) suggested that although the extant research had made significant strides in understanding the formation and governance of alliances, alliance performance remained underexplored; very few studies had systematically investigated what factors lead to alliance success. This call resulted in more than a decade of research and the emergence of three broad streams of research to examine the drivers of alliance performance:

1. Economic perspective,

2. Social-structural perspective, and

3. Relational perspective.

Although each perspective focuses on different sets of performance drivers, they all rest on the primary assumption that alliance performance is signaled by ongoing cooperation between partnering firms—despite the potential for opportunistic behavior, in which firms have incentive to pursue their own self-interest (Williamson, 1985).

The economic perspective, the first of the three, focuses on the characteristics important for selecting partners and designing governance structures to stave off opportunistic behavior that can increase the transaction costs of a partnership (Dyer, 1997; Williamson, 1985). Within this tradition, scholars have examined asset specificity, resource complementarity, and the strategic alignment of participating firms in predicting

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the stability of a partnership over time. Specifically, it has been argued that mutual investments in alliance-specific assets signal a long-term commitment to the partnership and can result in private sanctions that incent behavior. Empirical evidence suggest that alliance asset specificity can enhance learning, innovation (Mowery, Oxley, & Silverman, 1996), and short-term performance, particularly in nonequity alliances (Zollo, Reuer, & Singh, 2002), where there are fewer formal governance structures and mechanisms for control and monitoring (Luo, 2006; Williamson, 1991). Strategic alliances are perceived as a way to efficiently overcome resource limitations (Pfeffer & Salancik, 1978). Thus, it has been argued that another critical driver of alliance performance is the degree of resource complementarity between partnering organizations. Mowery, Oxley, and Silverman (1996) found that complementary resources, such as specialized technologies or expertise, positively affect alliance learning. Similarly, others have found that alliances between competitors result in an increased likelihood of alliance dissolution (Dussauge, Garrette, & Mitchell, 2000; Park & Russo, 1996). Finally, the strategic value of an alliance can vary between partners. In turn, it has been posited that an alliance's provision of access to strategically critical resources will increase the incentive to maintain a partnership, in order to procure those resources for an extended period (Lunnan & Haugland, 2008). Additionally, it has been found that strategic alignment, in terms of technology, products, and markets, is crucial to ensuring that partnering organizations can realize the anticipated synergies critical for alliance performance (Jemison & Sitkin, 1986; Saxton, 1997).

Sociology informs the second stream of research, the social-structural perspective. This theoretical lens suggests that although formal governance structures and partner characteristics can serve to prevent opportunism, social structures can augment and sometimes replace the need for such governance. Specifically, it has been argued that social structures can serve to deter uncooperative behavior by imposing costs to reputation (Robinson & Stuart, 2007) and enhancing perceptions of reliability and trustworthiness in the market (Gulati, 1995; Gulati & Singh, 1998). This particular lens transitions the discussion from the dyadic relationship between partners and focuses on how the networks in which alliances are embedded can create social benefits or costs that incentivize behavior (Gulati, 1998).

Finally, a third stream of research focuses on how relational mechanisms (such as trust, mutual identity, and relational attachment between boundary-spanners), which become institutionalized, can inhibit opportunistic behavior despite the economic incentives to do so (Gulati & Sytch, 2008; McEvily, Perrone, & Zaheer, 2003; Zaheer, McEvily, & Perrone, 1998). For example, this line of research has shown that interorganizational trust can enhance alliance performance, and that interorganizational trust and interpersonal trust are distinct constructs that operate at different levels of analysis, but have a mutually reinforcing relationship (Zaheer et al., 1998).

Although each of these three theoretical perspectives provides interesting insight into potential drivers of alliance performance, they all rely on the assumption that cooperation (the aversion of opportunistic behavior between partnering firms) is the primary vehicle through which alliance performance is achieved. As Gulati,

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Wohlgezogen, and Zhelyazkov (2012) pointed out in their most recent review of the alliance literature, the preoccupation with cooperation overlooks the role of process and minimizes the fact that—all things being equal—even if firms act cooperatively, they may still face obstacles when working interdependently across a firm boundary. These obstacles can inhibit coordination and increase conflict between boundary-spanning individuals responsible for executing day-to-day activities of the partnership.

The overemphasis of cooperation as the determinant of alliance success is not a new criticism. In fact, multiple scholars have underscored the importance of process in understanding alliance outcomes (Doz, 1996; Gerwin & Ferris, 2004; Gulati & Singh, 1998; Gulati, Wohlgezogen, & Zhelyazkov, 2012; Lavie, Haunschild, & Khanna, 2012; Mohr & Spekman, 1994; Park & Ungson, 2001; Ring & Van de Ven, 1994; Schreiner, Kale, & Corsten, 2009; Van de Ven & Walker, 1984; Zollo et al., 2002). Broadly speaking, these researchers have called attention to the importance of communication, coordination, conflict, and trust between boundary-spanning actors as crucial mechanisms driving alliance performance outcomes. There has been general theoretical agreement that processes are crucial to understanding the link between alliance attributes and alliance outcomes (Doz, 1996; Gulati et al., 2012; Park & Ungson, 2001). As Park and Ungson (2001) highlighted, however, the evidence of the underlying mechanisms driving the relationships "tend to be anecdotal in origin, ad hoc in content, and fragmented in development" (p. 38).

In his seminal piece on the evolution of cooperation in alliances, Doz (1996) began to link the extant research on alliance conditions with processes and outcomes. In

a longitudinal case study, he found that initial conditions of a partnership serve to enhance or stifle cognitive and behavioral learning of individuals embedded in alliances, resulting in either success or failure. A primary contribution of this work was to open the "black box" of alliances by considering the role of process in mediating initial conditions and outcomes. It was Doz's hope that highlighting the importance of process in alliance outcomes would lead to more research integrating individual behaviors into the interorganizational context. Despite his request for "more empirically 'messy' research" (p. 80) and the importance of "understanding how participants in the processes that generate the outcomes interact"(p. 81), there has been limited focus on the role of individual actors and their experiences working with partnering collaborators across firm boundaries (Calvard, 2014; Gulati et al., 2012).

The limited empirical evidence that does exist found that partner-specific experience (number of engagements with the same alliance partner), more so than general alliance experience (number of alliance engagements), enhances the perceived performance of alliances (Zollo et al., 2002). The authors theoretically claim that partner-specific experience facilitates the development of interorganizational routines and stable behavior patterns that enhance coordination, decision making, and conflict resolution. This theoretical perspective was further triangulated by Lavie, Haunschild, and Khanna (2012), who recently found that differences in management style can impair mutual trust. They found that in nonequity alliances (in which there are fewer governance structures and formal control mechanisms), trust, "embeddedness," and commitment are positively associated with the alignment of organizational routines.

Although they did not explicitly examine the mediating relationship between relational mechanisms, alliance routines, and alliance performance in their study, their findings allude to a fundamental link between the alliance context and outcomes through crucial collaborative dynamics such as coordination and conflict.

Another stream of research that has emerged to fill the gap in the understanding of processes within interorganizational alliances examines the effects of an internal alliance management function on alliance success. Alliance management capabilities entail distinct organizational practices designed to manage coordination, communication, and bonding with a firm's partners, and the evidence suggests that this capability is positively associated with perceived joint action and goal fulfillment of focal organizations with their partners (Kale et al., 2002; Schreiner et al., 2009).

Although these studies begin to highlight the importance of collaborative dynamics within alliances, the evolution of this work has been slow and has some limitations. With the exception of Doz's (1996) case study, the vast majority of researchers examining the link between the alliance context and processes have relied on the perceptions of chief executive officers (CEOs), executives, and middle-manager key informants responsible for the partnership's strategic management. Although this broad empirical focus has provided a general understanding of the factors that drive alliance performance from a strategic executive perspective, it is limited in its in-depth understanding of the experiences of individual actors who carry out day-to-day interdependent activities with collaborators from partnering organizations (Doz, 1996; Ring & Van de Ven, 1994).

The current understanding of processes within alliances is further hindered by the insufficient theoretical linkage between the alliance context and the nature of the activities that take place within alliances. For example, the empirical research often lacks a distinction between the different alliance governance structures (i.e., equity or nonequity), despite the fact that there is general agreement that nonequity alliances have fewer formal controls and hierarchical structures to incent coordination (Gulati & Singh, 1998; Zollo et al., 2002). Consequently, in order to understand which processes might be critical in one context versus the other, it is crucial that the type of governance structure under investigation becomes clearer and more transparent. Different conditions and processes may be critical in driving performance, based on the type of interorganizational arrangement being studied.

Although it has been recognized that alliances exist at different stages of the value chain, there tends to be a lack of transparency in most studies regarding this aspect of the alliance context. Processes crucial to the nature of work in a buyer-supplier relationship—in which the activities are serialized—might differ distinctly from processes important in joint-product development—which requires the integration of knowledge, expertise, and resources. In transitioning to a more in-depth examination of collaborative dynamics within alliances, the nature of the task and, in turn, the stage of the value chain become critical features in bounding the theorizing and the generalizability of the empirical evidence (Doz, 1996; Goodman, 1986).

Cross-validating findings due to differences in the levels of analysis, conceptualizations, and measures is another obstacle that has created challenges in

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effectively integrating the current knowledge of alliance outcomes (Park & Ungson, 2001). For example, in some cases, alliance performance is operationalized as survival (stability) or duration of the partnership. In other cases, alliance performance is assessed based on financial metrics and subjective satisfaction-based outcomes. In the latter two cases, an executive typically evaluates performance from the focal firm's perspective (conceptualized at the organizational level). This evaluation level creates difficulty in comparing these perceptions and metrics to measures of duration or survival, which reflect an interorganizational-level outcome (Rousseau, 1985). In the handful of studies that actually measured process (Mohr & Spekman, 1994; Schreiner et al., 2009), the constructs and measures were inconsistent, represented the perspective of one key informant, and tended to be underspecified. Ultimately, the measures of process are not linked to an established literature or clearly mapped to the alliance context, resulting in a fragmented understanding of what processes are critical in each type of alliance governance structure (equity or nonequity), for what type of task (serialized or interdependent), or in what stage of the alliance life cycle (formation, governance, or execution).

To overcome these limitations, alliance scholars have suggested leveraging the broad set of knowledge that has been developed regarding alliance outcomes, by diving deeper into well-specified alliance contexts to examine more closely how individuals' perceptions of their alliance context might influence attitudes and actions (Inkpen & Tsang, 2007). Leveraging the expansive and established literature in organizational behavior, in which collaborative dynamics (such as the development of transactive

memory systems and conflict) have been theorized and measured extensively in multiple contexts and across various tasks, might further enhance the value of this exercise.

Specifically, at the same time strategists and organizational theorists have been investigating alliances, researchers in the field of organizational behavior have extensively studied the impact of functional, cultural, temporal, and geographic boundaries on collaborative dynamics and outcomes (Espinosa, Cummings, Wilson, & Pearce, 2003). This research suggests that spanning boundaries can create "discontinuities," or gaps, in coherence that must be bridged to facilitate interdependent work (Watson-Manheim, Chudoba, & Crowston, 2002). These gaps can impact the way collaborators perceive each other (Cramton & Hinds, 2005; Mortensen & Hinds, 2001; Polzer, Crisp, Jarvenpaa, & Kim, 2006) as well as the flow of information (Ancona, 1990; Ancona & Caldwell, 1992; Cramton, 2001; Dabbish & Kraut, 2008; Dahlin, Weingart, & Hinds, 2005). Researchers have suggested the organizational boundary is one of the most commonly cited boundaries associated with interdependent work (Martins, Gilson, & Maynard, 2004) and have found that it can impose coordination costs and require new boundary-spanning management practices (Cummings & Kiesler, 2005; Levina & Vaast, 2005). Very little research, however, has explicitly examined how individual actors' perceptions of the alliance context might uniquely affect collaborative dynamics between interorganizational boundary spanners.

Ancona and Caldwell's (1992) seminal work on team boundary spanning called attention to the importance of external boundary-spanning activities in predicting collaborative outcomes. The consensus from this stream of research was that too much

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external activity can have negative consequences for teams by draining resources and distracting members from the management of internal processes (Ancona, 1990; Choi, 2002; Gibson & Dibble, 2013). The primary goal of cospecialization-alliance boundary spanners, however, is not only to interface with the external environment, but also to work interdependently with external partnering collaborators to integrate knowledge, expertise, and resources toward the development of a joint product. The current understanding of boundary spanning focuses primarily on boundary spanning that occurs outside the boundary of a team, but within a singular organization (Ancona, 1990; Richter, West, Van Dick, & Dawson, 2006). Thus, the understanding of boundary spanning and its relationship to collaborative dynamics at the boundary of a firm is limited.

This lack of understanding is exacerbated by the fact that collaborative work has traditionally been conceptualized as taking place within the walls of a singular organization, in which an aggregation of individuals—who share responsibility for common tasks—work interdependently (Hackman, 1987). This perspective assumes that individual actors are embedded in teams that have clear boundaries, membership stability, and established lines of authority (Cohen & Bailey, 1997; Hackman 2012). Much prior knowledge regarding collaborative dynamics has been predicated on the assumption that team membership is "well-bounded," that the environment influences individual actors within a team similarly, and, therefore, members develop a shared understanding of their circumstance.

The nature of collaborative work is changing, however, becoming more fluid and dynamic (Edmondson, 2012; Gibson & Dibble, 2013; Hackman, 2012; Mortensen, 2014). In his recently published study, Mortensen (2014) theorized and empirically validated that in less well-bounded teams (in which the team boundary is less clear and more permeable), team members have less shared agreement regarding the qualities and processes within the team. Hence, an expanded empirical research into interorganizational alliances must consider the implications that a fluid, dynamic, and disaggregated collaborative context has on theorizing.

Specifically, team features such as managerial support, training (Hyatt & Ruddy, 1997; Janz, Colquitt, & Noe, 1997; Moreland & Myaskovsky, 2000), and team rewards (Gladstein, 1984) have been shown to drive processes in "well-bounded" teams. In the context of alliances, however, interdependent work with partnering collaborators is more fluid and disaggregated, and thus, collaborating boundary spanners may not be able to rely on these traditional scaffolds. Accordingly, it is important to understand whether collaborative dynamics such as conflict and transactive memory systems (TMS), which have been shown to influence performance on interdependent tasks (De Dreu & Weingart, 2003; Ren & Argote, 2011), are also important to individuals' perceptions of alliance outcomes. Additionally, might qualities unique to the alliance context that have not been previously considered or linked to collaborative dynamics be important in understanding processes in the alliance context?

As noted earlier, much of the extant research on alliances has focused on the relationship between the alliance context and alliance outcomes. Whereas several

characteristics of the alliance context have verifiable objective qualities, such as the alliance governance structure, stage of the value chain, prior alliance experience, and the phase of the alliance life-cycle, other dimensions of the alliance context reflect relational qualities of the alliance partnership, including the degree of interorganizational trust, goal alignment, and informational power between partnering firms—all of which have been linked to alliance success (Muthusamy & White, 2006; Park & Ungson, 2001; Zaheer et al., 1998). The empirical examination of these relational attributes relies heavily upon executive perceptual data across multiple alliances. Thus, these beliefs are likely informed by a combination of the objective reality of the relational attributes of the partnership and an individual's personal experience working with partnering collaborators, as well as the socially constructed reality of the relational qualities of the alliance context—all of which may or may not reflect verifiable truth (Bandura, 1989; Thomas & Velthouse, 1990).

It has been argued that when environments are more equivocal, the construction of the perceived reality may be more important than the verifiable reality in understanding attitudes and behavior (Festinger, 1954; Pfeffer, Salancick, & Leblebici, 1976; Weick, 1995). Boundary spanners responsible for the day-to-day collaborative activities of an alliance are typically removed from executive-level discussions regarding the formation, design, and governance of an alliance partnership; thus, they have less access to the strategic underpinnings of the relationship, resulting in a more ambiguous understanding of the alliance context. These individual actors, however, engage at the boundary of the partnership most regularly once the partnership moves into the execution

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phase. Therefore, once work begins within the alliance, boundary spanners' beliefs regarding the relational qualities of the alliance context are likely to be particularly important in understanding how the day-to-day collaborative dynamics within an alliance might influence outcomes such as alliance partner effectiveness.

The goal of this dissertation is to overcome some of the prior limitations in the alliance research by holding constant the key objective characteristics of the alliance context. Specifically, in this dissertation, I examine collaborative dynamics within nonequity, cospecialization alliances during the partnership's execution stage. This type of alliance represents an alliance context in which there are fewer governance structures to guide and incent behavior, and boundary-spanning actors work interdependently across the firm boundary to codevelop joint products that integrate the unique expertise of the partnering alliance organizations. I draw upon the rich theoretical and empirical understanding of the relational qualities of the alliance context and in-depth knowledge of critical collaborative dynamics, derived from the organizational behavior literature, to construct and test an integrated theory that bridges these two streams of research.

The primary objective of this dissertation is to open the "black box" of alliances even further, by diving deeply into a focal alliance organization that maintains two primary nonequity, joint product-development alliances. In this research, I seek to understand how boundary spanners' beliefs regarding the relational qualities of the alliance context influence their experiences of conflict and their ability to develop TMS with partnering collaborators, and how this ultimately influences attitudes regarding partner effectiveness. In doing so, this dissertation helps close the gap in understanding

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what influences collaborative dynamics and outcomes—from the perspective of the

individual actor—within a burgeoning organizational form that, although widely used to

meet the demands of a global knowledge-based economy, remains underspecified.

Chapter 2: Theory

And then, I think sometimes our engineers tend to forget that you're

working with a person at "CapitalQ." It's no good ranting, "Well,

'CapitalQ' didn't tell me this," and, " 'CapitalQ' didn't tell me that."

It's like at the end of the day, there's somebody over there who is trying to

understand your problem and trying to help you. So, like, pick up the

phone and talk to them. (Boundary spanner interview, June 2013)

Organizations are motivated to participate in interorganizational alliance

arrangements for a variety of reasons: to procure resources, open distribution channels,

create efficiencies, enhance strategic positioning, and acquire knowledge (Child &

Falkner, 1998; Doz & Hamel, 1998). The interdependent activity in these types of

alliances focuses predominately on *exchange-based* interactions between boundary

spanners responsible for negotiating the price for the exchange of resources and for

maintaining the alliance relationship. *Cospecialization*, creating competitive advantage

by combining complementary specialized resources, expertise, and knowledge to jointly

develop a product or service, is another motivator of alliance formation (Inkpen and

Tsang, 2007). In this type of alliance, the interdependent activity between boundary

spanners involves collaborative dynamics that involve generating ideas, finding answers,

and solving problems with the goal of producing some form of joint output (Edmondson,

2012; Inkpen and Tsang, 2007). Much of the prior literature on alliances has overlooked

the crucial role of collaborative dynamics, which are likely to be particularly important to

outcomes in cospecialization alliances where integrating knowledge from the participating organizations into a joint product is a primary source of competitive advantage. Therefore, in the sections that follow, I put forth a theory that illuminates the role of collaborative dynamics in linking the relational qualities of the alliance context with alliance partner effectiveness to begin to close this gap in understanding.

Collaborative Dynamics: Knowledge and Social Integration

There are multiple avenues of inquiry to anchor the examination of collaborative dynamics within alliances. To keep this dissertation manageable, however, I will assume that the business conditions and motivations exist for the partnering organizations to participate in the alliance. I have also held constant the key objective characteristics of the alliance context through my sampling strategy. Specifically, the focus of this dissertation is on

1. nonequity cospecialization alliances,

2. cospecialization alliances operating in the operation stage of the value chain, in which the primary task is development of joint products that integrate the expertise of the partnering organizations, and

3. cospecialization alliances in the execution phase of the partnership life cycle, in which boundary spanners work collaboratively to integrate specialized knowledge and expertise toward the creation of a joint product.

Within this alliance context, the discussion focuses on knowledge and social integration, two aspects of collaboration likely to be important in this type of cospecialization alliance context.

Knowledge integration. Integrating specialized knowledge between collaborators across a firm boundary can be crucial to the success of cospecialized allied organizational arrangements (Gulati, 1995; Gulati & Singh, 1998; Gulati et al., 2012). As this chapter's introductory quote illustrates, however, the experience of interorganizational boundary spanners can be challenging; often, individuals' direct experience with partnering collaborators is objectified and informed by their perceptions of the alliance context (Pearce, 2009). Knowledge is more likely to transfer *within* an organization than *across* organizations (Argote, McEvily, & Reagans, 2003; Baum & Ingram, 1998; Darr, Argote, & Epple, 1995; Zellmer-Bruhn, 2003), implying that the organizational boundary can negatively influence how knowledge is processed between organizations—yet there exists very little understanding of how beliefs regarding the interorganizational context might influence knowledge integration. As Argote, McEvily, and Reagans (2003) articulated, "Further research is needed on the mechanisms through which organizational boundaries affect knowledge transfer" (p. 578).

Cospecialization alliances provide a unique context in which to begin examining this question. Specifically, these types of interorganizational arrangements are designed to develop joint products through collaborative practices that leverage the specialized knowledge embedded in boundary spanners, who represent the participating alliance firms. Despite the strategic codevelopment objectives often set by executives during the formation and design phase of an alliance, during the execution phase of the alliance life cycle, interorganizational boundary spanners (who manage day-to-day activities) appear to vary in their ability to recognize, rely upon, and integrate specialized expertise across

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firm boundaries (Pearce, 2009). In this dissertation, I seek to understand what might drive these differences. I will do so by taking a closer look at how boundary spanners' beliefs regarding the nature of the alliance context influence their experience integrating knowledge through the development of TMS with partnering collaborators, and how this ultimately impacts perceptions of partner effectiveness—a type of alliance outcome.

Social integration. Although it is predicted that knowledge integration will affect outcomes, including alliance partner effectiveness, it is posited that the nature of social interactions between boundary spanners is another collaborative dynamic that also plays a crucial role in ultimately influencing alliance partner effectiveness. Specifically, organizational affiliation can serve as an extremely salient social category by which boundary spanners can more or less identify (Li & Hambrick, 2005). This identification can increase the potential that stereotyping and biased perceptions of partnering collaborators will negatively impact social integration (Tajfel & Turner, 1979, 1986). In this dissertation, I theorize how boundary spanners' beliefs regarding the different relational qualities of the partnership may influence the type and amount of conflict they experience with their partnering collaborators. Further, I suggest that when conflicts are triggered within an alliance, they can serve to increase the salience of the partnering collaborators' organizational affiliation, and that this categorical cue is experienced differently based on the type of conflict that emerges—differentially impacting perceptions of alliance partner effectiveness—a type of alliance outcome.

Alliance Partner Effectiveness: A Type of Alliance Outcome

There has been much discussion in the strategy literature on how best to measure alliance performance (Ariño, 2003; Kale et al., 2002; Kale & Singh, 2009; Lunnan & Haugland, 2008). One primary challenge is that *alliance performance* is an umbrella term that has been used broadly to encompass a variety of alliance outcomes. For example, in some studies, alliance performance measures operational success by examining survival or contract stability, whereas in other studies, it includes financial measures such as profitability and growth (Ariño, 2003; Geringer & Hebert, 1991); in yet other studies, alliance performance refers to effectiveness measures that assess a focal firm's satisfaction with the alliance or with the partnering organization.

A secondary concern with measuring alliance performance has been the debate over the use of subjective versus objective measures. Initially, researchers felt it was crucial to assess alliance performance only with objective measures. These measures created obstacles, however, when examining nonequity alliances, such as those under investigation in this study, because the alliances are not separate legal entities with traditional accounting or financial measures including sales growth, return on assets, and profitability. Overcoming these obstacles led to managerial assessments, which reflect a key informant's satisfaction with the alliance or the extent to which they perceive the partner organization is meeting the alliance's stated objectives. This strategy was received with initial criticism due to common-method bias, until Geringer and Hebert (1991) demonstrated the existence of a high correlation between subjective assessments of performance and more objective measures based on accounting data.

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In order to overcome some of these concerns, I aim to be very precise in my definition of alliance performance. Specifically, in this study, *alliance performance* means a measure of partner effectiveness based on the perceptions of boundary spanners from the focal alliance organization. In cospecialization alliances, success is predicated on the development of joint products that optimize the unique expertise of the participating organizations. Thus, alliance partner effectiveness reflects the extent to which boundary spanners believe the partnering organization is effective in meeting the collaborative objectives of the alliance. This definition includes the degree to which individual boundary spanners perceive the partnering organization is efficient, innovative, and collaborative; provides high quality information; adheres to schedules; shares knowledge; and meets the strategic objectives of the partnership. Consequently, as I take a deeper dive to understand the role of collaborative dynamics within alliances, studying boundary spanners' perceptions of alliance partner effectiveness is an important complement to the portfolio of existing measures of alliance performance. In turn, one of the primary foci of this dissertation will be to understand how knowledge and social integration influence a specific type of alliance outcome, which, from this point forward, will be referred to as *alliance partner effectiveness*. Figure 1 provides an overview of the theoretical model that will be discussed in the sections that follow.
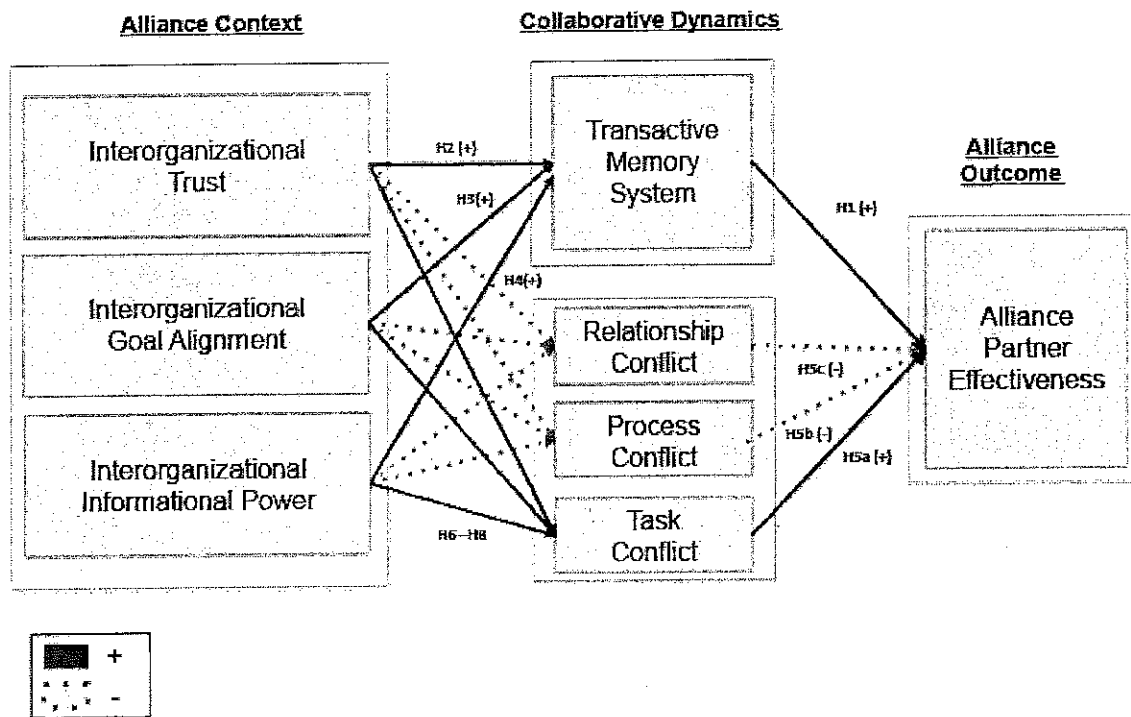
Figure 1. Conceptual model of alliance partner effectiveness

Knowledge Integration: TMS & Alliance Partner Effectiveness

Wegner (1987) originally developed TMS to explain how intimate couples rely on one another as external memory aides to supplement their own memory. Moreland and colleagues then adapted the concept to help explain why collaborators trained together perform better than those trained as individuals (Liang, Moreland, & Argote, 1995; Moreland, 2006; Moreland, Argote, & Krishnan, 1996). Through the specialization of knowledge, TMS can reduce the individual cognitive load, provide access to an expanded pool of expertise, and decrease effort redundancy (Hollingshead, 1998).

Wegner (1987) proposed that TMS develop as a function of a person's beliefs about the knowledge embedded in another person and about the accessibility of that knowledge. TMS can develop based on individuals' preconceptions about one another (Hollingshead & Fraidin, 2003), an individual's direct knowledge of who has expertise in what area (Moreland & Myaskovsky, 2000), and incentives to focus on unshared versus shared task information (Hollingshead, 2001).

The interorganizational tasks within the context of this study are highly interdependent. In general, the ability to coordinate resources and expertise in highly interdependent tasks is crucial for success (Van de Ven, Delbecq, & Koening, 1976). Lewis (2003) reported that TMS are an established predictor of performance on such interdependent tasks. Effective TMS are characterized by three primary attributes (Liang et al., 1995):

1. Knowledge specialization (differentiation of knowledge across members),

2. Knowledge coordination (awareness of who has what knowledge and how to access it), and

3. Knowledge credibility (trust in the knowledge held by other members).

Although each dimension of TMS (specialization, coordination, and credibility) can independently influence joint outcomes, the combination of the three elements has been found to be particularly important in tasks that require (a) large quantities of diversified specialized knowledge, (b) credible and accurate information, or (c) deep understanding of various specialized areas that cannot be cognitively managed by a single individual (Lewis & Herndon, 2011).

The development of TMS across the firm boundary is likely very relevant in cospecialization alliances, in which interorganizational boundary spanners are responsible for integrating the specialized technical knowledge that each partnering alliance organization brings to bear in the development of the complex joint products associated with the partnership. In such a task environment, boundary spanners must be able not only to identify the expertise needed, but also to rely upon the information provided by their partnering collaborators, at it is external knowledge that is relatively difficult to verify. Integrating the uniquely held technical knowledge requires coordination and the application of the comprehensive knowledge held by boundary spanners from both of the partnering organizations.

Ultimately, organizational members will view their alliance partner more favorably when they experience more developed TMS because (Lewis, 2003):

- It should allow individual boundary spanners to focus on developing their own organizational domain of expertise, while maintaining an awareness of the complementary specialized, task-relevant knowledge possessed by partnering collaborators—enhancing the belief that the partnering organization is effectively sharing knowledge and providing the expertise needed to meet the strategic objectives of the alliance.
- When individual boundary spanners have an awareness of who knows what (from their own as well as the partnering organization), they should be more proficient in their search for information relevant to the task—enhancing the

sense that the partnering organization is efficient in delivering the knowledge needed and that this allows for more innovative solutions and opportunities.

- Boundary spanners' feelings that the information provided by their partnering collaborators is accurate and credible should enhance a sense that the partnering organization possesses high-quality expertise and is willing to share this knowledge.

- An understanding of who holds what specialized expertise should allow members to better anticipate the behavior of members from their own organization, as well as from the allied organization, facilitating overall coordination and a sense that the partnering organization is acting collaboratively.

Thus, I posit:

H1: The more well developed are boundary spanners' TMS with partnering collaborators, the more positive will be their perceptions of their alliance partner's effectiveness.

Knowledge Integration: TMS & Alliance Context

One of the three primary streams of research on alliances examines the influence of the relational aspects of the alliance context in driving alliance partner effectiveness. Specifically, this perspective focuses on how the relational qualities of the partnership (such as the degree of interorganizational trust, goal alignment, and informational power) serve to inhibit opportunistic behavior despite economic incentives to do so (Gulati &

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Sytch, 2008; Muthusamy & White, 2006; Zaheer et al., 1998). The relational view suggests that there is interplay between individuals' beliefs regarding the interorganizational partnership and their experiences and attitudes regarding alliance outcomes. Thus, to begin exploring processes within alliances, I opted to focus on how impressions of the relational qualities of the partnership might relate to the collaborative dynamics between interorganizational boundary spanners, and how these dynamics ultimately influence perceptions of alliance partner effectiveness.

Interorganizational trust and TMS. Trust is an emergent state that acts as an important social resource. It can facilitate cooperation, constructive conflict, and negotiation processes, and serve to directly enhance performance (McAllister, 1995; Ring & Van de Ven, 1992; Simons & Peterson, 2000; Zaheer et al., 1998). The increased interest in trust across disciplines and levels of analysis has created some confusion in its definition and conceptualization. In an attempt to synthesize the understanding of trust, Rousseau, Sitkin, Burt, and Camerer (1998) and Mayer, Davis, and Schoorman (1995) developed integrative models of trust based on the shared understanding across disciplines of this fundamental construct. They suggest that trust has two primary components: the intention to accept vulnerability and positive expectations regarding the trustee's behavior.

In recent years, there has been debate on the role of trust in organizational settings (Dirks & Ferrin, 2001; Schoorman, Mayer, & Davis, 2007). Whereas most scholars agree that trust is beneficial to organizational functioning, less attention has been given to the ways in which these benefits are transmitted (Dirks & Ferrin, 2001). The dominant

stream of research purports that trust has a positive direct effect on organizational outcomes such as cooperation, positive attitudes, and performance, but a second, less widely studied line of research suggests trust provides the conditions under which certain outcomes, such as cooperation or higher performance, are likely. In an attempt to overcome this limitation in the literature, Dirks and Ferrin (2001) reviewed empirical studies from 40 years of research to examine the processes through which, and the conditions under which, trust affects organizational outcomes. Ultimately, they conclude both models are valid, but that "given a particular context, one model will better describe the effects of trust than the other" (p. 461). Specifically, they suggest *situational strength* delineates which model is most appropriate.

Situations are considered strong when they provide guidance and incentives to behave in a certain way and clear cues that lead individuals to interpret the events in a similar way for the outcome of interest. A bureaucratic organization with clear titles, roles, and hierarchical structures would be an example of a strong context. Weak situations are defined as the inverse. For example, a matrix organization or school board—with fewer lines of authority and formal procedures—would represent a weak context. Dirks and Ferrin (2001) argue the main effects of the trust model apply particularly in weak situations. Specifically, in weak situations, trust plays a more important role on the effect of the outcome.

Nonequity alliances lack vertical organizational integration, increasing the potential for opportunism and ambiguity (Kale & Singh, 2009; Zaheer et al., 1998). This lack of overarching governance creates the conditions for a "weak situation" (Dirks &

Ferrin, 2001), because the traditional control mechanisms are not available to provide guidance or incentives to behave in a particular way. Thus, nonequity alliances represent a context in which trust should have an important main effect.

In their seminal study of interorganizational arrangements, Zaheer, McEvily, and Perrone (1998) found *interorganizational trust*, the degree to which individual boundary spanners of a focal organization perceive their organization can trust the partnering organization, emerges as the overriding driver of supplier performance. Their study confirmed Dirks and Ferrin's (2001) postulation that trust has a particularly important direct effect on outcomes in "weak" contexts such as interorganizational arrangements. Zaheer et al. (1998) also found that interorganizational trust and interpersonal trust are distinct constructs that seem to be mutually reinforcing. Specifically, they found that the more the organization trusts the supplier organization, the more they trust the supplier representative, and vice versa—confirming the multi-level nature of trust (Rousseau, Sitkin, Burt, & Camerer, 1998).

Despite the confirmation that interorganizational trust is positively associated with alliance supplier performance and enhanced interpersonal trust, the research has shown little understanding of how trust might link to critical collaborative dynamics. Specifically, there is no evidence of how interorganizational trust might link to the development of TMS between interorganizational boundary spanners.

Nonequity alliances are typically governed by a contractual agreement to overcome some of the inherent risks posed by the lack of shared organizational hierarchy. Interorganizational contracts often address how the partnership is defined at the strategic

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level; however, they do not typically encompass the behaviors and outcomes between individuals who carry out the day-to-day collaborative activities. In such a "weak situation," there is more ambiguity in the alliance context. Thus, the boundary spanners' perception of higher levels of interorganizational trust should serve as a social cue that can facilitate key processes and enhance the attainment of more integrative outcomes (Kramer, 2004; Walton & McKersie, 1991). Research on negotiations suggests that trust increases information exchange and the likelihood that individual actors will engage in reciprocal concession making (Butler, 1995; Lewicki & Bunker, 1995). Trust also serves to reduce monitoring and defensive behavior. When individuals perceive higher levels of trust, they are less likely to guard against opportunistic behaviors, which should free cognitive resources away from monitoring pursuits and increase energy available for information processing needed for coordination. When there are high levels of mistrust, individuals are more likely to engage in defensive noncooperation, to avoid the risks of exploitation (Kramer & Brewer, 1984). This mistrust can lead to self-protective action such as withholding information, motivated by the expectation that the other side is unlikely or unwilling to behave in a trustworthy manner. Thus, boundary spanners' perception of high levels of interorganization trust should enhance their willingness and capacity to engage in information sharing, increasing the awareness of who knows what and facilitating coordinated action. Higher levels of perceived interorganizational trust should also serve to reduce uncertainty about the intentions of the partnering organization, which could otherwise impede the degree to which boundary spanners feel they can faith in the information provided. Ultimately, perceptions of interorganizational trust should

enhance the development of TMS with partnering collaborators by creating conditions that help facilitate a willingness to rely upon the information provided, to share information needed to effectively recognize expertise, and to coordinate activities. Hence, I posit:

H2: The more boundary spanners perceive trust between the partnering alliance organizations, the more developed will be their TMS with partnering collaborators.

Interorganizational goal alignment and TMS. Since the earliest discussions of interorganizational cooperation, scholars have posited that interorganizational cooperation is more likely when organizations share similar goals. Similar goals encourage cooperation and mitigate competition by sharing mutual performance objectives, as well as helping to specify the input and output domains of the participating organizations (Perrow, 1961; Schermerhorn, 1975).

In a recent review article, Gulati et al. (2012) argued that most research on interorganizational arrangements has focused on cooperation (partners' commitment and alignment of interests) as a determinant of alliance success and has paid less attention to the critical role of coordination. They defined *cooperation* as the "joint pursuit of agreed-on goal(s) in a manner corresponding to a shared understanding about contributions and payoffs" (p. 533), and *coordination* as "the deliberate and orderly alignment or adjustment of partners' actions to achieve jointly determined goals" (p. 537). The latter definition does not assume that coordination costs are alleviated because

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partners' interests are aligned; however, it does suggest that goal alignment is a crucial condition that enhances coordination, which may be particularly important in cospecialization alliances where competitive advantage is likely achieved by combining complementary specialized resources, expertise, and knowledge from interorganizational boundary spanners toward the development of a joint product.

Interorganizational goal alignment refers to the degree to which individual boundary spanners of a focal organization perceive that their organization and the partnering organization are aligned in the aims and objectives of the alliance. Although setting goals has been associated with enhanced individual and interdependent task performance (Locke & Latham, 1990; Locke, Shaw, Saari, & Latham, 1981; O'Leary-Kelly, Martocchio, & Frink, 1994), the extant research on alliances has not directly investigated the link between interorganizational goal alignment and collaborative dynamics such as the development of TMS between partnering collaborators.

In some of the earliest work on goals, Sherif (1958) discovered that in contexts prone to ingroup-outgroup categorizations, such as an alliance context in which organizational membership acts as a salient category (Li & Hambrick, 2005), superordinate goals can serve to enhance cooperative behavior. Sherif (1958) found that after engaging in a series of activities designed to prime shared objectives, members' attitudes towards outgroup members became more positive, and the nature of communication moved towards more integrative discussions anchored on achieving the joint objective.

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Goal-setting theory suggests that goal setting acts primarily as a motivational mechanism (Locke & Latham, 1990; Locke et al., 1981). Specifically, goals can help to direct behavior by defining and providing clarity regarding the input-output domain of a task. In the context of interorganizational alliances, goals are particularly crucial given the complexity of alliance arrangements. Often, participating alliance organizations choose to cooperate with one another in particular domains, but may compete in other areas or may not want to share resources or knowledge in specific spheres. In turn, when boundary spanners perceive higher levels of interorganizational goal alignment, it should increase their confidence regarding what expertise is available through the partnership, helping them to more efficiently focus their search and coordination efforts. Goals also serve as motivators and encourage directed effort over time (Locke et al., 1981). Thus, boundary spanners' perception of higher levels of interorganizational goal alignment should encourage members to persist in their efforts with partnering collaborators—even when coordination and expertise recognition across the organizational boundary is difficult. Over time, these efforts will lead to increased awareness of each other, which should surface new information-enhancing coordination and faith in the other's knowledge.

Inversely, when there is less commitment to a collective goal, individuals are less likely to share task-relevant information (Zander & Wolfe, 1964) and are less willing to help one another (Deutsch, 1949). Therefore, a misalignment in shared goals between interorganizational partners is likely to increase coordination costs between boundary spanners responsible for the day-to-day activities of the partnership, making it more

difficult for them to recognize, rely upon, and coordinate specialized expertise across the organizational boundary. Specifically, shared interorganizational goals may signal favorable conditions for interorganizational cooperation and greater clarity regarding the operational objectives of the partnership. These, in turn, should translate into more willingness to rely upon the information provided by partnering collaborators as well as greater clarity regarding the complementarity and specialized knowledge that members from each organization bring to bear on the joint activities of the partnership. Thus, I posit:

H3: The more goal alignment that boundary spanners perceive between the partnering alliance organizations, the more developed TMS they will experience with partnering collaborators.

Interorganizational informational power and TMS. Several theoretical perspectives address why firms engage in interfirm collaborations. One of the most ubiquitous theoretical frameworks is based on Pfeffer and Salancik's (1978) publication, *The External Control of Organizations: A Resource Dependence Theory*, which proposed that an organization's power to control resources is critical to its survival and the procurement of external resources is a crucial strategy for acquiring resources—and, in turn, power. Another important reason that firms engage in interfirm collaborations is to reduce uncertainty in learning or decision-making situations. This reason holds particularly true in cospecialization alliances, in which success is predicated on the

alliance's ability to integrate the unique knowledge of each organization through iterative, joint decision making and problem solving (Inkpen & Tsang, 2007).

According to Smith (1973), two types of influence can lead to the acquisition of power in social systems such as alliances. The first form, resource-based power, derives from one party having influence over another because of control over some type of resource or outcome the other wants. The second type, informational-based power, derives from informational influence, in which one party has the ability to reduce the uncertainty in a decision situation. Much of the current literature on power focuses on power derived from the influence over resources (Magee & Galinsky, 2008), with scant attention given to other ways in which power might be derived through social informational influence (Hinds, Neeley, & Cramton, 2013). Thus, as this discussion proceeds, I will focus on informational-based power, given the importance of joint decision making and problem solving in the cospecialization alliance context.

Muthusamy and White (2006) found mutual informational power, the relative degree to which partners can influence each other's decisions about key issues in the alliance, to be positively associated with perceived alliance performance. The authors theorized mutual power enhances effective coordination, learning, knowledge exchange, and joint decision making. These underlying mechanisms, however, were not empirically examined. The importance of shared informational power was further triangulated by Saxton (1997). He found that the degree of perceived shared decision making between partnering organizations was positively associated with alliance satisfaction. Although both of these studies allude to the importance of informational-based power in driving

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alliance outcomes, they did not illuminate the mechanisms through which this might occur.

In the alliance context, there is a high degree of uncertainty because partnering organizations lack the standard operating procedures and established precedent that often exist within a singular organization (Cyert & March, 1963). Boundary spanners often work with partnering collaborators who are physically remote and who may have different work practices, priorities, and constraints. Under such uncertain conditions, individuals are likely to depend more heavily on their beliefs regarding the social influence of the participating parties when making decisions (Pfeffer et al., 1976).

Thus, boundary spanners' perception that their organization has power to influence decisions within the alliance—*interorganizational informational power*—is likely to influence the collaborative dynamics between partnering collaborators. Specifically, when boundary spanners perceive their organization can influence decisions within the alliance, it should enhance their individual sense of self-efficacy in making decisions when working on activities associated with the alliance. A sense of self-efficacy affects an individual's attention and cognitive thinking (Bandura, 1989). When individuals feel more self-efficacy, they are more likely to focus outwardly, giving attention to the joint activities of the task, rather than turning inward and becoming self-preoccupied and evaluative of the difficulties that may be experienced (Wood & Bandura, 1989). People who feel a strong sense of self-efficacy remain highly efficient in their analytical thinking, fostering cognitive constructions of effective action (Bandura & Adams, 1977). Ultimately, the enhanced information-processing capabilities that

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accompany a sense of self-efficacy should positively influence the boundary spanner's ability to coordinate activities and recognize specialized expertise across the organizational boundary. In addition to enhancing an individual's cognitive capacity, self-efficacy can boost motivation in the face of obstacles (Bandura, 1989). In the cospecialization alliance context, the nature of the task is often complex and challenging. In addition, physical barriers to knowledge recognition are significant, because most collaborators work at a distance. Consequently, enhanced motivation in the face of such obstacles should allow for greater coordination and understanding of who knows what. Finally, self-efficacy beliefs can also enhance feelings of trust (Anderson & Galinsky, 2006; McAllister, 1995), positively influencing impressions that information provided by partnering collaborators is credible. Accordingly, I posit:

H4: The more boundary spanners perceive their organization has power to influence decisions within the alliance, the more developed TMS they will experience with partnering collaborators.

Social Integration: Conflict between Interorganizational Boundary Spanners

Although collaboration between firms, in which boundary spanners possess unique skills and organizational competencies, provides access to a greater amount of unique knowledge that can benefit problem solving, it also increases differentiation. Even though differentiation can increase access to a wider range of information, resources, and perspectives important for knowledge integration, it can also increase the potential for conflict, affecting social integration.

Conflict is defined as the expressed conflict between interdependent actors due to perceived incompatibilities or attitudes in which they hold discrepant views (Boulding, 1962; De Dreu, Harinck, & Van Vianen, 1999; Thomas, 1992). Conflict is important in the context of cospecialization alliances. This type of alliance represents a form of organizing that requires the management of complex interdependencies across an organizational boundary, creating the potential for gaps in informational as well as social coherence. Thus, individual boundary spanners embedded in this type of arrangement must reconcile a mix of individual, group, organizational, and interorganizational forces—making them prone to misunderstandings and biases that can result in actual discrepancies, as well as feelings of incompatibility (Cramton, 2001; Lau & Murnighan, 1998, 2005; Polzer et al., 2006).

One of the main debates regarding conflict is whether it is positive or negative for joint outcomes. The research on conflict is extensive; however, the results are equivocal. Both theory and empirical evidence suggests conflict can be both destructive and beneficial (Jehn & Bendersky, 2003; Simons & Peterson, 2000). In an attempt to better understand these inconsistencies, a theoretical distinction has been made to differentiate affective and cognitive conflict. The tri-fold model, which has dominated organizational research for the last 15 years, separates conflict into three distinguishing dimensions (Jehn, 1995):

1. Task conflict,

2. Process conflict, and

3. Relationship conflict.

Task conflict is a form of cognitive conflict, defined as disagreements among interdependent members about the tasks being performed. This definition includes conflicts about ideas generated and disagreements about the content and issues of the task. *Process conflict*, another form of cognitive conflict, is defined as the tension that surfaces regarding the means to accomplish a specific task. This definition includes strategies for approaching a task, but does not include tension about the content or substance of the task. Process conflict includes how work assignments are delegated, who is responsible for what, and how work should proceed. Finally, *relationship conflict* is conceptualized as an affective form of conflict, and represents the awareness of interpersonal incompatibilities. This concept includes personality differences as well as differences of opinion and preferences regarding nontask issues.

Social Integration: Conflict and Alliance Partner Effectiveness

In cospecialization alliances, where interorganizational boundary spanners are responsible for working interdependently on joint tasks, some degree of conflict is expected. What may be unique about conflict in the alliance context, however, is the increased likelihood that conflicts between boundary spanners (whether task, process, or relational conflicts) serve to activate an individual's awareness of their own, as well as their collaborators', organizational affiliation (Li & Hambrick, 2005). Thus, as the frequency of conflict increases between boundary spanners, so might the frequency of members' awareness of their organizational affiliations. It is anticipated that the increased frequency of members' awareness of their organizational affiliations, especially through the manifestation of conflict—regardless of type—will increase the likelihood

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that organizational categorization processes will be triggered—and ingroup and outgroup stereotypes will seep into the conflict cycle (Tajfel & Turner, 1979; Turner & Oakes, 1989). Thus, the fundamental conflict debate: Is conflict positively or negatively related to beliefs regarding partner effectiveness in the context of interorganizational alliances? The answer to this question is likely related not only by how the different types of conflict link to alliance partner effectiveness, but also by how individual actors use the ingroup and outgroup stereotypes to inform their experiences of the conflict.

Task conflicts are a form of cognitive conflict that has the potential to enhance the information-processing capacity between partnering collaborators. Collaborators who debate the pros and cons of a task are likely to stay focused on the objectives of the partnership. Task-based conflict is also likely to surface expertise and information that is crucial for task performance. As with any cross-boundary conflict, however, task conflict also has the potential to trigger stereotypes based on organizational affiliation.

In the alliance context, there are barriers to information flow, given that collaborators often work at a distance, in different organizational contexts, and with different conduits for communication and repositories for storing knowledge. Thus, although stereotypes can lead to misattributions, they can also serve as informational cues that can aid boundary spanners to better understand who knows what (Cramton, 2001; Hollingshead & Fraidin, 2003) and facilitate more effective knowledge coordination. The primary objective of a cospecialization alliance is to codevelop and integrate expertise into a joint product. In turn, it is anticipated that the higher levels of cross-boundary task conflict, which increase the information-processing capacity between

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interorganizational collaborators, will be experienced as beneficial—overriding or mitigating the negative consequences that can accompany stereotyping. Specifically, cross-boundary task conflict will be seen as a process that surfaces important knowledge and informational cues, ultimately boosting positive beliefs regarding the effectiveness of the partnering organization. Thus, I posit:

H5a: Boundary spanners who experience higher levels of task conflict with partnering collaborators will perceive the alliance partnering organization as being more effective.

Process conflicts are another form of cognitive conflict that can also help surface information that can be used to enhance coordination. Although process learning can ultimately improve task performance (Watson, Kumar, & Michaelsen, 1993), disruptions in coordination are not always experienced as episodes that benefit task success (Jehn & Mannix, 2001). Likely, the nature of alliance work compounds how boundary-spanners experience such disruptions. Alliance work provides more contextual ambiguity and fewer face-to-face interactions between interorganizational collaborators to provide direct affective cues to understand and better manage process conflicts when they surface. Thus, although conflicts over process may surface important information to help coordination and task performance, over the long run, without the relational lubricant of familiarity, shared value systems, and conflict-management capabilities to resolve issues as they surface, process conflicts may be experienced as disruptive and difficult to resolve (Jehn & Mannix, 2001). Therefore, unlike task conflicts (in which organizational affiliation

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serves as an informational cue), cross-boundary process conflicts are likely to interfere with short-term task activities, making them more prone to personalized misattributions associated with the ingroup and outgroup biasing that can accompany cross-boundary conflict. Boundary spanners making personal, rather than situational, attributions can further exacerbate difficulties in resolving conflicts surrounding how to work together—and result in a self-reinforcing cycle in which interorganizational collaborators become increasingly vulnerable to chronic conflict (Peterson & Behfar, 2003; Zellmer-Bruhn, Waller, & Ancona, 2004). This conflict will negatively impact beliefs regarding alliance partner effectiveness, because conflicts over how to work together will be experienced by boundary spanners as a distraction from the information processing needed for their joint development activities, rather than as a vehicle for accessing knowledge and increasing alliance-specific capabilities that will improve long-run success. Accordingly, I posit:

H5b: Boundary spanners who experience higher levels of process conflict with partnering collaborators will perceive their alliance partnering organization as being less effective.

Relationship conflict is a form of affective conflict that can sidetrack individuals from the information processing required for effective task performance (De Dreu & Weingart, 2003; de Wit, Greer, & Jehn, 2011). Biases and stereotypes based on organizational affiliation, which often accompany cross-boundary conflict, will likely amplify this relationship. Boundary spanners serve as representatives for their organization. Thus, when individuals of the focal organization perceive tension and

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friction with their partnering collaborators, it is likely to negatively spill over into their beliefs regarding the partnering firm's overall effectiveness. Thus, I posit:

H5c: Boundary spanners who experience higher levels of relationship conflict with partnering collaborators will perceive their alliance partnering organization as being less effective.

Social Integration: Conflict and Alliance Context

Interorganizational trust and conflict processes. As discussed in previous sections of this chapter, when boundary spanners perceive higher levels of interorganizational trust, particularly in "weak situations" (such as nonequity alliances), trust should serve as a social context cue. Such a cue encourages a greater willingness to exchange information and increases the likelihood that individuals will engage in reciprocal behavior (Butler, 1995; Kramer, 2004; Walton & McKersie, 1991). This behavior should, in turn, increase boundary spanners' confidence in being open and enhance their willingness to engage in task-based debates and conflict.

In the interorganizational context, boundary spanners have limited face-to-face interaction, shared information systems, and organizational structures to coordinate activities, which increase the potential for coordination loss (Cummings, Espinosa, & Pickering, 2009; Espinosa et al., 2007). Thus, when unforeseen contingencies surface, boundary spanners with higher levels of trust in the partnering organization should be more willing to give their collaborators the benefit of the doubt and work with them to

resolve issues. This willingness should reduce feelings of tension and frustration and allow adaptations to processes, reducing future conflicts over how to work together.

If boundary spanners do not perceive trust between their organization and the partnering organization, it becomes more difficult to interpret the behaviors of their partnering collaborators—particularly, when the behaviors do not meet expectations. Such feelings of mistrust can lead to an unwillingness to address issues when they surface and increase the likelihood of personalized misattributions (McAllister, 1995). For example, boundary spanners may ask themselves, "Is this behavior just a mistake, a difference in approach, an alternative perspective; or is this personal or a signal of unfair practices?" Such misattributions can increase not only impressions of personal friction and tension, but also the likelihood of a chronic conflict cycle when process and relationship conflicts do surface. Hence, I posit:

H6a: Boundary spanners who perceive more trust between the partnering alliance organizations will experience higher levels of task conflict with their partnering collaborators.

H6b: Boundary spanners who perceive more trust between the partnering alliance organizations will experience lower levels of process conflict with their partnering collaborators.

H6c: Boundary spanners who perceive more trust between the partnering alliance organizations will experience lower levels of relationship conflict with their partnering collaborators.

Interorganizational goal alignment and conflict processes. *Interorganizational goal alignment*, the degree to which boundary spanners perceive their organization and the partnering organization's aims and objectives are aligned, encourages cooperation and mitigates competition between firms (Perrow, 1961; Schermerhorn, 1975). In turn, another important question addresses how perceptions of interorganizational goal alignment might influence collaborative dynamics, such as conflict, between collaborating boundary spanners.

Interorganizational goal alignment can serve to reduce feelings of competition, increase clarity about the input-output domain of the partnership, act as a source of motivation, and encourage persistence (Locke et al., 1981). Thus, when boundary spanners perceive more interorganizational goal alignment, they should be less likely to frame the nature of the joint work as competitive or as a fixed pie solution. This orientation should encourage individuals to be more willing to actively discuss and debate ideas and to believe it possible to arrive at solutions that meet the needs of both organizations, incentivizing task-based conflict.

Impressions of interorganizational goal alignment should also serve to increase a boundary spanner's sense of clarity regarding the scope of the partnership, and should reduce uncertainty about who should do what—minimizing the potential for process

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conflict. When differences emerge in how to approach a set of tasks, a sense of goal alignment should motivate and encourage resolution between interorganizational collaborators to address issues, particularly in the face of obstacles that can accompany working across a firm boundary.

As outlined previously, in contexts prone to ingroup and outgroup categorizations (Li & Hambrick, 2005), superordinate goals can enhance cooperative behavior between individuals. This behavior can result in individual boundary spanners feeling more positively toward outgroup members and expressing more willingness to engage in integrative discussions, and reduce the likelihood of unfavorable stereotypes and biases that can lead to increased feelings of relationship conflict (Amason & Sapienza, 1997; Li & Hambrick, 2005; Sherif, 1958; Xie, Song, & Stringfellow, 2003). Accordingly, I posit:

H7a: Boundary spanners who perceive more goal alignment between the partnering alliance organizations will experience higher levels of task conflict with their partnering collaborators.

H7b: Boundary spanners who perceive more goal alignment between the partnering alliance organizations will experience lower levels of process conflict with their partnering collaborators.

H7c: Boundary spanners who perceive more goal alignment between the partnering alliance organizations will experience lower levels of relationship conflict with their partnering collaborators.

Interorganizational informational power and conflict processes. Likely, interorganizational boundary spanners' beliefs that their organization lacks power to influence decisions within the alliance can negatively influence feelings of self-efficacy. Reduced levels of self-efficacy can lead to a sense that there is little one can do personally to change the course of events, ultimately reduce the sense of motivation (Bandura, 1989), and negatively affect the boundary spanner's willingness to exert effort to share information or debate the pros and cons of a task, reducing levels of task conflict.

In the alliance context, fewer social incentives and greater physical distance between partnering collaborators make communication and coordination more costly. Thus, when boundary spanners are less willing to exert the effort needed to communicate under such circumstances, it can lead to gaps in understanding and increase the potential for differences in understanding of how to coordinate activities—process conflict. In addition, boundary spanners' beliefs that their organization has less influence in the decision-making processes within the alliance will negatively impact their willingness to expend effort to resolve issues when they surface—increasing the potential for a chronic conflict cycle leading to misattributions often associated with relational conflict. Therefore, I posit:

H8a: Boundary spanners who perceive their organization lacks power to influence decisions within the alliance will experience lower levels of task conflict with their partnering collaborators.

H8b: Boundary spanners who perceive their organization lacks power to influence decisions within the alliance will experience higher levels of process conflict with their partnering collaborators.

H8c: Boundary spanners who perceive their organization lacks power to influence decisions within the alliance will experience higher levels of relationship conflict with their partnering collaborators.

Chapter 3: Methods

Study Design

It is generally agreed there is a significant gap in the literature on alliance performance regarding the antecedents and outcomes of alliance process (Das & Teng, 2000, 2003; Doz, 1996; Gulati et al., 2012; Inkpen & Tsang, 2007). As noted in the prior section, alliance performance in this study refers to alliance partner effectiveness—one type of alliance outcome. An in-depth understanding of internal factors within alliances is crucial to inform the mechanisms through which the alliance context ultimately affects alliance partner effectiveness. Likely, a primary reason for this gap is the methodological challenge of deep access into an alliance organization to acquire the rich data needed to understand processes better. My primary aim in this research, then, was to overcome this limitation by designing a study that would reveal a deeper understanding of the collaborative dynamics associated with alliance partner effectiveness. A secondary objective was to design a study that avoided fragmenting the knowledge discovery process. I accomplished this by building on the accumulated knowledge of alliance partner effectiveness in organizational theory and by leveraging the well-established understanding of collaborative dynamics in the field of organizational behavior.

A field-based survey study was designed to achieve these objects by quantitatively testing a model of alliance partner effectiveness outlined in the previous chapter. I built on the theory and prior in-depth qualitative inquiry that helped to ground the theory development, outlined earlier in this dissertation (Pearce, 2009). The research was designed to answer the question: How do the perceptions of the relational qualities of

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the alliance context of interorganizational boundary spanners (who work interdependently with partnering alliance collaborators on the development of joint products) affect crucial interorganizational collaborative dynamics, such as the development of TMS and conflict, and how do they link to alliance partner effectiveness?

Sample. With few exceptions, most empirical studies on alliance partner effectiveness have prioritized generalization over specificity. Most studies have relied on archival databases to identify potential alliances, and then sampled a subset. The response rates have been relatively low (often under 25%), and when perceptual data is collected, it is typically based on the perspectives of one or two key informants such as CEOs, executives, or high-level managers from a given alliance.

The goal of the data collection for this study was to prioritize specificity over generalization, to understand collaborative dynamics in more depth and from the perspective of multiple interorganizational boundary spanners responsible for the day-to-day work associated with alliance product development. Thus, an important objective of the sampling strategy was to identify alliance organizations working on highly interdependent activities rather than exchange-based partnerships such as buyer-supplier alliances. In order to tease out how individual boundary spanners' perceptions of the alliance relationship influences their ability to work collaboratively across the organizational boundary, another criteria of the sampling strategy was to hold constant many of the objective characteristics of the alliance context that have been found to influence alliance partner effectiveness. Accordingly, I selected a focal organization that maintained multiple nonequity alliances with organizations of similar size, within the

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same industry, in the execution phase of the alliance life cycle, and in which the alliances were in the same stage of the value chain (operations) and working on similar types of tasks (joint product development). As has been alluded to by alliance researchers, identifying a focal alliance organization willing to provide deep access into their organization to understand the underbelly of one of their most valuable strategic assets—their alliances—was challenging. Acquiring access took nearly a year and a half of trial and error, patience, and extreme perseverance.

My final sample was anchored by a focal organization that maintained two primary cospecialization nonequity alliances initiated at approximately the same time, and in which the principle activities involved joint product development. At the time of data collection, the focal organization was a Global Fortune 500 company in the mobile technology industry with 50,000 people employed worldwide, $16.87 billion revenue, and a market cap of $24.83 billion. The two alliance partnering organizations were also Global Fortune 500 companies embedded in the mobile technology industry. The first alliance partner had a headcount of 99,000 people worldwide, $77.85 billion revenue, and a market cap of $271.77 billion. The second alliance partner had a headcount of 30,000 people worldwide, $24.87 billion revenue, and a market cap of $117.94 billion. Each alliance partner contributed specialized technology and expertise integral to the design and development of mobile devices.

Interorganizational alliance context. Figure 2 provides a graphical overview of the interorganizational context under investigation. The top oval represents the focal alliance organization (pseudonym Ninc), from which the data were collected. The two

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ovals at the bottom of the diagram represent the two partnering alliances (MCorp and CapitalQ). Within the focal organization (Ninc), each engineer was embedded in a singular line team. The 29 line teams represented different functional domains. The line teams are symbolized in the graphic by small, dark blue ovals. Product development was organized into teams referred to as "product programs." Within the product programs, boundary spanners from the focal organization and from both of the partner alliance organizations worked interdependently to produce a specific mobile device. At the time of data collection, there were nine active product programs in the operation phase of the product development life cycle. The product programs are represented by the light blue ovals between the focal organization and the alliance partners. The dotted lines represent people, technology, and resources that each of the alliance partners and the focal organization contributed to the joint development of mobile technologies that took place in the product programs.
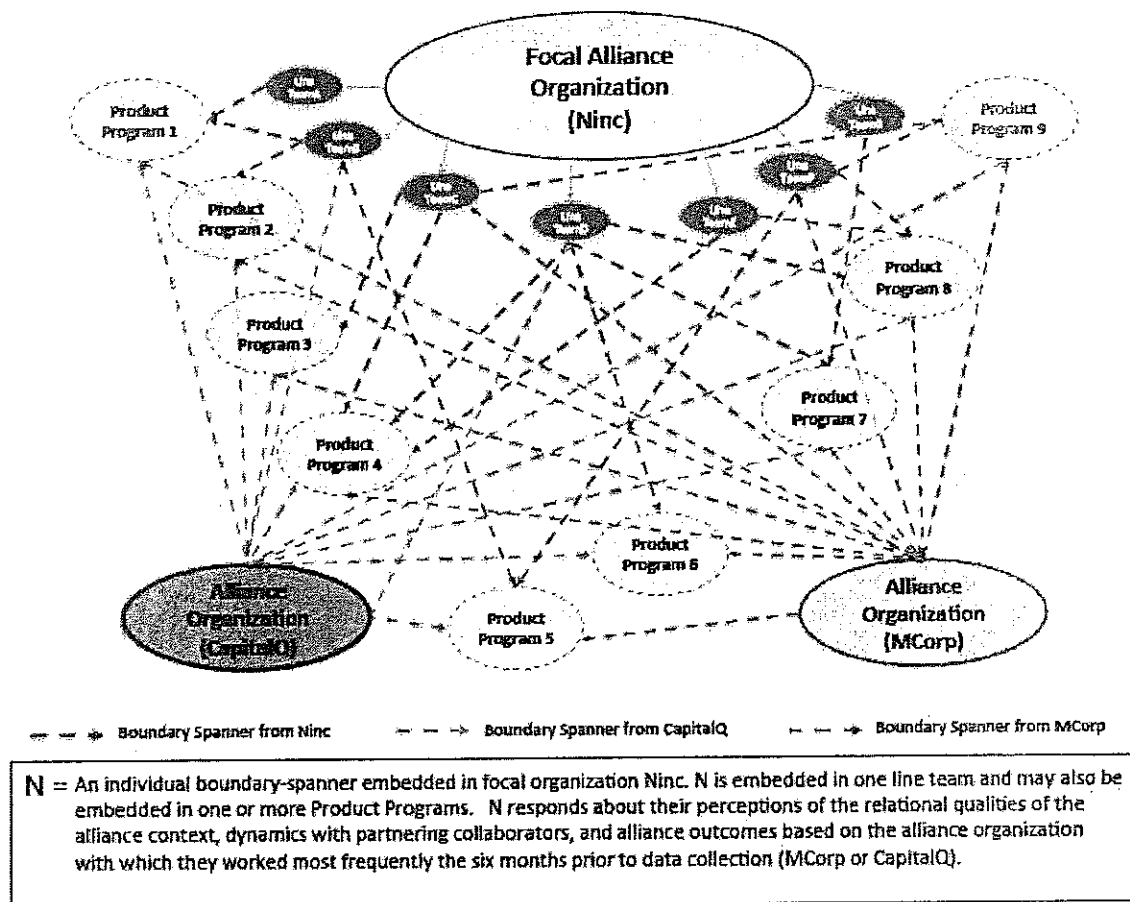
Figure 2. Interorganizational alliance sampling context

Nature of collaborative work within the alliance context. Given this

dissertation's focus on collaborative dynamics within interorganizational alliances, it is

important to understand how collective work was organized in this context. The day-to-

day work of the engineers from the focal alliance organization was organized around

product programs that ran on 6- to 12-month cycles. The engineers worked to produce a

mobile device that included a chipset from one of the alliance partners (CapitalQ) and

software from the second alliance partner (MCorp). Each program included

approximately 20 to 30 engineers from the focal alliance organization who were

responsible for different aspects of product development during various phases of the

development life cycle.

Data were collected from individual boundary spanners within the focal

organization. Each boundary spanner was embedded in a singular line team, which

represented the various functional teams within the focal alliance organization. Examples

include radio frequency, antenna, and broadband. In addition, focal organization

boundary spanners belonged to one or more product programs.

Boundary spanners from the focal organization collaborated with individuals from

the two primary alliance organizations, CapitalQ and MCorp. The partnering

collaborators were physically located in their "home" organizations, which were based in

the same time zone as the location of the focal alliance organization. The majority of the

day-to-day communications between the boundary-spanning collaborators from the focal

alliance organization and the two alliance organizations took place via email, phone, chat,

and use of an error database. Boundary spanners from the focal organization often had

multiple points of contact and, over time, rarely worked with the same set of partnering collaborators. In some cases, members of the focal alliance organization had a dedicated set of resources in the partnering organization; however, it was not unusual for the membership of these teams to change frequently. On occasion, boundary spanners from the focal organization would meet face-to-face to work with collaborators from the partnering organizations to discuss product progress, escalate product issues, or launch a new product program. Thus, as with the interdependent work within the focal organization's product program and line teams, the day-to-day interactions with the partnering alliance collaborators from MCorp and CapitalQ were quite dynamic. Figure 2 illustrates, and the quotes below exemplify, the nature of the collaborative alliance work within the focal organization. The quotes were derived from the initial interviews conducted with individual boundary spanners to ground my understanding of the empirical context.

Table 1. *Example Quotes of Boundary Spanners Regarding Alliance Collaborative Work*

Collaborative Work in the Focal Alliance Context
"People that are on the team aren't necessarily working on anything else, so they're sort of dedicated for the duration to the program or the project. There are some people that will be shared across multiple programs."
"I've been with Ninc for quite a number of years, 14 years in September. I've been on programs that have been selling for years. Those days are gone. Now, it's more like a matter of months."
"I would guess [that in each program] there are about eight or nine managers that are handling specific tasks. That forms the program management team, and each of these people has, depending on the function, multiple other disciplines reporting in to [them]. And, in other functions, there's only the manager that don't [sic] necessarily have other people reporting into them. Then, there's the extended software organization that delivers things into that product program that aren't directly just working on [the program]; they're working on what we need plus what other programs need."
"[On the software side], that's where the structure starts getting a little scattered. Because it has asset teams that are not dedicated to a [product program], but that deliver features into our product as well as other products. So, it's like a dotted line to the [product program]. They have people that are like a pool of resources that go from one product to the next. So, the organization tends to get a little scattered, and they are not direct, dedicated reports [to the product program]."
"And there's various people from different functions that are part of the team, and…it sort of starts fanning downwards into various engineers and other people."
"There are multiple points of contact" "There is a team of people, but you may not get the same person you worked with previously, or you get someone totally new; you have no idea. So, everything funnels…. So, you hope it doesn't get lost in translation across the organizations."

The type of collaborative work that occurs within the alliances in this dissertation aligns with the view of many groups and teams scholars who have argued that the nature of interdependent work is changing. Specifically, collaborative work is becoming more fluid and dynamic than has been traditionally conceived (Edmondson, 2012; Gibson & Dibble, 2013; Hackman, 2012; Mortensen, 2014). Although the nature of the alliance work in this context requires collaboration between interorganizational boundary spanners, it was not clear whether there would be a shared understanding of the collaborative dynamics based on an individual's team affiliation. Therefore, an empirical question of importance is whether beliefs regarding partner effectiveness vary based on individual experiences, or whether there are multi-level effects in which variance is based on socially shared attitudes across line teams and/or product programs.

Data Collection

In order to ground my theory prior to issuing the quantitative survey, I conducted 12 interviews with individuals from the focal alliance organization who had worked on at least one joint product with one of the two partnering alliance organizations. These data were used to tailor the survey to the specific context, to enhance my theory development, and to help guard against mono-method bias. (See Appendix A for details on the guiding questions.)

Much of the prior research on interorganizational alliances relied on executive or managerial perceptions of partnership outcomes. Thus, to expand understanding of the experiences of the individuals who manage the day-to-day coordination, product development, and interdependencies with partnering collaborators, a survey-based design

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was used. The goal was to collect data from each boundary-spanning engineer from the focal organization, to understand their experiences working with collaborators that span the organizational boundary. A survey-based design was most appropriate in this circumstance, both to build on prior theory and to systematically and directly understand the attitudes of the individuals embedded deep within the alliance context, not previously considered in prior research.

I distributed 226 surveys electronically with a response rate of 63%. After data cleansing, the final sample was 126. The survey was designed to elicit background information about each individual. In addition, the survey measured boundary spanners' perceptions of the relational qualities of the interorganizational alliance context (interorganizational trust, informational power, and goal alignment), collaborative dynamics (TMS and conflict), and critical outcomes such as beliefs regarding alliance partner effectiveness and specified control variables using established scales.

Figure 3 provides an overview of the data collection strategy, followed by Table 2 and Table 3, which detail the survey measures. The first phase of data collection included 12 one-hour interviews with various organizational actors, to ground the survey instrument to the empirical context. In the second data collection phase, an electronic survey was designed, pre-tested, and distributed to individual boundary spanners from the focal alliance organization. Respondents were asked to identify which of the two alliances they had worked with most closely in the last six months. They were then asked a series of questions regarding their perceptions of that alliance (as detailed in the above paragraph).

Phase 1 Data Collection	Phase 2 Data Collection	Data Source	Data Referent
Focal Alliance Interview With Boundary Spanners (1 Hour)	Boundary Spanner Survey (20 Min)	Boundary Spanner from Focal Alliance Organization Ninc	or → Alliance CapitalQ / Alliance MCorp
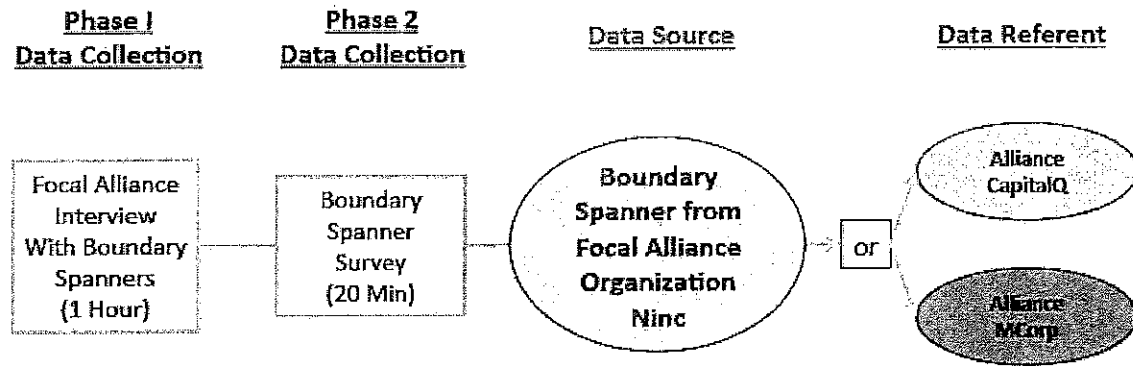
Figure 3. Data collection strategy

Tables 2 and 3 provide a detailed overview of the questions asked of respondents, and a description, definition, and source of each construct measured. They also report the Cronbach Alpha statistics for each scale assessing the reliability of the measurement of the construct in this sample.

Table 2. *Alliance Controls and Alliance Partner Effectiveness*

Construct	Definition	Source	Relational qualities of the alliance context	Cronbach Alpha
	Anchor: We know that the nature of the relationship between organizations can vary. If you consider Ninc's partnership with CapitalQ, please share the extent to which the following statements reflect your feelings:			
Interorganizational trust (7-point scale)	The degree to which boundary spanners from the focal organization perceive their organization can trust the partnering organization.	Zaheer et al. (1998)	CapitalQ may use opportunities that arise to profit at my organization's expense. (R)	0.72
			Based on past experience, Ninc cannot with complete confidence rely on CapitalQ to keep promises made to us. (R)	
			Overall, Ninc can trust that CapitalQ will follow through on its commitments to Ninc.	
Interorganizational strategic goal alignment (7-point scale)	The degree to which boundary spanners from the focal organization perceive their organization and the partnering organization are aligned in the aims and objectives of the alliance.	Adapted from Jap (2001) and Stephen & Coote (2007)	Ninc and CapitalQ agree on the strategic mission of the partnership.	0.92
			Ninc and CapitalQ agree on what needs to be achieved within the partnership for strategic success.	
			Overall, Ninc and CapitalQ have clear, shared goals for the partnership.	
Interorganizational informational power (7-point scale)	The degree to which boundary spanners from the focal organization perceive their organization can influence decisions within the alliance.	Adapted from Anderson, John, & Keltner (2012)	Ninc's wishes do not carry much weight with CapitalQ. (R)	0.87
			Ninc's perspective has little sway, even when it is voiced to CapitalQ. (R)	

Construct	Definition	Source	Alliance outcome	Cronbach Alpha
	Anchor: Compared to the very best partnering organization you are working with or have worked with in the past, please rate the performance of CapitalQ on the following dimensions:			
Alliance partner effectiveness (7-point scale)	The degree to which boundary spanners from the focal organization perceive the partnering organization is effective in meeting the collaborative objectives of the alliance, based on multiple dimensions.	Jehn (1995); Gladstein (1984)	a) Responsiveness, b) efficiency, b) quality, c) innovativeness, d) adherence to schedules, e) meeting strategic objectives, g) knowledge sharing, h) collaborative practices, i) integrating specialized expertise from Ninc.	0.90

Note: R = reverse scored items

Table 3. *Alliance Collaborative Dynamics*

Construct	Definition	Source	Collaborative dynamics	Cronbach Alpha
	Anchor: To begin the survey, we'd like to ask you to please consider your current collaborative work with your counterparts at CapitalQ and share with us the extent to which the following statements reflect your experience:			
TMS adapted from Lewis (2003) (7-point scale)	The degree to which boundary spanners from the focal organization are able to develop a shared memory system, in which they can recognize, coordinate, and rely upon the information provided by their partnering collaborators	Coordination	I work with my counterparts from CapitalQ in a well-coordinated fashion. When I work with my counterparts from CapitalQ, I am able to accomplish tasks smoothly and efficiently.	0.87
		Specialization	I have different specialized knowledge about aspects of our joint work than do my counterparts from CapitalQ. I am responsible for expertise in different areas than are my counterparts from CapitalQ.	0.74
		Credibility	I trust the knowledge of my counterparts from CapitalQ is credible. I am confident relying on the information that my counterparts from CapitalQ bring to the discussion. I have faith in the "expertise" of my counterparts from CapitalQ.	0.91
	Anchor: Next, we'd like to know about the different types of conflict that you have experienced with your counterparts from CapitalQ:			
Conflict (5-point scale: "none" to "a lot")	Task conflict: The frequency with which boundary spanners from the focal organization experience differences in viewpoints with collaborators from the partnering organization regarding the task.	Behfar et al. (2011); Jehn (1995)	To what extent do you argue the pros and cons of different opinions with your counterparts from CapitalQ? How often do you discuss evidence for alternative viewpoints with your counterparts from CapitalQ? How frequently do you engage in debate about different opinions and ideas with your counterparts from CapitalQ?	0.94
	Process conflict: The frequency with which boundary spanners from the focal organization experience differences about task related coordination with collaborators from the partnering organization.	Behfar et al. (2011); Jehn (1995)	How frequently do you disagree with your counterparts from CapitalQ about the optimal amount of time to spend on different aspects of your shared work? How often do you disagree with your counterparts from CapitalQ about who should do what? How often do you disagree with your counterparts from CapitalQ about how to approach your joint work?	0.87
	Relationship conflict: The frequency with which boundary spanners from the focal organization experience interpersonal incompatibilities with collaborators from the partnering organization.	Behfar et al. (2011)	How much friction is there between you and your counterparts from CapitalQ? How much are personality conflicts evident between you and your counterparts from CapitalQ? How much tension is there between you and your counterparts from CapitalQ?	0.85

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Preliminary Data Analysis

Interview data. The interview data were used for three primary purposes: theory expansion, construct validation, and measurement development. The interview data informed measures of alliance partner effectiveness as well as additional controls that surfaced from a better understanding of the context.

Descriptive statistics from survey data. Prior to data analysis, a descriptive statistical analysis was performed to examine missing data and outliers, and to confirm normal distribution of the data. Outliers were detected using box plots, the outlier labeling rule technique (Hoaglin, Iglewicz, & Tukey,1986) and by examining z-scores in excess of 3.29 (Tabachnick & Fidell, 2013). Cases with standardized scores outside the calculated range were examined to rule out data entry errors and to ensure that one variable was not responsible for the majority of the outliers. With the remaining outliers, I opted to minimize their influence by changing the outlier score to a raw score one unit larger (or smaller) then the next most extreme score (Tabachnick & Fidell, 2013).

I then conducted a missing-data analysis. To begin, I removed cases in which an individual started the survey, but did not reply to any of the questions. I then ran a missing data analysis, which revealed that 15.79% of values within the dataset were incomplete. According to Tabachnick and Fidell (2013), "The pattern of missing data is more important than the amount of missing data" (p. 62). To rule out nonrandomly missing values, which can significantly impact the generalizability of the results, I conducted Little's missing completely at random (MCAR) test. A statistically nonsignificant result indicates the probability that the pattern of missing data diverges

from randomness is greater than .05, so MCAR can be inferred. The Little's MCAR results showed $\chi^2 (358, N = 126) = 285.298, p = .998$. Thus, MCAR can be inferred, suggesting the data are missing completely at random. In this dissertation, I used structural equation modeling techniques. One of the assumptions of structural equation modeling is that there is no missing data. I used SPSS AMOS V22, which employs full information maximum likelihood estimation (FIML) to meet this assumption. The FIML estimation has been found to be more unbiased and efficient than listwise deletion, pairwise deletion, and similar response pattern imputation under ignorable missing data conditions (MCAR) (Enders & Bandalos, 2001).

FIML estimation, however, does not allow for the examination of modification indices, a statistical tool that can provide useful information to ensure error covariance structures are properly specified in a model (Kline, 2012). In turn, for this portion of the analysis, I used a multiple imputation technique using SPSS V22 data imputation software. According to Little and Rubin (2002), multiple imputation is a recommended method for handling missing data. I utilized the multiple imputation datasets to assess the error covariance structures that required modification. I, however, used the FIML estimation technique in AMOS for the primary structural equation modeling path analysis.

Finally, I screened the data for univariate normality by examining the skewness and kurtosis for each of the latent variables. I used both significance tests, as well as visual examination of the histograms for each variable, to assess the shape of the distribution. Non-normal kurtosis can produce an underestimate of the variance of the variable, and skewness of variables, particularly in opposite directions, can degrade the

statistical solution. The visual examination and statistical tests indicated that the majority

of the variables did not exhibit significant kurtosis or skewness ($-1.96 < z > 1.96$). The

exceptions included non-normal skewness in the credibility dimension of TMS

($z = -3.199$) and the coordination dimension of TMS ($z = -2.195$). Kurtosis was not found

for any of the variables, except the credibility dimensions of TMS ($z = 2.183$). It is

important to note that for each of these variables, the z-scores are just slightly outside the

recommended range ($-1.96 < z > 1.96$) (Tabachnick & Fidell, 2013).

In this dissertation, I used structural equation modeling techniques employing ML

estimation. Standard ML estimation assumes the joint distribution of endogenous

variables should be multivariate normal (Kline, 2012; Weston & Gore, 2006).

Multivariate normal distribution implies that 1) all univariate distributions are normal,

2) all bivariate scatterplots are linear, and 3) the distribution of the residuals is

homoscedastic (Malone & Lubansky, 2012). Thus, in addition to the univariate analysis

of the endogenous variables described above, I also examined the joint scatter plots for

each of the relationships between the primary endogenous variables to assess linearity

and homoscedasticity. In addition, I conducted the Breusch-Pagan Homoscedasticity

Test (Pryce, 2002) for each of the pairs of endogenous variables, as a strategy to

triangulate the more commonly used method of visual examination (Tabachnick & Fidell,

2013). The Breusch-Pagan test is also sensitive to missing data; therefore, I ran these

tests using the multiple imputation datasets described previously. Based on these

statistical strategies, the linearity and homoscedasticity of the endogenous variables were

confirmed.

Although data transformations are recommended for non-normal data, there remains some disagreement about the validity of this approach, given the difficulty in interpreting results (Tabachnick & Fidell, 2013). Despite the small degrees of skewness and kurtosis, and the challenges to interpretation, I opted to transform the relevant variables based on the type of skewness (positive or negative) and degree of kurtosis. I then ran the hypothesized model using both nontransformed and transformed variables, to compare the model solutions. The model fit patterns were consistent across analyses. These results align with Tabachnick and Fidell (2013), who suggest, "With a large sample, a variable with statistically significant skewness often does not deviate enough from normality to make a substantive difference in analysis" (p. 80). This also aligns with the work of West, Finch, and Curran (1995). They suggest that for larger sample sizes, structural equation modeling estimation is robust to minor deviations from normality. Therefore, given that 1) the variables evidencing skewness and/or kurtosis are not included in the primary hypothesized model (TMS Credibility and TMS Specialized can be found in Auxiliary Analysis B: TMS Dimensions only), 2) the sample size is greater than 100 cases, 3) the degrees of skewness and kurtosis were just outside the recommended z-score range, and 4) the consistent patterns of model fit across the nontransformed and transformed models, the results reported in this dissertation reflect the nontransformed solutions.

Factor analysis. This research involved the adaptation of measures that reflect the structure of the specified constructs. Factor analysis is appropriate when researchers want to identify latent variables that are contributing to the common variance in a set of

measured variables (Fabrigar, Wegener, MacCallum, & Strahan, 1999). I identified a

priori, from prior scales as well as from key informant interviews, the relationship

between the measured variables and the common factors. Consequently, I conducted

confirmatory factor analysis to explore the underlying dimensions of the constructs

proposed in this study. Reliabilities were calculated for all scales. The Cronbach Alpha

statistics ranged from .72 to .94, with most scales above .80. Tables 4 and 5 outline the

final pattern matrix structures and associated Cronbach Alpha statistics for each factor.

The boldface denotes items identified to collectively represent a construct or a dimension

of a particular construct (i.e., process conflict, task conflict, or relationship conflict).

Table 4. *Conflict Processes Pattern Matrix*

Pattern matrix	Factor[a]		
	1	2	3
Cronbach Alpha	**0.94**	**0.85**	**0.87**
To what extent do you argue the pros and cons of different opinions with your counterparts from CapitalQ?	**0.91**	0.02	-0.02
How frequently do you engage in debate about different opinions and ideas with your counterparts from CapitalQ?	**0.90**	0.03	0.04
How often do you discuss evidence for alternative viewpoints with your counterparts from CapitalQ?	**0.90**	-0.02	0.04
How much tension is there between you and your counterparts from CapitalQ?	0.01	**1.02**	-0.12
How much friction is there between you and your counterparts from CapitalQ?	-0.10	**0.75**	0.22
How much are personality conflicts evident between you and your counterparts from CapitalQ?	0.15	**0.60**	0.09
How frequently do you disagree with your counterparts from CapitalQ about the optimal amount of time to spend on different aspects of your shared work?	-0.06	-0.01	**0.91**
How often do you disagree with your counterparts from CapitalQ about how to approach your joint work?	0.23	0.13	**0.59**
How often do you disagree with your counterparts from CapitalQ about who should do what?	0.22	0.11	**0.57**

Note: Boldface items collectively represent a construct or a dimension of a particular construct.
[a]1 = Task conflict, 2 = Process conflict, 3 = Relationship conflict

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Table 5. *Relational Qualities of Alliance Context Pattern Matrix*

Pattern matrix	Factor[a]		
	1	2	3
Cronbach Alpha	**0.72**	**0.87**	**0.92**
Based on past experience, Ninc cannot with complete confidence rely on XYZ to keep promises made to us.	**0.99**	0.43	0.08
Overall, Ninc can trust that XYZ will follow through on its commitments to Ninc.	**0.66**	0.18	0.39
XYZ may use opportunities that arise to profit at Ninc's expense. (R)	**0.53**	0.39	0.02
Ninc's perspective has little sway, even when it is voiced to XYZ. (R)	0.37	**0.99**	0.28
Ninc's wishes do not carry much weight with XYZ. (R)	0.39	**0.83**	0.20
Ninc and XYZ agree on what needs to be achieved within the partnership for strategic success.	0.22	0.25	**0.91**
Overall, Ninc and XYZ have aligned goals for the partnership.	0.23	0.20	**0.90**
Ninc and XYZ agree on the strategic mission of the partnership.	0.14	0.17	**0.85**

Note: *Note*: Boldface items collectively represent a construct or a dimension of a particular construct.
[a]1 = Task conflict, 2 = Process conflict, 3 = Relationship conflict. R = reverse scored items

Multi-level analysis. The goal of this dissertation is to examine the interplay between the relational qualities of the alliance context and the collaborative dynamics of interorganizational boundary spanners responsible for the day-to-day product development activities of the alliance. An important step in the analysis was to determine whether there were group-level effects. As discussed earlier, interdependent work in the interorganizational context is dynamic, fluid, and disaggregated. Thus, it was not clear if variance would be found between the line teams, product program teams, organizational units, or the alliances.

Multi-level modeling is an analytical technique that allows the examination of phenomena at different analysis levels. Multi-level modeling is particularly useful in circumstances in which individuals belong to groups of differing sizes. The limitation, however, is that multi-level modeling is sensitive to the sample size as well as to the number of individuals (i) within a group (j) and the number of groups. In the context of this field site, individuals were embedded in multiple groups:

1. Alliance (j = 2),

2. Organizational unit (j = 2),

3. Line team (j = 35), and

4. Product program teams (j = 9).

Accordingly, in this context, multi-level analysis was only appropriate for examining whether there were between-group differences in line teams and product program teams (Tabachnick & Fidell, 2013).

The first step in multi-level modeling is to examine the "null model" to partition the variance in the outcome into its "within" and "between" group components. The between group differences are reflected in the interclass correlation. This analysis ultimately helps identify whether there is a significant variance between groups in the sample and determine whether a multi-level model is warranted (Heck, Thomas, & Tabata, 2013; Tabachnick & Fidell, 2013). In this dissertation, one primary outcome variable of interest has been hypothesized: alliance partner effectiveness. The findings from the multi-level null model analysis indicated that there were no significant differences between line teams in perceptions of alliance partner effectiveness

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(ICC = 0.00%). Similarly, there were no significant differences between product program teams in perceptions of alliance partner effectiveness (ICC = 1.55%). Based on this analysis, it was determined that an individual analysis was appropriate, and structural equation modeling would be the best statistical technique to examine the hypothesized relationships simultaneously. Given that multi-level modeling is limited in its capacity to analyze between-group differences when there is a limited number of groups, in subsequent analyses (outlined in Chapter 4), I examined the effect of alliance organization and organizational unit on alliance partner effectiveness in the control analysis to account for differences not hypothesized in the model (Heck et al., 2013).

Structural equation modeling. Given the results from the multi-level analysis, structural equation modeling statistical techniques were used to test the theoretical model proposed in this research. Structural equation modeling is appropriate in this context for multiple reasons. First, it allows the use of multiple variables simultaneously and control of variables that may co-vary, to match the complexity of the model being proposed. Additionally, structural equation modeling software and techniques have advanced significantly in the last several years, allowing for the analysis of more advanced theoretical models—such as the model proposed in this dissertation (Schumacker & Lomax, 2010).

The primary goal of structural equation modeling is to determine the goodness-of-fit between the hypothesized model and the sample data (data = model + residual). This statistical method is designed to take a confirmatory (hypotheses testing) approach to data analysis. An adequate goodness-of-fit indicates the plausibility of a postulated set of

relationships among variables, but does not confirm causality. I assessed the fit of a model by relying on several fit statistics. These included the chi-square/degrees of freedom (χ^2 / df) (Wheaton, Muthén, Alvin, & Summers, 1977), the comparative fit index (CFI) (Bentler, 1990), and the root mean square error of approximation (RMSEA) (Steiger, 1990; Steiger & Lind, 1980). Standards for the fit indices have increased over recent years, from .90 to .95 for CFI, and less than 0.06 to 0.08 for the RMSEA, although 0.08 to 1.00 cutoffs are still considered acceptable (Bryne, 2013). The χ^2 represents the chi-square. It is highly influenced by sample size; therefore, researchers often use χ^2/df, which divides the chi-square by the degrees of freedom. A score of 5.0 or below is considered a good fit (Wheaton, et al., 1977). Given the relatively small size of my sample by structural equation modeling standards, I will use the χ^2/df fit statistic (Byrne, 2013).

Chapter 4: Results

Descriptive Statistics and Correlations

Structural equation modeling statistical techniques were used to test the hypotheses associated with the theoretical model proposed in this research. The findings represent the individual level of analysis, given there were no significant differences between perceptions of alliance partner effectiveness based on boundary spanners' product program or line team affiliations. The means, standard deviations, and zero-order correlations of all variables appear in Table 6.

Table 6. *Descriptive Statistics and Pearson Correlations*

	Variable	M	SD	Pearson correlations												
				1	2	3	4	5	6	7	8	9	10	11	12	14
1	Alliance organization	1.63	0.48	-												
2	Organizational unit	0.30	0.46	-.21*	-											
3	Alliance experience	30.34	32.05	.15	-.03	-										
4	Organizational tenure	9.07	5.58	.19	-.36**	-.01	-									
5	Industry tenure	13.58	6.68	.03	-.05	.32**	.55**	-								
6	Interorganizational goal alignment	4.96	1.02	-.14	.15	-.07	-.02	.08	-							
7	Interorganizational trust	4.00	0.98	.18	.05	.01	.03	.12	.22*	-						
8	Interorganizational informational power	3.96	1.25	.01	.13	.18	-.09	.05	.28**	.44**	-					
9	TMS	4.86	0.87	-.09	.17	.18	.03	.19	.55**	.35**	.38**	-				
10	Task conflict	2.40	0.93	.10	.17	.13	-.13	-.09	.03	.16	.12	.19*	-			
11	Process conflict	2.18	0.85	.04	.06	.03	-.12	-.09	-.06	-.07	.00	-.01	.65**	-		
12	Relationship conflict	1.98	0.85	.02	.03	.12	-.19	-.01	-.15	-.14	.03	.01	.53**	.67**	-	
14	Alliance partner effectiveness	4.62	1.09	.21*	.12	.22	.11	.13	.48**	.35**	.26*	.64**	.09	-.21	-.19	-

Note. N = 126

*Correlation is significant at the .05 level (2-tailed); **Correlation is significant at the .01 level (2-tailed).

Controls

To control for influences not associated with the hypothesized model but that could affect the outcomes under investigation, I measured several control variables. Previous studies have found that prior alliance partner experience is positively related to alliance partner effectiveness (Gulati, Lavie, & Singh, 2009). Therefore, I controlled for factors that could influence prior partner experience, including organizational tenure with the focal organization and industry tenure, as well as the length of time team boundary spanners worked with the specified alliance organization. Organizational and industry tenure were not significantly related to alliance partner effectiveness ($\beta = .15, p = .07$ and $\beta = -.04, p = .61$, respectively). Alliance-specific experience was, however, significantly related to alliance partner effectiveness ($\beta = .22, p < .05$).

Another important consideration in the analysis was to understand if there were systematic differences across individuals with whom alliance boundary spanners worked most closely. In the initial analysis—just the controls—there was no significant direct effect of alliance organization on alliance partner effectiveness ($\beta = .14, p = .09$). Given, however, the importance in this study of the alliance organization and that the effect is trending towards significance, I chose to control for alliance organization to rule out alliance-specific effects above and beyond those specified in the model.

Finally, interorganizational boundary spanners not only belonged to different product programs and line teams, they also were affiliated with different

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organizational units within the focal organization. Interorganizational boundary-spanning members within the different organizational units were responsible for different types of mobile technology development. Specifically, one organizational unit developed hand-held mobile devices, such as cell phones. This technological domain was the focal organization's core competency and represented the technological sector in which the organization had been embedded since its inception. The second organizational unit was responsible for the development of connected devices, similar to iPads. This was a new division within the focal organization, representing a new technology space not only for the focal organization, but also for its partners. Prior research suggests that the nature of the task can influence interdependent outcomes (Goodman, 1986). Thus, I also wanted to control for the potential differences in perceived partner effectiveness based on the organizational unit to which the interorganizational boundary spanning members belonged. Analysis revealed that organizational unit was not significantly related to alliance partner effectiveness ($\beta = .12$, $p = .16$). Based on these findings, I controlled for alliance organization and alliance experience in the subsequent analyses. Table 7 outlines the regression weights and standard errors for the control variable analysis, along with the model fit statistics.

Table 7. *Controls, Unstandardized, Standardized, Standard Errors, and Significance Levels*

Alliance partner effectiveness <---	Controls			
	Unstandardized estimates	Standardized estimates	SE	p
Alliance organization	0.31	0.14	0.18	0.09
Alliance experience	0.01	0.22	0.00	0.02
Organizational unit	0.28	0.12	0.20	0.16
Organizational tenure	0.03	0.15	0.02	0.07
Industry tenure	-0.01	-0.04	0.01	0.61

Note. N = 126; χ^2/df = 10.281; CFI = 0.000; RMSEA = 0.231

Structural Equation Model

For this dissertation, I tested the theoretical model using structural equation modeling techniques to examine the relationship between the relational qualities of the alliance context, interorganizational collaborative dynamics, and alliance partner effectiveness. Specifically, I was interested in understanding whether, and how, interorganizational trust, goal alignment, and informational power affect the development of interorganizational TMS and conflict between interorganizational boundary spanning collaborators, and how they might influence crucial outcomes such as alliance partner effectiveness.

Typically, TMS are examined as a single construct that incorporates three separate dimensions: credibility, coordination, and specialization. In a recent review by Ren and Argote (2011), the authors recommend that studies report both the effects

of TMS as a single construct and the effects of the various dimensions. Accordingly, I hypothesized and tested my relationships using TMS as a single variable and report these findings in the following section. I also conducted an auxiliary analysis examining the individual dimensions of TMS, which I report at the end of this chapter.

The hypothesized model is in Figure 4. The dark black lines reflect a significant hypothesized direct effect, and dotted lines imply a nonsignificant hypothesized direct effect. The hypothesized model examined predictors of collaborative dynamics and alliance partner effectiveness. I controlled for the direct effects of alliance experience, alliance organization, interorganizational trust, interorganizational goal alignment, and interorganizational informational power on alliance partner effectiveness. I also controlled for covariance between the exogenous variables (interorganizational trust, goal alignment, and informational power) as well as the error covariance between the three types of conflict (task, process, and relationship). Based on the results from the modification indices analysis, I controlled for the error covariance between TMS credibility and TMS coordination in the auxiliary analysis examining the individual dimensions of TMS. Figure 4 does not reflect the control variables, but Table 8 details the relationships. This analysis was conducted using responses from 126 individual boundary spanners. Results show that the model fit the data well (χ^2/df = 1.223; CFI = .987; RMSEA = .036). In the following section, I detail the results from the hypothesized model in Figure 4. The results reflect the standardized regression weights and associated significance levels.
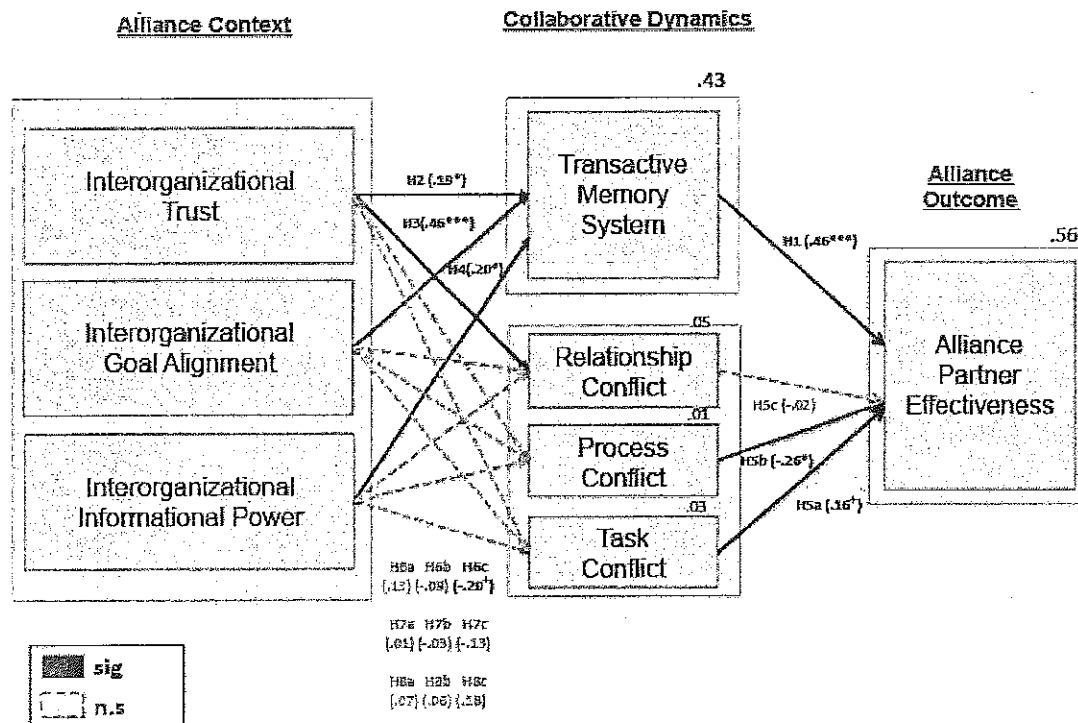
Figure 4. Model 1a: Hypothesized alliance partner effectiveness
Note: $\chi^2 / df = 1.223$; CFI = .987; RMSEA = .036. Also, see Table 8 for unstandardized, standardized, standard errors, and significance levels.
+p < .10, *p < .05, **p < .01, ***p < .001.

Table 8. *Unstandardized, Standardized, Standard Errors, and Significance Levels for Model 1a in Figure 4*

Structural model						
Regression weights			Unstandardized estimates	Standardized estimates	*SE*	*p*
Alliance partner effectiveness	<---	Alliance organization	0.50	0.22	0.13	***
Alliance partner effectiveness	<---	Alliance experience	0.00	0.10	0.00	0.17
Alliance partner effectiveness	<---	Interorganizational informational power	-0.02	-0.02	0.06	0.78
Alliance partner effectiveness	<---	Interorganizational trust	0.10	0.09	0.08	0.22
Alliance partner effectiveness	<---	Interorganizational goal alignment	0.22	0.23	0.08	0.00
Alliance partner effectiveness	<---	TMS	0.54	0.46	0.11	***
Alliance partner effectiveness	<---	Task conflict	0.18	0.16	0.11	0.10
Alliance partner effectiveness	<---	Relationship conflict	-0.03	-0.02	0.13	0.81
Alliance partner effectiveness	<---	Process conflict	-0.32	-0.26	0.13	0.02
TMS	<---	Interorganizational informational power	0.14	0.20	0.06	0.03
TMS	<---	Interorganizational trust	0.16	0.19	0.07	0.02
TMS	<---	Interorganizational goal alignment	0.38	0.46	0.06	***
Relationship conflict	<---	Interorganizational informational power	0.12	0.18	0.08	0.13
Process conflict	<---	Interorganizational informational power	0.04	0.06	0.08	0.60
Task conflict	<---	Interorganizational informational power	0.05	0.07	0.09	0.58
Relationship conflict	<---	Interorganizational trust	-0.17	-0.20	0.09	0.07
Process conflict	<---	Interorganizational trust	-0.07	-0.09	0.09	0.44
Task conflict	<---	Interorganizational trust	0.12	0.13	0.10	0.24
Relationship conflict	<---	Interorganizational goal alignment	-0.10	-0.13	0.08	0.21
Process conflict	<---	Interorganizational goal alignment	-0.02	-0.03	0.08	0.78
Task conflict	<---	Interorganizational goal alignment	0.01	0.01	0.09	0.92

Note. $N = 126$; $\chi^2/df = 1.223$; CFI $= .987$; RMSEA $= .036$
***$p < .001$

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Hypotheses 1 predicated that more developed TMS between interorganizational collaborators would be positively associated with perceived alliance partner effectiveness. Hypothesis 1 was supported, suggesting that more developed TMS between partnering collaborators is positively related to beliefs regarding alliance partner effectiveness ($\beta_1 = .46, p < .001$).

Hypotheses 2, 3, and 4 predicted that boundary spanners' perceptions of the relational qualities of the alliance context would be positively related to more developed TMS between partnering collaborators. All three hypotheses were supported, indicating that when boundary spanners believe there is more trust between the partnering organizations, the partnering organizations are aligned in their goals; when the boundary spanners' organization has power to influence decisions within the alliance, they are better able to develop a shared TMS with partnering collaborators ($\beta_2 = .19, p < .05; \beta_3 = .46, p < .001; \beta_4 = .20, p < .05$).

Hypotheses 5a predicted that more task conflict would be positively related to boundary spanners' perceptions of alliance partner effectiveness. Although this hypothesis was not significant at a $p < .05$ level, the significance was trending in that direction ($\beta_{5a} = .16, p = .10$). Hypothesis 5b was confirmed, indicating that more process conflict between interorganizational collaborators has a direct negative effect on perceptions of alliance partner effectiveness ($\beta_{5b} = -.26, p < .05$). Hypothesis 5c was not confirmed. There was no direct effect of relationship conflict on beliefs regarding alliance partner effectiveness ($\beta_{5c} = -.02, p = .81$).

Hypothesis 6a predicted that the more boundary spanners perceived interorganizational trust between the partnering organizations, the more task conflict they would experience. Conversely, hypotheses 6b and 6c predicted that boundary spanners who perceive more trust between the partnering organizations would be less likely to experience process and relationship conflict. Hypotheses 6a and 6c were not supported. Hypothesis 6c, however, was trending toward significance, alluding to the possibility that beliefs regarding the degree of interorganizational trust between alliance organizations may be associated with experiences of relationship conflict ($\beta_{6a} = .13, p = .24$; $\beta_{6b} = -.09, p = .44$; $\beta_{6c} = -.20, p = .07$).

Hypothesis 7a predicted that the more boundary spanner perceived interorganizational goal alignment between the partnering organizations, the more task conflict they would experience. Hypotheses 7b and 7c predicted that boundary spanners who perceived more goal alignment between the partnering organizations would be less likely to experience process and relationship conflict. Hypotheses 7a through 7c were not supported ($\beta_{7a} = .01, p = .92$; $\beta_{7b} = -.03, p = .78$; $\beta_{7c} = -.13, p = .21$).

Hypothesis 8a predicted that the more boundary spanners perceived that their organization has power to influence decisions within the partnership, the more task conflict they would experience. Hypotheses 8b and 8c predicted that when boundary spanners believe their organization can influence decisions within the alliance, they would be less likely to experience process and relationship conflict with their

partnering collaborators. Hypotheses 8a through 8c were not supported ($\beta 8a = .07$, $p = .58$; $\beta 8b = .06$, $p = .60$; $\beta 8c = .18$, $p = .13$).

Auxiliary Analysis A: Indirect Effects

The findings from the hypothesized model indicated the importance of TMS. The hypothesized model found that boundary spanners' perceptions of the alliance context are associated with more developed TMS and that more developed TMS is associated with beliefs regarding alliance partner effectiveness. Therefore, I wanted to explore further whether more developed TMS between partnering collaborators might mediate the relationship between the relational qualities of the alliance context and alliance partner effectiveness.

A variable may be called a mediator to the extent that it accounts for the relation between the predictor and the criterion (Barron & Kenny, 1986). To investigate these relationships, I conducted two types of analysis. I began with a bootstrapping approach available in SPSS AMOS, to assess the significance of indirect effects in relationship to the direct effects using structural equation modeling. In recent years, this approach to testing, which tests not only for indirect effects, but also the significance of these effects to guard against Type I and Type II errors (Preacher & Hayes, 2004), has grown in popularity. I also used the traditional technique initially proposed by Barron and Kenny (1986) to triangulate these results. The following section details the bootstrapping results. (Appendix B details the Barron and Kenny mediation analysis results, which confirm the findings outlined in the below section.)

The findings suggest that the development of interorganizational TMS partially mediates the relationship between interorganizational goal alignment [direct effect ($\beta = .30$, $p < .01$) and indirect effect ($\beta = .17$, $p < .001$)] and alliance partner effectiveness. In addition, TMS fully mediates the relationships between interorganizational trust [direct effect ($\beta = .14$, $p = .09$) and indirect effect ($\beta = .09$, $p < .05$)] and alliance partner effectiveness. The data from this dissertation are cross-sectional in nature. Thus, although these statistics confirm the importance of collaborative dynamics such as TMS in understanding the underlying mechanisms linked to alliance partner effectiveness, a causal relationship cannot be confirmed. (The analysis details are outlined in Appendix B.)

Auxiliary Analysis B: TMS Dimensions

TMS are traditionally theorized and examined as a singular construct; however, scholars have recommended that, in reporting results in studies examining TMS, it can be valuable to examine the individual dimensions of TMS to better understand how the underlying mechanisms may operate in a given context (Lewis & Herndon, 2011; Ren & Argote, 2011). Table 9 and Figure 5 outline the findings from this analysis.
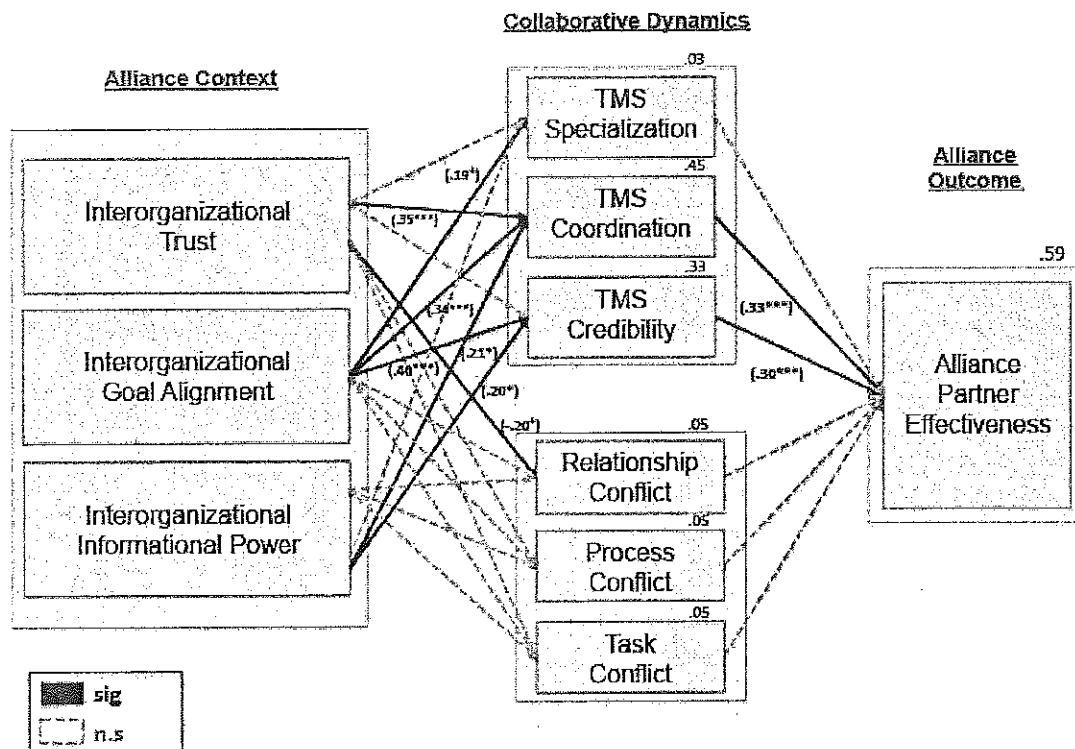
Figure 5. Model 1b: Alliance partner effectiveness—TMS expanded
Note: $\chi^2 / df = 1.389$; CFI = .970; RMSEA = .047. Also, see Table 9 for unstandardized, standardized, standard errors, and significance levels.
+p < .10, *p < .05, **p < .01, ***p < .001.

Table 9. *Unstandardized, Standardized, Standard Errors, & Significance Levels for Model 1b in Figure 5*

Structural model						
Regression weights			Unstandardized estimates	Standardized estimates	SE	p
Alliance partner effectiveness	<---	Alliance organization	0.44	0.20	0.13	***
Alliance partner effectiveness	<---	Alliance experience	0.00	0.10	0.00	0.12
Alliance partner effectiveness	<---	Interorganizational informational power	-0.05	-0.07	0.06	0.39
Alliance partner effectiveness	<---	Interorganizational trust	0.07	0.06	0.08	0.41
Alliance partner effectiveness	<---	Interorganizational goal alignment	0.21	0.22	0.07	0.00
Alliance partner effectiveness	<---	TMS Specialized	-0.02	-0.03	0.06	0.70
Alliance partner effectiveness	<---	TMS Coordination	0.26	0.33	0.08	***
Alliance partner effectiveness	<---	TMS Credibility	0.26	0.30	0.08	***
Alliance partner effectiveness	<---	Relationship conflict	-0.02	-0.01	0.12	0.89
Alliance partner effectiveness	<---	Process conflict	-0.20	-0.17	0.13	0.11
Alliance partner effectiveness	<---	Task conflict	0.11	0.10	0.11	0.30
TMS Specialized	<---	Interorganizational informational power	-0.04	-0.04	0.12	0.72
TMS Specialized	<---	Interorganizational trust	-0.08	-0.07	0.14	0.53
TMS Specialized	<---	Interorganizational goal alignment	0.22	0.19	0.12	0.07
TMS Coordination	<---	Interorganizational informational power	0.22	0.21	0.09	0.01
TMS Coordination	<---	Interorganizational trust	0.45	0.35	0.10	***
TMS Coordination	<---	Interorganizational goal alignment	0.41	0.34	0.09	***
TMS Credibility	<---	Interorganizational informational power	0.19	0.20	0.09	0.03
TMS Credibility	<---	Interorganizational trust	0.15	0.13	0.11	0.16
TMS Credibility	<---	Interorganizational goal alignment	0.44	0.40	0.10	***
Relationship conflict	<---	Interorganizational informational power	0.11	0.17	0.08	0.16
Process conflict	<---	Interorganizational informational power	0.04	0.05	0.08	0.67
Task conflict	<---	Interorganizational informational power	0.05	0.06	0.09	0.59
Relationship conflict	<---	Interorganizational trust	-0.17	-0.20	0.09	0.07
Process conflict	<---	Interorganizational trust	-0.07	-0.08	0.09	0.45
Task conflict	<---	Interorganizational trust	0.11	0.13	0.10	0.26
Relationship conflict	<---	Interorganizational goal alignment	-0.10	-0.13	0.08	0.23
Process conflict	<---	Interorganizational goal alignment	-0.02	-0.02	0.09	0.83
Task conflict	<---	Interorganizational goal alignment	0.01	0.01	0.09	0.90

Note. N = 126; χ^2/df = 1.389; CFI = .970; RMSEA = .047
***p < .001

In line with prior research (Kanawattanachai & Yoo, 2007; Michinov, Olivier-Chiron, Rusch, & Chiron, 2008; Ren & Argote, 2011), examining the individual dimensions of TMS reveals different levels of influence of the various dimensions. Specifically, it illuminates the critical role of coordination and credibility in this context. To investigate further the role of these specific dimensions of TMS, I conducted a mediation analysis to examine the relationship between the alliance context variables, coordination and credibility, and alliance partner effectiveness. The findings indicate that coordination partially mediates the relationship between interorganizational goal alignment [direct effect ($\beta = .32, p < .01$) and indirect effect ($\beta = .14, p < .01$)] and alliance partner effectiveness. The results also suggest coordination fully mediates the relationship between interorganizational trust [direct effect ($\beta = .07, p = .47$) and indirect effect ($\beta = .17, p < .01$)] and alliance partner effectiveness. In addition, I examined the mediating role of credibility and found that credibility partially mediates the relationship between interorganizational goal alignment and partner effectiveness [direct effect ($\beta = .32, p < .01$) and indirect effect ($\beta = .15, p < .01$)], but that there is no mediation effect between interorganizational trust and partner effectiveness [direct effect ($\beta = .18, p < .05$) and indirect effect ($\beta = .06, p = .35$)]. These findings help to unpack more succinctly the role of coordination and credibility in understanding the relationship between boundary spanners' impressions of the various relational qualities of the alliance context and alliance partner effectiveness. It is important to note that this auxiliary analysis relied on two variables (TMS Coordination and TMS Specialized) that exhibit slight

kurtosis and skewness. While structural equation modeling is robust to minor

departures from normality (West, Finch, & Curran, 1995), it is important to account

for this deviations when interpreting results. (The mediation analysis for these

individual dimensions can be found in Appendix B.)

Auxiliary Analysis C: Alternative Relationships

The data from this study are cross-sectional. In addition, structural equation

modeling is a statistical technique designed to take a confirmatory approach that can

indicate the plausibility of a relationship, but cannot confirm causality. Although my

theory predicted, and the data validated, the plausibility of a direct relationship

between the relational qualities of the alliance context and the collaborative dynamics

relationship (χ^2/df = 1.223; CFI = .987; RMSEA = .036), the data from this study are

not longitudinal in nature. Thus, I cannot confirm the direction of this relationship.

Consequently, it was appropriate to consider alternative relationships between the

variables of interest. To do so, I performed two auxiliary analyses to examine the

relationship between the relational qualities of the alliance context and the

collaborative dynamics: reverse pattern and association pattern. The first analysis

examined the reverse model, in which it is posited that the collaborative dynamics

(TMS and conflict processes) would predict boundary spanners' attitudes regarding

the relational qualities of the alliance (interorganizational goal alignment, trust, and

informational power). Only marginal support was found for this model

(χ^2/df = 2.364; CFI = .903; RMSEA = .089). The second analysis assumed a

covariance, instead of a direct effect, between the relational qualities of the alliance

and the collaborative dynamics. Although the model fit for these data was not as robust as that of the hypothesized model, the covariance model adequately fit the data $(\chi^2/df = 1.382; CFI = .978; RMSEA = .047)$.

My interpretation of these findings, in concert with the results from the hypothesized model, is that boundary spanners' perceptions of a positive relationship between the partnering alliance organizations supports the development of TMS, and that this might lead to a self-reinforcing cycle in which boundary spanners with more developed TMS will also have more positive beliefs regarding the nature of the relationship between the alliance firms. Although it is not possible to confirm the directionality of the relationships, the low model-fit of the reverse model alludes to the possibility that the cycle starts with how boundary spanners perceive the nature of the partnership influencing the development of the collaborative dynamics, which then reinforce attitudes regarding the nature of the alliance relationship.

Chapter 5: Discussion

Summary of Results

The primary goal of this dissertation was to respond to the multitude of calls in the literature on alliances to understand more extensively the role of process in shaping alliance partner effectiveness (Doz, 1996; Gulati et al., 2012; Inkpen & Tsang, 2007; Ring & Van de Ven, 1994). Although there is body of conceptual work on alliance processes (Das & Teng, 2000, 2003; Doz, 1996; Ring & Van de Ven, 1994) and a handful of empirical studies that have examined different aspects of process (Gulati et al., 2009; Hoang & Rothaermel, 2005; Mohr & Spekman, 1994; Saxton, 1997; Schreiner et al., 2009), the findings are fragmented, the boundary conditions blurry, the data rely on the perceptions of executives, and the measures are neither consistent nor rooted in established literature (Gulati et al., 2012). In this dissertation, I begin to overcome these limitations by synthesizing multiple streams of research to understand collaborative dynamics—a specific subset of alliance processes—from the perspective of interorganizational alliance boundary spanners. The goal of this dissertation was to develop and extend theory to understand more comprehensively what influences the development of TMS and triggers conflict between alliance boundary spanners, and how they link to beliefs regarding partner effectiveness.

In this dissertation, I built on prior organizational research that suggested the relational qualities of an alliance context, such as interorganizational trust, strategic goal alignment, and informational power, are positively related to alliance partner

effectiveness (Muthusamy & White, 2006; Perrow, 1961; Zaheer et al., 1998). Concomitantly, for this study, I drew on the extensive work on collaborative dynamics from the organizational behavior literature to assess directly the attitudes and experiences of individual actors. I strived to extend the knowledge by building on theory and established measures from these two robust streams of research, to develop an integrated framework of collaborative dynamics in the alliance context. I uncovered, through detailed examination of a focal organization maintaining multiple product development alliances, that when boundary spanners believe the alliance relationship is more congruous, they are able to develop higher quality systems in which they are better able to recognize, rely upon, and coordinate knowledge with their partnering collaborators. I also investigated whether collaborative dynamics mediate the relationship between the alliance context and partner effectiveness. I found that, indeed, more developed TMS between partnering collaborators may mediate the relationship between boundary spanner's attitudes regarding the degree of interorganizational goal alignment and interorganizational trust, and their beliefs about the partnering firm's effectiveness. Despite theory that suggested the relational features of the alliance context should be associated with the various forms of conflict, these relationships proved insignificant. Finally, I discovered that boundary spanners who experience fewer conflicts over how to organize work, and who actively engage in task-based debate, are more likely to perceive the partnering organization as effective in meeting the collaborative objectives of the alliance. In concert, these results suggest that collaboration dynamics, in alliances designed to integrate

specialized knowledge of participating organizations into a joint product (Park & Ungson, 2001), are important to perceptions of alliance partner effectiveness.

Contributions to Theory

This dissertation contributes to theory by extending the knowledge of what influences alliance partner effectiveness when working interdependently across an organizational boundary. Although organizational theorists have examined alliances from a strategic perspective, very few studies have looked closely at the day-to-day interactions of individual actors—where much of the interdependent work takes place. In order to close this gap, Gulati et al. (2012), in their latest review of the literature, suggested the following to move the alliance research forward, in better understanding the role of process within alliances further elaboration of the underlying mechanisms and boundary conditions, careful specification of measures of coordination, and increased emphasis on coordination dynamics. This dissertation makes a significant contribution in all of these areas by:

- Theorizing the underlying mechanisms driving alliance partner effectiveness based on the boundary conditions of the context;

- Theoretically linking multiple literatures to uncover the relationship between boundary spanners' beliefs regarding the relational qualities of the alliance context and collaborative dynamics;

- Empirically bringing "solid" evidence from the perspective of the individual actors responsible for the day-to-day activities of the alliance during the execution phase of the alliance life cycle; and

- Empirically testing an integrated theory, based on validated measures, from established streams of research.

Ultimately, this dissertation revealed that the conditions of the alliance itself profoundly influence the way in which interorganizational boundary spanners collaborate, and that their ability to do so has important implications for individual actors' beliefs regarding the effectiveness of their partnering organizations. The sections below describe in more detail how this dissertation deepens our theoretical understanding in three specific domains: an integrated model of alliance context and knowledge integration; alliance partner effectiveness and social integration; and boundary conditions, the role of context and task.

Integrated model of alliance context and knowledge integration. In this dissertation, I found that interorganizational boundary spanners' ability to develop systems in which they are able to recognize, coordinate, and rely upon expertise from their partnering collaborators is highly influenced by how they perceive the broader interorganizational arrangement in which they are embedded. I found that the relational qualities of the alliance are associated more with an individual's unique experience within the partnership than with any given group to which they belong (e.g., line or product program team).

One potential explanation for the robustness of these contextual influences on the development of interorganizational TMS is that it is the relational qualities of the partnership to which individuals are exposed most consistently, given the multiple interorganizational projects, channels of communication, and interorganizational collaborators with which they engage. In turn, perhaps the beliefs regarding the

nature of the partnership play a particularly influential role in shaping the individual's experiences working in this type of interdependent context. In "unbound" collaborative contexts that are more fluid, dynamic, and disaggregated (as they were in this study), the likelihood that organizational members will have shared understandings based on their group affiliation may diminish. This likelihood aligns with recent findings by Mortensen (2014), in which he established that the more teams individuals belongs to, the less time the individuals spend in their focal teams, increasing their focal team membership model divergence (misalignment among team members' models of who are, and who are not, team members). This divergence indicates that, in these more amorphous collaborations, it may be less likely that members develop a shared understanding based on their primary group membership. If indeed the case, this explanation has important implications for theorizing and conducting research in "unbound" collaborative contexts. Specifically, it calls for increased attention to the broader context in which individuals are embedded, to illuminate new qualities of the environment that may be influential in predicting collaborative dynamics and outcomes in these more permutable interdependent task environments.

This explanation also aligns with the perspectives of Levine and Moreland (1990), Ren and Argote (2011), and Humphrey and Aime (2014), who suggest that most research on collaborative dynamics such as TMS and conflict has focused on team-level inputs. Further, they encourage the examination of organizational- or, in this case, interorganizational-level, inputs that may help enhance the understanding of collaborative dynamics—in particular, TMS, which has relied heavily on lab-based

research—in natural settings and in relationship to other variables not yet considered. Although the findings from this dissertation relied on individual-level data, they allude to the possibility of multi-level effects. There are several methodological challenges associated with multi-level research, but as the interdependent contexts become more disaggregated, fluid, and dynamic, the explanatory variables and mechanisms may benefit from an expansion into other levels of analysis to help understand what influences collective organizing (Humphrey & Aime, 2014). This dissertation brings the research one step closer to making these types of linkages.

Alliance partner effectiveness and social integration. Prior research has examined the relationship between conflict and alliance supplier effectiveness in exchange-based partnerships (buyer-supplier) (Zaheer et al., 1998). It found that interorganizational trust signficantly reduces perceptions of macro-interorganizational conflict, but does not mediate the relationship between interorganizational trust and alliance supplier effectiveness (Zaheer et al., 1998). It has also been theorized, although not empirically validated, that internal tensions may lead to alliance instability—another type of alliance performance (Das & Teng, 2000).

The findings from this dissertation do not support a link between the relational qualities of the alliance context (interorganizational trust, goal alignment, or informational power) and the various types of conflict. The relationship between interorganizational trust and relationship conflict, however, was trending toward significance, suggesting it may be important to probe this relationship further. The theoretical underpinnings of the extant research on tensions in interorganizational arrangements has focused on different types of strategic misalignment, which reflects

a macro-level tension that may have more influence on an organization's decision to sustain a partnership than it would on perceptions of the effectiveness of the partnering organization. Zaheer et al.'s (1998) examination of conflict also focused on macro-level conflict between the partnering organizations; whereas in this study, the focus was on interpersonal conflict between interorganizational collaborators. Accordingly, the drivers of this type of interpersonal conflict may be more proximal to the interdependent activities of interorganizational boundary spanners. For example, perhaps conflicts surface due to a lack of communication or differences in work practices.

In addition, findings from this study did not reveal an association between relationship conflict and alliance partner effectiveness. Process conflict, however, was found to have a negative relationship to alliance partner effectiveness, whereas task conflict was found to have a positive association and was trending toward signficance. These findings add to the understanding of conflict and extend prior theories on the role of subgroups in enhancing collaborative outcomes (Gibson & Vermeulan, 2003). Specifically, in the alliance context with clear distinctions in organizational affiliation between members engaging in interdependent activities, cognitive conflicts may serve as a catalyst that surfaces important information about the task or processes. These conflicts may be particularly valuable in the alliance context, in which there are structural barriers to knowledge transfer—distance, different knowledge repository systems, propriatary protection policies—as byproducts of working between firms. At the same time, conflicts that suface between boundary spanners have the potential to increase awareness of the other's

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organizational affiliation (Li & Hambrick, 2005). An actor's organizational affiliation is a category that can serve as a cue of who knows what, but it can also act as a catalyst for negative ingroup-outgroup stereotyping (Cramton & Hinds, 2005). The findings from this dissertation suggest that understanding the relationship between cognitive conflict and effectiveness outcomes, in a boundary-spanning context, may be associated with how the type of conflict is linked to the way in which boundary spanners use the categorical cue of organizational affiliation. Perhaps when conflicts surface task information that enhances the ability of differentiated collaborators to more effectively coordinate knowledge and expertise, the conflicts are perceived as beneficial and create opportunity for boundary spanners to benefit from beliefs of mutual positive distinctivenss—the ability to recognize positive qualities of their own as well as other groups (Cramton & Hinds, 2005). Conflicts perceived as disruptive, as is often the case with process conflict (Jehn & Mannix, 2001), may, however, lead to negative ingroup-outgroup stereotyping, increasing the potential for misattribution, making process issuses more difficult to resolve, and ultimately detracting from perceptions of overall effectiveness. Given that the relationship between cognitive conflict and performance remains equivocal (Behfar, Mannix, Peterson, & Trochim, 2011; De Dreu & Weingart, 2003), this finding helps to tease apart the mechanisms and conditions under which the different types of cognitive conflict may be particularly beneficial or detremental to outcomes.

This dissertation also deepens our understanding of process conflict. In much of the extant research, process conflict has often been indistiguishable from relationship and task conflict, and its relationship to performance has been mixed

(Behfar et al., 2011). In this study, however, process conflict was structurally (factor) distinct from both task and relationship conflict, and was negatively associated with beliefs regarding alliance partner effectiveness. This finding aligns with other discoveries in this dissertation that suggest coordination is a crucial process in understanding attitudes regarding alliance partner effectiveness. One distinguishing quality of the interorganizational context is the lack of clear overarching organizational structure to support coordination between interorganizational collaborators, as might be found in a singular organization (Cyert & March, 1963). This quality alludes to the possibility that process conflicts may be more likely to surface, and may also be more detremental if there are structural barriers that make resolving process issues difficult and there is less joint accountability and fewer shared reward systems to incent cross-boundary coordination. This disseration, in turn, may help illuminate the conditions under which process conflicts may be more or less harmful to effectiveness and enhance the ability to theorize and understand this dimension of conflict.

It is also interesting to note that, despite the fact that the interview data from Phase One of the data collection revealed tension and frustration by the interorganizational boundary spanners, relational conflict did not surface as a predictor of alliance partner effectiveness. This lack of linkage may be an artifact of underreporting or due to the nature of the interorganizational context in which this investigation took place. It may also be that the interorganizational alliance context represents an interesting domain for exploring relationship conflict. Specifically, most boundary-spanning work in interorganizational alliances occurs at a distance,

with multiple collaborators and multiple projects, and little overarching organizational support to socially integrate collaborators across the organizational boundary. Consequently, this type of work context may not be conducive for developing close personal ties, which, in turn, may create conditions in which tensions and frustrations are less relational. Instead, the tensions and frustrations may be primarily assocatied with an individual's ability to exchange and integrate task-relevant knowledge with partnering collaborators. As such, when conflicts surface—even if they elicit emotional intensity—they may not be directed at partnering collaborators as individuals, but objectified to the partnership. Accordingly, team members do not experience relational conflict in this context, because there is no forum for forming the interpersonal relationships necessary for relationship conflict to surface. When conflict surfaces and the conflict aids in surfacing information that faciliates knowledge integration, the conflicts are perceived to have postive benefits. If the conflicts detract from coordination, however, they are pereived as liabilities to alliance partner effectiveness. Thus, the alliance context may remove the confounding of relationship conflict (Todorova, Bear, & Weingart, 2014; Weingart, et al., 2014) in task and process conflict that may occur in other settings and focus individuals on the content of the conflict, allowing for a clearer understanding of the relationships between the different types of conflict and associated outcomes.

Boundary conditions: Linking context and task. The limited research examining the interplay between the relational qualities of the alliance context and collaborative dynamics within alliances has focused primarily on buyer-supplier relationships, in which dyadic exchange-based relationship management has been the

primary unit of work under investigation (Zaheer et al., 1998). Specifically, the seminal work on interorganizational trust by Zaheer et al. (1998) found that interorganizational trust has a direct effect on alliance supplier performance in a buyer-supplier dyadic relationship. Findings from this dissertation indicated interorganizational trust is also important in predicting perceived partner effectiveness in a cospecialization alliance; the relationship, however, was fully mediated by the degree of coordination between partnering collaborators.

Findings from this dissertation also indicated the importance of interorganizational goal alignment in predicting partner effectiveness. The relationship between shared goals and outcomes in interdependent work is one of the most robust findings in organizational behavior and social psychology (Becker, 1978; Klein & Mulvey, 1995; O'Leary-Kelly et al., 1994; Weingart, 1992; Weingart & Weldon, 1993). Consequently, it is not surprising that interorganizational goal alignment plays a crucial role in predicting partner effectiveness in a context in which the primary objective of the partnership is to work interdependently to produce a joint product. What is interesting, however, is that perceived goal alignment between the partnering organizations is partially mediated by the degree to which knowledge and expertise is perceived as credible, and the degree to which knowledge is effectively coordinated between interorganizational collaborators. This mediation suggests that the ability to coordinate and rely upon the knowledge exchanged between interorganizational collaborators in a codevelopment alliance context is particularly important. Zaheer et al. (1998), in contrast, found that in a buyer-supplier arrangement, interorganizational trust has a significant direct effect on alliance

supplier performance and directly relates to the ease and speed of negotiation between partnering organizations; however, negotiation processes do not mediate the relationship between interorganizational trust and alliance performance.

In stepping back and thinking about these two different contexts, the distinction in these findings is important and provides an opportunity to expand the theoretical framework. Specifically, a buyer-supplier interorganizational arrangement is designed as an exchange relationship, in which the ability to negotiate price efficiently may be the most crucial determinant of alliance partner effectiveness. Consequently, qualities of the alliance that support this activity, such as interorganizational trust, may be particularly important to alliance partner effectiveness. In the context of a cospecialization alliance, the ability to integrate specialized expertise from the partnering organizations is likely the critical determinate of alliance partner effectiveness (Park & Ungson, 2001). Therefore, while interorganizational trust remains crucial, it may influence alliance partner effectiveness through a different set of mechanisms. Specifically, it may serve to support coordinated activity. In addition, based on the findings from this dissertation, it appears that in codevelopment alliance contexts, interorganizational trust is not the only important factor driving alliance partner effectiveness. Interorganizational goal alignment is also crucial, not only in directly influencing alliance partner effectiveness, but also in scaffolding coordination and in enhancing the perceived reliability of knowledge between partnering collaborators.

This dissertation did not make a direct comparison between buyer-supplier and cospecialization alliances. The relative importance of coordination in this study's

context, however, suggests it may be important to consider whether this collaborative dynamic is also an important underlying mechanism in a buyer-supplier partnership, or whether different processes are particularly crucial in driving alliance partner effectiveness when the primary task focuses on negotiation and relationship management rather than development of an integrated product.

Implications for Practice

The implications of this dissertation's findings suggest that it is not only important to consider the role of collaborative dynamics in theorizing about alliance partner effectiveness, it is also important for leaders and organizational members who work across firm boundaries to be aware of what might influence collaborative dynamics and to consider how these influences might impact the design and implementation of work practices. Specifically, this research suggests interventions that touch boundary spanners within their own organizations may not provide the incentives or structure to support cross-firm organizing. Therefore, it would be important, for instance, to have rewards and strategies that enhance accountability at levels that capture the intersecting interdependencies. In the context of this dissertation, it might be useful to link rewards to the response time of partnering collaborators or joint incentives for collaborators from both alliance organizations associated with the success, innovation, or on-time delivery of joint products.

When interorganizational partnerships are initiated, the primary focus is often on selecting partners and establishing contractual elements of the relationship. These discussions often take place between high-level executives, and very little effort is put

into designing the day-to-day interorganizational interactions and activities required to execute the objectives of the partnership. Findings from this research suggest developing strategies to support how boundary spanners perceive the alliance partnership is important in their ability to collaborate effectively across firm boundaries. In the context of cospecialization alliances, developing organizational capacities that support and communicate the mutual nature of the alliance relationship is important. Specifically, it is important that leaders ensure individual boundary spanners responsible for the day-to-day activities of the partnership understand how the partnering organizations are aligned in their goals and strategic objectives, while also clarifying the input-output domain of the partnership. In addition, it is important to create transparency around the decision-making processes within the partnership and to ensure these processes permeate from the executive level down to the "shop" floor. Finally, it is also critical that there are strategies in place that convey trust between the alliance firms.

Although the findings from this dissertation did not reveal what drives conflict in cospecialization alliances, they suggest that process conflict is negatively associated with perceptions of partner effectiveness and that task conflict may be beneficial to perceptions of partner effectiveness. Given these findings, it may be valuable to consider what other factors might reduce conflicts regarding how to work together. Specifically, it may be important to consider interventions that focus on developing shared work practices, clarifying processes for how to resolve coordination challenges as they surface, and creating norms between interorganizational boundary spanners that support open and honest communication.

It may also be important for leaders to consider how they might encourage debate and discussion of task-related issues between interorganizational boundary spanners, given that task conflict was trending towards significance in predicting a positive association between task conflict and perceived alliance partner effectiveness in this research. One potential strategy may be developing norms of mutual positive distinctiveness (Cramton & Hinds, 2005), in which boundary spanners recognize— but also perceive as beneficial—their differences. Creating forums designed to encourage task debate with shared norms of how to approach such discussions and clarify how decisions will be made may be another effective approach.

Limitations

This study included one focal organization and two of its primary partnering organizations. Consequently, the sampling of interorganizational partnerships in this study is limited and could affect the generalizability of the results. Specifically, it is possible that qualities of the interorganizational partnership crucial in predicting alliance partner effectiveness are specific only to this context and set of organizational tasks.

In addition, these data represent the perspectives of only one organization and its members. Hence, important follow-ups to this study would be to expand the number of partnerships under investigation and to extend the reach of the study into other partnering organizations, to understand and triangulate where there may be alignment, as well as differences, in how partnering organizations organize and perceive their interdependent interorganizational collaborative activities.

The data from this study were cross-sectional. Thus, I cannot make any causal claims and can only indicate the plausibility of the relationships based on the degree to which the hypothesized model fits the data. Thus, another important next step would be to consider a longitudinal design that looks at the nature of the relationships over time.

Finally, the outcome data in this study were based on boundary spanners' self-reports. This type of measure, however, is highly correlated with objective financial performance metrics of profitability and growth (Ariño, 2003; Geringer & Hebert, 1991). In addition, given that this study included a sample of multiple alliances and focused not on alliance-level outcomes, but on individuals' beliefs regarding their alliance partners, the measure included in this study matches the theoretical framing.

Future Research

As one chapter closes, another opens. Although the results of this dissertation began to unravel many questions about interorganizational alliances, they also created new questions and areas for inquiry. Specifically, another step in the exploration of interorganizational alliances is to dive deeper into the role of multi-team membership in this context. Hierarchical multi-membership analysis is one strategy to begin this investigation. This type of data is complex, and software available to analyze such data is limited in its capacity. As multi-team membership becomes more and more relevant in empirical settings, however, developing methodological strategies for collecting and analyzing data using these techniques creates an opportunity for

expanded learning. The strategy of data collection used in this dissertation provides a unique opportunity to explore this domain further.

The findings from this dissertation also illuminated the importance of the relational qualities of the alliance context in influencing collaborative dynamics and outcomes. As alluded to in the discussion section, it is possible the hypothesized relationships may vary depending on the stage of the value chain in which interdependent interorganizational boundary spanners are embedded. Many organizations maintain both supplier-buyer partnerships as well as codevelopment alliances. Thus, an important follow-up question would be whether the results from this dissertation are generalizable to both contexts and, if not, to understand more deeply the crucial processes and features of the partnership for driving alliance partner effectiveness in each context.

The qualitative data from this dissertation suggested a tendency, in the interorganizational context, for day-to-day collaborators to forget they are working with another individual in the partnering organization. This suggestion is not surprising, given that many of day-to-day interactions take place between individuals who work together temporarily, do not have a shared organizational context, who work at a distance, who often interact through a database system. Therefore, an important follow-up to this dissertation would be to understand more clearly whether the development of closer relational ties might serve to mitigate coordination loss and foster relationships with increased opportunity to deliberate ideas—ultimately benefiting the effectiveness of the alliance, learning, and coinnovation.

Although not confirmed in the quantitative data, a strategy surfaced in the qualitative data that was piloted by the focal organization to enhance coordination and encourage increased social integration. The strategy encompassed the use of collocation sites where the focal organization's interorganizational boundary spanners worked at a shared location in the alliance partner's facilities for a specified number of days each week. In the limited discussions on this topic, it appeared this strategy had both pros and cons, but could prove to be a unique, empirical context in which to explore these ideas further.

Finally, the findings from this dissertation indicated that conflict is a process that influences outcomes in the interorganizational context. Although the association between perceptions of interorganizational trust and relationship conflict were trending towards significance, the data did not reveal what might be driving task or process conflict between interorganizational boundary spanners. Consequently, important follow-up questions would be to better understand what fosters task conflict, which enhances coordination; what are the antecedents to process conflict, given that it is detrimental to perceptions of alliance partner effectiveness; and whether these drivers are similar to those found in other contexts or unique factors are associated with this specific empirical setting.

Conclusion

This research contributes to the organizational behavior and strategic organizational theory literature in several ways. First, it highlights the importance of understanding collaborative dynamics in alliances. Second, this dissertation begins to

close the gap between the strategic organizational and organizational behavior literatures by examining the link between relational qualities of alliance, collaborative dynamics, and critical outcomes such as alliance partner effectiveness. This research suggests the relationship between the relational qualities of an alliance (interorganizational trust, goal alignment, and informational power) and alliance partner effectiveness is more complex than originally assumed. Specifically, this work highlights the importance of TMS in understanding this relationship. In doing so, this dissertation helps theoretically extend and empirically confirms what many have assumed regarding the importance of coordination between partnering collaborators who are responsible for executing the day-to-day interdependent activities associated with interorganizational partnerships. Finally, this research opens the "black box" of interorganizational alliances even further by providing additional insight into this form of organizing, which is increasingly used to address complex public- and private-sector problems that cannot be solved within the context of a singular organization.

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Appendix A: Interview Protocol

Introduction.

I am interested in developing a better understanding of the dynamics associated with collaborations embedded in organizational partnerships, such as the Ninc-MCorp partnership or the Ninc-CapitalQ partnership. Our research team is partnering with Ninc to develop a better understanding of your collaborations to begin identifying what helps promote effectiveness in these types of collaborations as well as to identify key challenges to help Ninc make informed design and implementation decisions to ultimately optimize your partner-based collaborations. I am in San Diego for the next three days, meeting with a range of key constituents who collaborate with a variety of partnerships for Ninc. All of the information from our interview will be treated with confidentially.

Questions

We'd like to begin our discussion with a few brief questions about you and your role within Ninc.

1. How would you describe your current role and responsibilities within Ninc?
2. Which partnership(s) do you currently collaborate with primarily?
   *When we think about partnership, we tend to think about relationships where the partners are actively working together on joint outcomes. Is this how you would describe the partnership with XXX?
3. Can you tell me a little bit about your work with partner [XXX],
   - What are the types of joint deliverables or activities for which you are responsible?
4. Can you tell me a bit more about how you coordinate activities between Ninc and XXX?

(PROBES)

- Do you work in teams, projects, dyads?
- By chance, do you have a project plan or timeline for project "A" that we could look at together? *[If so, use as a guide for further probes]*
- On average, what is the duration of partner-based projects?
- Is there a team lead for the collaboration? Is there a similar role within the project held by XXX?
- How many people are part of the project from Ninc and from XXX?
- How do members get assigned to the project?
- Does the membership within XXX project change? If so, how frequently?
- Where are project members located?
- How do project members from Ninc and XXX communicate?
- How frequently do project members of Ninc and communicate?

5. If you were to think about your joint activities with XXX, what do you feel are some of the key challenges that have the potential to undermine success of the project?

6. What do you feel are some of the key factors that are important to the success of the XXX-Ninc project?

7. If you were to describe the partnership to a friend, what would you say?

Appendix B: Mediation Analysis

Table B1. *Bootstrapping Technique in AMOS to Predict Alliance Partner Effectiveness from Interorganizational Goal Alignment, Trust, and Informational Power, and Mediating Variables TMS, TMS Coordination, and TMS Credibility*

Direct path: Alliance Context ---> Alliance partner effectiveness			
		Mediation	
Alliance Context	TMS	TMS coordination	TMS credibility
Interorganizational goal alignment[a]			
Standardized direct effect	.30** (.10)	.32** (.12)	.32**(.00)
Standardized indirect effect	.17*** (.04)	.14** (.07)	.15** (.05)
Analysis	Partial mediation	Partial mediation	Partial mediation
Interorganizational trust[b]			
Standardized direct effect	.14 (.09)	.07 (.10)	.18*(.08)
Standardized indirect effect	.09* (.05)	.17** (.05)	.06 (.05)
Analysis	Full mediation	Full mediation	No mediation
Interorganizational information power[c]	N/A	N/A	N/A

Note. [a]Standardized direct effect .44 (.00); [b]Standardized direct effect .22 (.04); [c]Standardized direct effect .05 (.63). Bootstrap Samples = 2000; Bias Corrected Confidence level = .95. ( ) = S.E. +p < .10, *p < .05, **p < .01, ***p < .001.
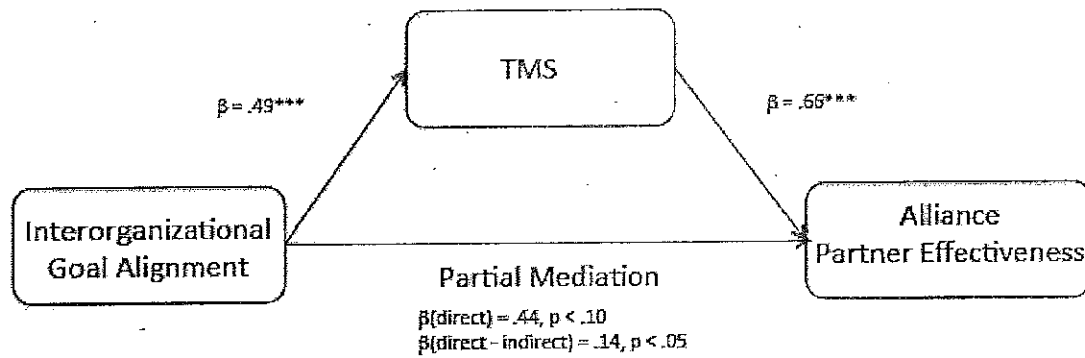
Figure B1. Predicting alliance partner effectiveness from interorganizational goal alignment and mediating variable TMS
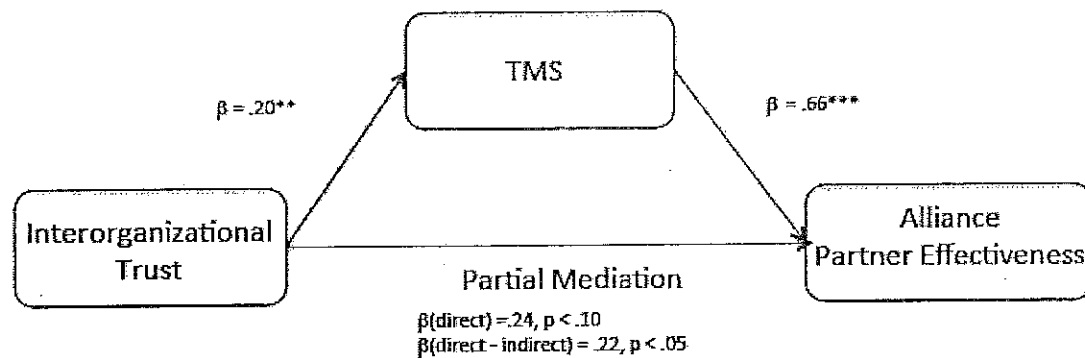

Figure B2. Predicting alliance partner effectiveness from interorganizational trust and mediating variable TMS
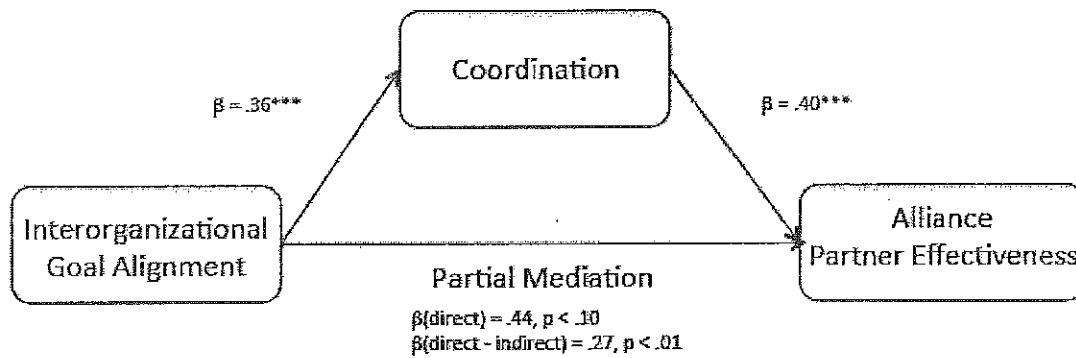
135

Figure B3. Predicting alliance partner effectiveness from interorganizational goal alignment and mediating variable coordination
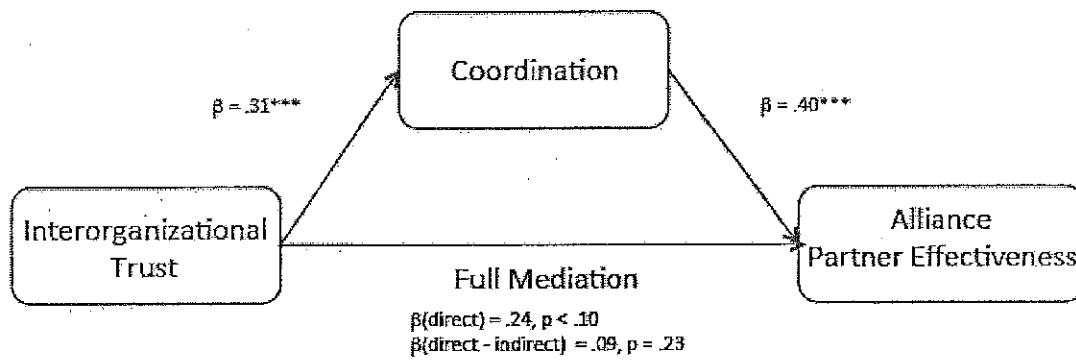

Figure B4. Predicting alliance partner effectiveness from interorganizational trust and mediating variable coordination
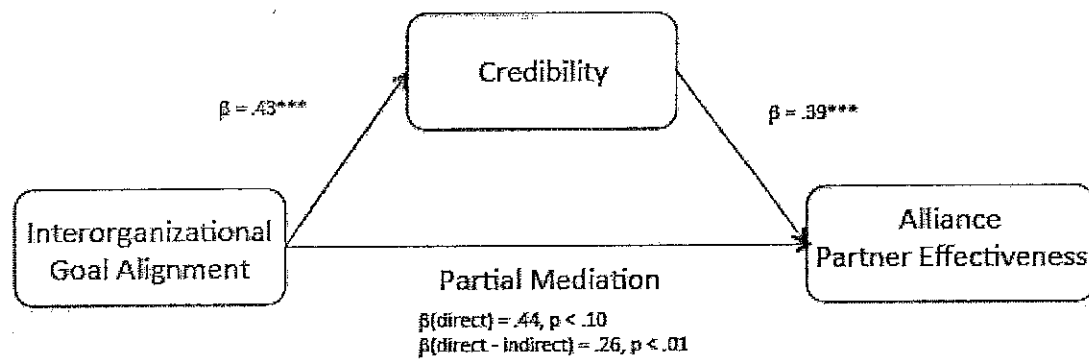
Figure B5. Predicting alliance partner effectiveness from interorganizational goal alignment and mediating variable credibility