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# Could the double-edged nature of innovation partnership with suppliers invoke the "other sides" of trust and interdependence?

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ABSTRACT

While developing innovation partnerships with suppliers could be of immense help to firms in achieving their innovation goals, such partnerships could have a double-edged effect as they could also result in opportunistic imitation and learning races among the partners. Accordingly, it is important to understand the factors that drive the development of innovation partnerships with suppliers. In this study, we consider the effect of congruence and incongruence of two such mechanisms – trust and interdependence. We also study the contingent role of bargaining power and relationship length. We test the hypotheses using polynomial regression in conjunction with the response surface methodology. Our results suggest that the double-edged nature of innovation partnership overshadows the broadly proclaimed positive side of trust and the negative side of interdependence. Additionally, when looking closely at the contingent effect of bargaining power and relationship length, the effects of congruence and incongruence in trust and interdependence seem quite intriguing. In the case of higher bargaining power as well as longer relationships, the congruence between trust and interdependence seems to be most conducive for innovation partnerships. Interestingly, while the positive effects of interdependence diminish whenever bargaining power is high, the dark side of trust is no longer an issue in the case of longer relationships.

## 1. Introduction

Since firms do not possess all the required capabilities to reach their innovation goals, they increasingly forge partnerships with their suppliers to successfully navigate their innovation roadmap, including the speed and timing of innovation (Wagner and Bode, 2014). Despite the numerous economic and strategic benefits that are alluded to in extant literature, innovation partnerships could also expose the knowledge assets of firms to their partners, thereby enabling those partners to easily replicate the focal firm's innovation processes, capabilities, and outcomes (Dahlander and Gann, 2010; Martinez-Noya et al., 2013)). In other words, innovation partnerships also have a double-edged effect as they allow partners to observe each other's innovation processes, thereby decreasing the underlying causal ambiguity. Therefore, it is very important for firms to adopt appropriate mechanisms that could promote successful innovation-related partnerships that help mitigate the appropriation of idiosyncratic knowledge assets (Schubert, 2016).

Extant literature purports that innovation partnerships can be promoted by social as well as economic mechanisms (Chicksand, 2015; Yam and Chan, 2015). In our study, we include two such fundamental mechanisms: trust as a social mechanism and interdependence as an economic mechanism (Blau, 1964; Emerson, 1962; Morgan and Hunt, 1994; Pfeffer and Salancik, 1978; Ring & Van De Ven, 1992). When it comes to trust, we focus specifically on goodwill trust (e.g., Lado et al., 2008; Sako, 1991); in the case of interdependence, we conceptualize it to focus on symmetric mutual dependence that does not take into the extent of power imbalance (i.e., dependence asymmetry) in the relationship (e.g., Pu et al., 2023; Vijayasarathy, 2010). Though the

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literature has forwarded various social mechanisms, such as commitment and solidarity, trust is considered the most prominent social mechanism (Krishnan et al., 2006; Poppo et al., 2008). Alternatively, when it comes to economic mechanisms, interdependence could occur at varying levels in almost all exchange relationships (Williamson, 1985). Therefore, interdependence is considered the most prominent economic mechanism in literature (Laaksonen et al., 2008).

Despite their prominence and increased occurrence, studies that incorporate both trust and interdependence in the same empirical model are considerably sparse (e.g., Capaldo and Giannoccaro, 2015; Geyskens et al., 1996; Guo et al., 2023; Katsikeas et al., 2009; Krishnan et al., 2006). More importantly, Laaksonen et al. (2008) and Tangpong et al. (2015) illustrate that exchange relationships, in general, could exhibit varying levels of trust and interdependence. In other words, these authors illustrate that there could be different configurations of trust and interdependence wherein the levels of trust and interdependence could be either matched (i.e., both could be low or high) or unmatched (while trust/interdependence is high, interdependence/trust could be low). Whenever matched or congruent, the coexistence of trust and interdependence is broadly considered to have a positive effect on various relational outcomes (Geyskens et al., 1996; Laaksonen et al., 2008; Wicks et al., 1999). However, given its double-edged nature, would such a positive effect be plausible in the case of innovation partnerships as well? Therefore, it is important to empirically evaluate, using large-scale survey data, whether the matched (congruent) levels of trust and interdependence are conducive to developing innovation partnerships. Alternatively, it is also equally important to empirically establish whether both these mechanisms could be individually dominant in promoting innovation partnerships when they are unmatched (i.e., incongruent).

The need to study the effect of different configurations of trust and interdependence on innovation partnerships gains more salience, given that both trust and interdependence have also been established to have different sides. Though the dominant side of trust is that it is generally good for relationships (Dyer and Chu, 2003; Morgan and Hunt, 1994; Zaheer et al., 1998), researchers contend that too much trust could actually be detrimental (Jap and Anderson, 2003; McEvily et al., 2003; Zaheer et al., 1998); in other words, trust is conjectured to have a dark side (other side) (Molina-Morales et al., 2011; Stevens et al., 2015; Villena et al., 2011). Alternatively, while the dominant side of interdependence is that it is negative as it is economically ingrained (Benson, 1975; Pfeffer, 1972), scholars propose that it could also have a positive (other) side as it could ensure convergence of interests among partners (Kumar et al., 1995; Williamson, 1993). Additionally, given that innovation partnership is in itself double-edged, it would be interesting to unravel the theoretical conundrum that these other sides of trust and interdependence present, specifically in the context of innovation partnerships. Against this backdrop, our first research question is, "What are the effects of the different configurations of trust and interdependence on innovation partnerships?" We draw upon the tenets of the resource dependence theory [RDT] and the relational exchange theory (RET) to study the effect of congruence and incongruence in trust and interdependence.

Second, we also acknowledge the fact that the combined effects of these mechanisms could also be contingent on other factors. Accordingly, we explore how these different configurations of trust and interdependence could impact innovation partnerships under two key contingencies: bargaining power and relationship length. Theoretically, given that unbalanced bargaining power increases the inability of the focal firm to predict the market as well as competitive environments, RDT suggests that firms would need to rely increasingly on appropriate mechanisms whenever unbalanced bargaining power is high (Cheng et al., 2020; Crook and Combs, 2007; Pfeffer and Salancik, 1978). Our conceptualization of bargaining power focuses on the broader notion of power that could result from not only dependence asymmetry but also various other sources, including size, profitability, and the market share held by the partner firms (Cho et al., 2019; Kim et al., 2005). Alternatively, as espoused by the RET, relationship length could cast a "shadow of the past," wherein the history of prior interactions could create a social environment within which trusting partnerships could thrive (Blau, 1964; Poppo et al., 2008). Therefore, the second research question that we aspire to address is "Do bargaining power and relationship length moderate the effect of congruence and incongruence in trust and interdependence on innovation partnership?"

By answering these two research questions, we make some invaluable contributions to the literature. Even though the dominant sides of trust and interdependence are well established, some studies also hint at the other sides of trust and interdependence (Blau, 1964; Gulati and Singh, 1998; Gundlach and Cadotte, 1994; Krishnan et al., 2006; Laaksonen et al., 2008; Villena et al., 2011; Wicks et al., 1999). Additionally, achieving higher levels of trust and interdependence, independently or simultaneously, does not come without a cost (Das and Teng, 2000). Therefore, it will be theoretically enriching to understand whether too much of either trust or interdependence could personify an "Icarus paradox" (Miller, 1992). In other words, would higher levels of trust and/or interdependence be paradoxically detrimental to innovation partnership ("too much of a good thing")? On a related note, scholars also suggest that the combined effects of trust and interdependence are more complex (Geyskens et al., 1996; Laaksonen et al., 2008; Wicks et al., 1999). Acknowledging this as plausible, our study makes an invaluable contribution by shedding light on the theoretical conundrum surrounding trust and interdependence through the adoption of the polynomial regression analysis in conjunction with the response surface methodology, an approach that is considered to be appropriate for unfolding the effects of the congruence/incongruence (Edwards and Parry, 1993; Myers et al., 2009; Shanock et al., 2010).

## 2. Theory and hypothesis development

### 2.1. Innovation partnership

We define partnership as "an ongoing collaborative relationship between two legally separate organizations, based upon a commitment to the equal sharing of the costs, risks, and rewards derived from working together" (Chicksand, 2015, p. 123) Both RET (Macneil, 1980; Morgan and Hunt, 1994) and RDT (Pfeffer and Salancik, 1978) address various reasons why firms enter into partnerships. One such partnership that is driven by innovation or R&D goals is an innovation partnership. Generating and implementing new products with shorter lead times requires considerable input and collaboration from supply chain partners (Yam and Chan, 2015). To achieve innovation-related goals, companies must forge strategic partnerships with their suppliers (Mohr and Spekman, 1994) as they could not only enable the buying firm to gain access to new ideas and technologies, knowledge as well as complementary assets from suppliers but also share risks with them (Belderbos et al., 2004).

At the same time, innovation partnerships could be a double-edged sword as they expose secret and tacit knowledge residing within a firm by opening up the firm's innovation process to its partners (Dahlander and Gann, 2010; Martinez-Noya et al., 2013); they could also decrease the causal ambiguity surrounding a firm's idiosyncratic capabilities, as they are readily and easily observable (Barney, 2014). Exchange partners could easily replicate superior innovation performance as they gain deeper insights into the firm's innovation processes, as well as capabilities (Martinez-Noya et al., 2013). There are inherent liabilities in innovation partnerships, given that they could also lead to imitation by not only the partners but also the partners' partners (Dahlander and Gann, 2010; Katila and Ahuja, 2002). Therefore, innovation partnerships present a unique context within which appropriate protection mechanisms are required to safeguard against opportunistic imitation and appropriation (Schubert, 2016).

### 2.2. Trust and interdependence

In interfirm relationships, trust and interdependence are two distinct variables that scholars commonly use to characterize how a firm (e.g., a focal firm) stands in a relationship with another firm (e.g., a supplier) (e.g., Laaksonen et al., 2008; Tangpong et al., 2015; Wicks et al., 1999). Trust is a fundamental force in making inter-organizational relationships work (Blau, 1964; Ring and Van de Ven, 1994). Scholars adhering to RET consider trust as a key social mechanism in managing buyer-supplier relationships (Macneil, 1980; Morgan and Hunt, 1994). At the inter-organizational level, Sako (1992) categorizes trust as either contractual, competence, or goodwill. We focus on the goodwill trust, which is evident when the buying firm is confident that the supplier is not only reliable, honest, and fair but also acts in its (i.e., buying firm's) best interest (Blome et al., 2023; Dyer and Chu, 2003). Given that goodwill trust signifies that the supplier is willing to go beyond contractual compliance and make significant contributions to the relationship (Sako, 1991), it is the most appropriate manifestation of trust for studying innovation partnerships with suppliers (Krishnan et al., 2006).

Within the context of innovation, trust could increase the quality as well as quantity of knowledge sharing, thereby creating a collaborative climate for innovation (Molina-Morales et al., 2011). Particularly when the dynamism of the sourced technology is high, a more flexible, trust-based cooperative new product development process will be needed as the focal firm will be less capable of foreseeing and specifying supplier requirements (McCutcheon and Stuart, 2000). At the same time, trust also has a dark side, specifically at higher levels (Molina-Morales et al., 2011; Stevens et al., 2015; Villena et al., 2011). We define the dark side of trust as "the risks and potential negative consequences that are associated with high levels of trust." Given that we focus on goodwill trust, which reflects the confidence that a firm has in its partner to be reliable, honest, and fair, when too much, it could take a dysfunctional turn wherein it might rather invite abuse and opportunistic behavior from the partner (Jap and Anderson, 2003; McEvily et al., 2003; Zaheer et al., 1998). Specifically, within the context of innovation partnerships, the "poker hand" metaphor (Kogut and Zander, 1992, p. 394) could be used to explain this conundrum posed by too much trust; as the cards (i.e., knowledge) are revealed, unintended imitation and knowledge sabotage could rapidly ensue as high levels of trust provide the sufficient incentives to behave opportunistically (Molina-Morales et al., 2011). Therefore, while we acknowledge the good and bad sides of trust, we believe that the dark side of trust plays a more dominant role within the context of innovation partnerships given the underlying dilemmas of knowledge leakage, imitation, and the inherent learning races (Dahlander and Gann, 2010; Martinez-Noya et al., 2013).

Interdependence is an equally important force in explaining inter-organizational relationships (Laaksonen et al., 2008). As opposed to trust, RDT posits interdependence as an economic mechanism in managing buyer-supplier relationships (Emerson, 1962; Pfeffer and Salancik, 1978). The essential argument of RDT is that organizational survival hinges on the capability to get access to the much-needed critical resources owned by other organizations (Casciaro and Piskorski, 2005; Pfeffer and Salancik, 1978). As means towards this end, firms will employ tactics aimed at reducing uncertainty in the flow of these resources: for example, they will try to establish joint actions with these external organizations that the firms depend on (Hillman et al., 2009). It has been acknowledged that in order to address some of RDT's ambiguities, the concept of dependence needs to be better characterized by distinguishing the two dimensions of mutual dependence and power imbalance (Casciaro and Piskorski, 2005; Kumar et al., 1995).

In this study, we conceptualize interdependence to represent the bilateral dependence between the buyer and supplier firms, regardless of whether the dependence of the buyer and that of the supplier is balanced or not (Casciaro and Piskorski, 2005; Pu et al., 2023; Vijayasarathy, 2010). In other words, our conceptualization of interdependence reflects symmetric mutual dependence (Emerson, 1962). While interdependence could result from various factors, it is directly dependent on the increased opportunity and switching costs that arise from relationship-specific resource investments as well as relationship-specific capability-building (Laaksonen et al., 2008). At varying degrees, conditions of mutual dependence can easily emerge in new product development processes: in fact, the focal firm is likely to depend on the supplier's specific process and component knowledge (Yan and Dooley, 2014). Therefore, it is important to analyze how interdependence can affect innovation-related interfirm collaboration.

Early research has considered interdependence as a negative force (dominant side) that could be detrimental to the weaker partner (Benson, 1975; Pfeffer, 1972). However, interdependence ensures closer integration between the partners in that they pool their investments, resources, and capabilities for their collaborative benefits (Luo, 2008b). Though this could create a lock-in effect, interdependence has been envisioned to have a positive (other) side in that it ensures the convergence of the interests of both partners (Kumar et al., 1995). In doing so, it could increase sharedness, synergy, and collaboration between the partners. Interdependence could, more importantly, act as a deterrent by suppressing the outbreak of conflicts as well as the desire for opportunistic behavior while simultaneously ensuring reciprocity in the relationship (Williamson, 1993). In summary, we contend that the other "positive" side of interdependence could be more relevant for mitigating the double-edged effect of innovation partnerships.

Trust and interdependence have been used to develop relationship typologies that reflect the different combinations of the two constructs (Laaksonen et al., 2008; Tangpong et al., 2015). Some scholars suggest that certain combinations would promote a virtuous interplay among them, thereby favoring the accomplishment of the relationship's goals; other configurations, instead, would be dysfunctional and detrimental to these goals (Laaksonen et al., 2008; Wicks et al., 1999). Wicks et al. (1999) contend that a fit between trust and interdependence exists when the two variables are matched (i.e., their levels are roughly similar). At the same time, willingness to establish highly interdependent relationships would signal to the partner a genuine interest in nurturing such relationships and provide a foundation for the development of solid levels of trust. Instead, investing in building trust in the simpler interaction among loosely coupled firms would be neither economically efficient nor desirable, as it would hinder the option of switching to a more attractive alternative that the markets may offer. Also, mismatched values of trust and interdependence – in both forms of an insufficient or excessive level of trust for a given level of interdependence – would not effectively hedge against a partner's opportunistic conducts (Laaksonen et al., 2008; Wicks et al., 1999) and compromise the relationship's stability, even leading to its possible termination.

However, the empirical analysis of these dynamics remains limited (Tangpong et al., 2015; Yilmaz et al., 2005), and the results reported by a few studies (e.g., Guo et al., 2023; Yilmaz et al., 2005) are in contrast, to some extent, with the expected patterns. Guo et al. (2023), for example, found that goodwill trust negatively mediates the impact of interdependence on information exchange in conflict resolution. Yilmaz et al. (2005) found that when interdependence is high, trust is unrelated to relational behavior, suggesting that exchange partners can adopt such supportive and cooperative practices also when trust and interdependence degrees are uneven in the relationship. Moreover, only a few studies typically focus on the individual and joint effects of trust and interdependence on relational outcomes (e.g., Geyskens et al., 1996; Izquierdo and Cillan, 2004; Yilmaz et al., 2005) highlighting a need for more research examining how different configurations of trust and interdependence influence other forms of interfirm collaboration, such as innovation partnerships.

### 2.3. Effects of trust and interdependence

Given that our research hypotheses are based on the congruence and incongruence, they relate to the effects along the symmetry and asymmetry lines indicated in Fig. 1. The symmetry line represents the line along which both trust and interdependence increase simultaneously (i.e., congruence); both trust and interdependence increase simultaneously as we move from point 1 toward point 3 and then onto point 5 along the symmetry line. The asymmetry line represents the line along which trust and interdependence go in different directions (i.e., incongruence); in other words, as we move from point 2 to point 3 and then onto point 4 on the asymmetry line in Fig. 1, trust increases as interdependence decreases.

At point 2 in Fig. 1, interdependence is high and trust is low. Though trust is low, interdependence between the partners is not only balanced but also high; the strategic importance of high and symmetric mutual dependence is recognized by scholars espousing RDT (Emerson, 1962; Heide and John, 1990; Pfeffer and Salancik, 1978). Therefore, in spite of the lack of higher levels of social motivation, there is quite a strong economic motivation for the partners to engage in long-lasting partnerships (Geyskens et al., 1996). As per RDT, given that there could be a high amount of idiosyncratic resource investments in such highly interdependent relationships (Das and Teng, 2000; Emerson, 1962; Heide and John, 1990; Pfeffer and Salancik, 1978), partners recognize the fact that working together could result in greater benefits than that which could be achieved individually (Mohr and Spekman, 1994). Even though such a configuration is economically driven and could signify a feeling of being "locked in", it also signals partners' mutual reciprocation as well as the willingness to adapt to each other's needs (Geyskens et al., 1996; Hald et al., 2009). We contend that the partners would rather be cautious not to jeopardize their economic interests, given that this configuration involves high levels of mutual resource commitments. Even though trust is low, conflicts, as well as opportunistic behavior, would be significantly lower given that both partners would have much to lose due to high levels of economic investments (Kumar et al., 1995). Although episodic self-interest-seeking behaviors cannot be excluded (Tangpong et al., 2015), the high and balanced interdependence tends to discourage opportunistic behaviors since both parties recognize the economic necessity for their exchange relationship. Accordingly, this configuration has the ability to create a conducive environment within which innovation partnerships could thrive (Geyskens et al., 1996).

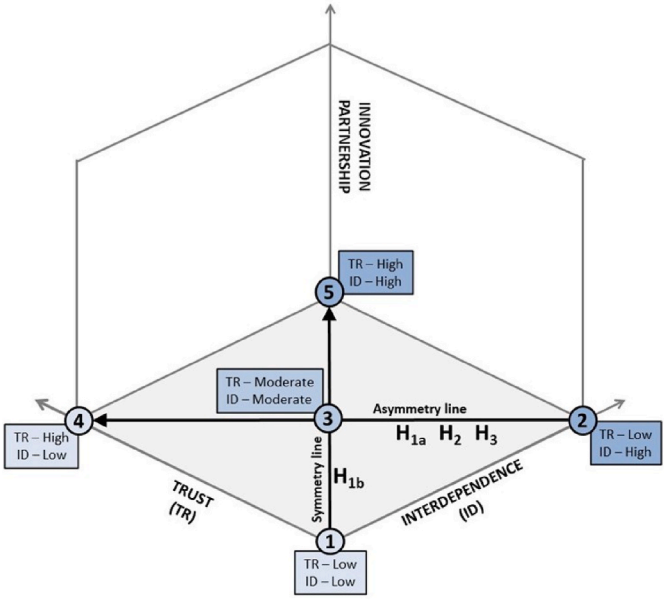


**Fig. 1.** Response surface - symmetry and asymmetry lines.

Alternatively, at point 4, trust is high and interdependence is low. Although RET suggests that high levels of trust have the unique ability to strengthen inter-organizational ties (Katsikeas et al., 2009; Morgan and Hunt, 1994; Ring & Van De Ven, 1992), engaging in innovation partnership may raise severe risks and penalties in this configuration. Given the low level of interdependence, trust alone would create too few incentives to hinder opportunism (Wicks et al., 1999). In line with the perspective of the "dark side of trust" (Jap and Anderson, 2003; Molina-Morales et al., 2011; Villena et al., 2011), excessive reliance on trust not supplemented with a requisite amount of economic investments from both sides may likely result in the potential for imitation, knowledge leakage, and learning races in innovation partnerships. Given that innovation partnerships, more often than not, require the sharing of sensitive as well as proprietary knowledge, the potential for even minimal levels of opportunistic behavior could deter firms from engaging in innovation partnerships. In other words, partners will not willingly share proprietary information as their priority would be to protect their knowledge assets (Simonin, 1999). Adhering to the proponents that espouse the "dark side" of trust, we conjecture that at high levels of trust and low levels of interdependence, innovation partnership could be at its lowest level.

As opposed to points 2 and 4 along the asymmetry line (Fig. 1), point 3 represents relationships that signify moderate levels of both trust and interdependence. Even though the levels of trust and interdependence are matched, when compared to points 2 and 4, this configuration has only moderate levels of both social and economic motivations. In terms of interdependence, this might signify an inferior configuration as the economic motivation is only moderate. Alternatively, when looking from the perspective of trusting relationships, this might signify what is called an optimal level of trust wherein the firms neither overinvest nor underinvest in trust (Wicks et al., 1999). Taken together, we conjecture that economic bonding will be a stronger force than social bonding in the unique context of innovation partnerships. Yilmaz et al. (2005) support this claim of ours as they found that (a) the economic element has a greater effect than the social one in promoting relational behaviors, and (b) in highly interdependent relationships, trust is unrelated to relational behaviors. Based on these outcomes, they come to the conclusion that the extent of relational behaviors "is more sensitive to need-based, structural considerations (i.e., interdependence) than to attitudinal ones (i.e., trust)" (Yilmaz et al., 2005, p. 244). Accordingly, we conjecture that while the level of innovation partnership would be lower than that at point 2, it will be higher than that at point 4. While we acknowledge the fact that the effect need not always be linear, we conservatively hypothesize that the extent of innovation partnership will decrease as we move along the asymmetry line.

**H1a.** Increasing incongruence when interdependence is higher than trust will positively impact innovation partnership as opposed to when trust is higher than interdependence (i.e., the asymmetry line will have a negative slope).

Looking at the symmetry line, point 1 wherein trust and interdependence are both low represents a configuration that signifies market-based relationships (Laaksonen et al., 2008). Innovation partnership is bound to be quite low at point 1. Both RDT and RET lend support to this conjecture. When interdependence is low, the scope for innovation partnerships is also quite low given that such relationships signify a series of discrete transactions and do not warrant the effort for extensive interactions (Gundlach and Cadotte, 1994). Additionally, with trust also being low, the partners wary of the other's intentions and actions (Geyskens et al., 1996).

As we move along the symmetry line from point 1 to point 3 and further on to point 5, trust and interdependence increase simultaneously, thereby creating configurations that could promote increased innovation partnership between the partners. Even though higher levels of interdependence could lead to innovation partnerships, as espoused by RDT, it does signify a "locked-in" feeling (Blau, 1964). While we

conjecture that such a locked-in effect could actually be conducive to innovation partnerships, higher levels of trust could be beneficial as it could significantly attenuate the potential negativity created by higher levels of interdependence (McEvily et al., 2003). As per the tenets of RET, trust could act as a glue in such relationships and bring the "economically-bound" partners closer together socially as well (Gulati and Singh, 1998; Hald et al., 2009; Wicks et al., 1999). Configurations of higher trust and higher interdependence could provide a sense of security that could mitigate any negative effects of opportunism, and in doing so, enhance the intent to engage in innovation partnerships (Gulati and Singh, 1998; Krishnan et al., 2006; Zaheer et al., 1998). In other words, if trust does not exist in interdependent relationships, they might still continue to develop into innovation-based partnerships. But at the same time, it is more likely that such relationships become cognitively intolerable because of dysfunctional inter-organizational behavior (Laaksonen et al., 2008).

Additionally, given that interdependence will facilitate the convergence of the interests of both partners (Kumar et al., 1995), it could also simultaneously mitigate the dark side of trust. Wicks et al. (1999) suggest that whenever the level of trust is matched with a similar level of interdependence, then that level of trust is optimal, no matter how high it is. Since both partners have much to lose in an interdependent relationship, they will be more inclined not to take any undue advantage of the complacency and blind spots that could be created by high levels of trust. Based on this line of reasoning, we hypothesize the following effect along the symmetry line.

**H1b**. Increasing congruence in trust and interdependence will positively impact innovation partnership (i.e., the symmetry line will have a positive slope).

### 2.4. Effect of contingencies

#### 2.4.1. Bargaining power

Asymmetric dependence has long been considered a source of power imbalance in buyer-supplier relationships (Emerson, 1962). In this study, we envision interdependence as a symmetric mutual dependence between the partners that arises from mutual as well as equivalent resource commitments from both partners. Given that this manifestation of interdependence does not capture the notion of power imbalance, we rather consider bargaining power a key contingency. Bargaining power could be driven by various other factors, including size, profitability, and the market share held by the partner firms (Cho et al., 2019; Kim et al., 2005). Therefore, our conceptualization of bargaining power is much broader than the power imbalance that is created by asymmetric dependence alone. No matter the source of this power, if bargaining power exists in a relationship, the stronger firm in the relationship could exercise this power to gain a bigger portion of the value created within their partnership (Cheng et al., 2020).

As espoused by RDT, whenever bargaining power is exercised by the stronger firm, the relationship could be fraught with resentment and conflicts that could significantly undermine the willingness of the weaker firm to engage in partnership activities (Crook and Combs, 2007). While the stronger partner might exploit the power asymmetry through appropriate control mechanisms, it could invariably create greater risks and challenges from the perspective of the weaker partner. Therefore, bargaining power could play a significant contingent role in the effects that different configurations of trust and interdependence could have on innovation partnerships. In effect, the existence of a power asymmetry might require a different configuration of the mechanisms (Mahapatra et al., 2010) that should ease the potential conflicts between the partners and rather encourage reciprocity within which innovation partnerships could still thrive. Though the dark side of trust could be magnified when there is a higher imbalance of bargaining power, we conjecture that the positive effects of interdependence on innovation partnerships could significantly diminish as resentment and conflicts in the relationship increase with the increase in bargaining power imbalance (Crook and Combs, 2007). Therefore, while our initial hypothesis along the asymmetry line (i.e., negative slope) would be salient in the case of balanced bargaining power, whenever the bargaining power is unbalanced, using either trust or interdependence could be detrimental to innovation partnerships. Alternatively, in such relationships, matched levels of trust and interdependence could provide a sense of security that could mitigate the potential negative effects of unbalanced bargaining power. Therefore, while the positive effect of congruence in trust and interdependence would still hold, we forward the following hypothesis related to the asymmetry line for formal testing.

**H2**. When bargaining power is unbalanced, innovation partnership will be lower in the case of (1) a higher level of interdependence and a lower level of trust, and (2) a lower level of interdependence and a higher level of trust. In other words, the negative slope along the asymmetry line will become insignificant.

#### 2.4.2. Relationship length

Based on the tenets of RET, mutual understanding and a sense of continuity develop during the course of several transactions between the buyer and supplier (Heide and John, 1990). Specifically, time could play a critical role in enabling the partners to not only understand each other but also build expectations about future relationships (Jap and Anderson, 2007). Therefore, relationship length could be a key contingency when it comes to the effect of congruence and incongruence in trust and interdependence. On the one hand, an extended history of interaction could cast a "shadow of the past," which could transform the nature of the relationship as well as alter the role of the underlying mechanisms (Blau, 1964; Poppo et al., 2008). On the other hand, relationship length also has the unique ability to enhance commitment as well as encourage the development of relationship-specific capabilities between the partners, thereby, ultimately, facilitating future attachments (Heide and Miner, 1992). It also has the ability to decrease the partners' perception of exchange hazards in the relationships (Krause et al., 2007). Therefore, relationship length will also create a "shadow of the future" within which firms can employ effective mechanisms to encourage collaborative relationships.

In short-term relationships, trust between buyer and supplier could be nascent (Jap and Anderson, 2007). In such cases, firms might rather try to build interdependent relationships with their suppliers (Emerson, 1962). Accepting and deepening interdependence between the partners might be required in the case of short-term relationships so as to realize specific goals (Jap and Anderson, 2007; Ring and Van de Ven, 1994); interdependence becomes a prominent force that could drive innovation partnerships in such relationships. Alternatively, in long-term relationships, trust could become resilient and encourage future collaborative interactions. The tenets of RET suggest that, as a result of the long-term relationship between the buyer and the supplier, trust between them helps in the development of relationship-specific capabilities (Ireland and Webb, 2007). The shadows of the past and future that are characteristic of longer relationships could make trust a formidable force and could even overshadow its dark side (Poppo et al., 2008). In other words, the prior history between the exchange partners could not only create a unique path for increased trust but also help trust to morph into a significant organizing principle that could facilitate innovation partnerships (McEvily et al., 2003; Poppo et al., 2008). Therefore, higher levels of trust need not be detrimental to the development of innovation partnerships in the case of long-term relationships (Blau, 1964; Macneil, 1980). While these arguments do not stand against our conjecture that congruent levels of trust and interdependence will positively impact innovation partnerships (i.e., along the symmetry line), relationship length will significantly moderate the effect of incongruence in trust and interdependence (i.e., along the asymmetry line). Specifically, whenever the relationship length is longer, high levels of trust will become just as

beneficial as high levels of interdependence when it comes to promoting innovation partnerships. Therefore.

**H3**. Relationship length will moderate the combined effect of trust and interdependence such that innovation partnership will be higher in the case of (1) a higher level of interdependence and a lower level of trust, and (2) a lower level of interdependence and a higher level of trust. In other words, the negative slope along the asymmetry line will become insignificant.

## 3. Methodology

### 3.1. Data collection

We developed the survey instrument by including indicators that were adapted from past literature; the survey instrument was pretested using supply chain practitioners as well as academicians. Based on the suggestions received from eight experts, we made some minor changes to the instrument. All indicators were measured using a 5-point Likert scale with *strongly disagree* and *strongly agree* as endpoints. We obtained the initial list of 3000 members from the Institute for Supply Management (ISM). The survey instrument was targeted to respondents holding high-level purchasing executive positions (e.g., vice presidents, directors, etc.) within US manufacturing firms. We selected the initial sampling frame by selecting 1500 respondents from the list of 3000 members randomly. Since ISM does not give out the email addresses of its members, we conducted the survey in two stages. In the first stage, we mailed a cover letter along with a consent form to 1500 respondents; if a respondent did not consent to participate, we requested them to provide some basic details about their inability to participate in the study. While 30 surveys were returned as non-deliverable, a total of 580 respondents returned their consent form [580/(1500–30) = 40 % response rate]. Out of these 580, 275 declined to participate, giving reasons such as lack of experience and company policy. Due to this, the effective sample size was reduced to 1195 (1500 - 30–275). While some of the participants chose to receive the paper version of the survey, the majority of the respondents completed the web survey. After multiple follow-up emails, 241 respondents completed the survey, with a response rate of 20.17 %. When it came to the coverage of different industries, our final sample was similar to the initial sampling frame of manufacturing firms belonging to SIC codes, including 20, 28, 34–37, and 39 (refer to Appendix A). So, our final sample adhered to the industry sectors that we initially intended to study. Our final sample size and response rate were also considered adequate as they are comparable to extant empirical research published in the domain of operations and supply chain management (e.g., Ambulkar et al., 2015; Prajogo et al., 2020). Appendix A presents the details pertaining to the respondent and firm profile details.

Though the theoretical constructs included in our study are related to dyadic buyer-supplier relationships, we collected data from a single respondent who was part of the buyer firm. Therefore, we must clearly establish that our study does not suffer from issues pertaining to the exception fallacy (Roh et al., 2013). Exception fallacy refers to "an erroneous finding where researchers draw biased aggregate or group conclusion among stakeholders on the basis of a single rater" (Roh et al., 2013, p. 712). We believe that the chances of biases related to the exception fallacy are low in our study because our hypothesized model studies the effect of the buyer's evaluation related to dyadic constructs – trust and interdependence - on its ability to develop innovation partnerships. In other words, since we have positioned the study specifically from the buyer's side of the dyadic relationship, collecting data from the buyer's side does not lead to erroneous conclusions (e.g., Pu et al., 2023; Roh et al., 2013; Son et al., 2021). Additionally, we would like to point out that our study ensures the validity and reliability of measurement items and data collection by also ensuring that the target respondents were appropriate to answer the survey questions (Hair, 2011); this approach further minimizes the chances for erroneous conclusions. As an additional validation, we included a question in the survey to assess how knowledgeable the respondents were with respect to the survey questions; this was measured using a 5-point Likert scale question with endpoints of "not at all" and "significant". The average score for this question was 3.97, suggesting that the respondents possessed the required knowledge to answer the survey questions. Overall, we believe that the chances of exception fallacy in our study are considerably low (Roh et al., 2013).

### 3.2. Measures

The measurement items are provided in Table 1. *Trust* was operationalized to measure the extent of benevolence, fairness, as well as honesty exhibited by the supplier firm (Lado et al., 2008; Nooteboom et al., 1997; Sako and Helper, 1998). *Interdependence* was designed to reflect the high level of investments made as well as relationship-specific capabilities created by the two firms (Luo, 2008a). *Bargaining power* was captured using a single 5-point Likert scale question, "we have a bargaining power-based relationship with this supplier". Selecting "1" indicated that the exchange partners had equal power, while "5" indicated that the bargaining power was not balanced. Whenever respondents perceive a single-item measure to be unambiguous and concrete, then using such a single-item measure is considered to be appropriate (Bergkvist and Rossiter, 2007). The *length of the relationship* was captured using an objective scale asking for the number of years of relationship with the selected supplier.

We controlled for variables that could influence the extent of innovation partnerships. First, we included firm size, measured using sales volume, as a control variable. The rationale for controlling for firm size was that it is directly related to not only the extent of resources available for engaging but also being successful in innovation-related partnerships (Paulraj et al., 2008). Second, we included the firm's market share as a control due to our belief that it could reflect the extent of resources available to participate in innovation partnerships (Boulding and Staelin, 1993). Additionally, the extent of the market share held could also be a proxy for expertise and knowledge that could help in being successful in initiating and managing innovation partnerships (Salavou et al., 2004). Market share was measured in comparison to the firm's competitors. We also controlled for the level of competition in the product market. Given that a higher level of competition could put pressure on the focal firm to be at the forefront of innovation (Khilji

**Table 1**
Measurement model.

| Indicator<br>(Coefficient alpha, Coefficient omega, Composite Reliability, Average Variance Extracted) | Std. Coefficient |
|---|---|
| ***Trust (α = 0.94; Ω = 0.94; CR = 0.94; AVE = 0.75)*** | |
| We have never had the feeling of being misled by the supplier. | 0.83 |
| We can always depend on the supplier to treat us fairly. | 0.91 |
| We can count on the supplier to be honest in its dealings with us. | 0.94 |
| We can rely on the supplier to keep the promises it makes to us. | 0.83 |
| The supplier is a company that we have great confidence in. | 0.83 |
| ***Interdependence (α = 0.79; Ω = 0.79; CR = 0.80; AVE = 0.56)*** | |
| Our relation with this supplier is based on interdependence. | 0.62 |
| We both have made a great deal of investments in this relationship. | 0.88 |
| We both have created capabilities that are unique to this alliance. | 0.73 |
| ***Innovation partnership (α = 0.89; Ω = 0.89; CR = 0.88; AVE = 0.64)*** | |
| We involve this supplier in our new product development process. | 0.83 |
| We achieve our innovation target through joint innovation projects with this supplier. | 0.94 |
| We provide resources to increase the innovativeness of this supplier. | 0.70 |
| We adjust our contracts to increase the innovativeness of this supplier. | 0.71 |
| We rely on the innovativeness of this supplier.* | |

Model Fit Indices: Normed $\chi 2 = 1.81$ ($\leq 3.0$); NNFI = 0.98 ($\geq 0.90$); CFI = 0.98 ($\geq 0.90$); RMSR = 0.05 ($\leq 0.10$); RMSEA = 0.06 ($\leq 0.10$).
Note: * items dropped.

et al., 2006). Accordingly, it might provide the impetus for firms to engage in innovation-related partnerships with their key suppliers. We measured competition using a Likert-scale question: "in your major product/product line, the intensity of competition is very high". Finally, we also controlled for the entrepreneurial orientation of the firm. Given that the presence of an entrepreneurial orientation signals the willingness of the firm to take risks as well as be proactive (Lumpkin and Dess, 1996), it could be a strong driver to engage in innovation partnerships; it was captured using the question "our organization has a high rate of new product introductions" measured using the anchors *significantly disagree* to *significantly agree*.

### 3.3. Non-response bias

We assessed non-response bias initially using the wave approach that was proposed by Rogelberg and Stanton (2007). According to this approach, you split the final sample into early (131 responses) and late groups (110 responses) based on the survey submission date (Pace, 1939). Group comparison tests were conducted using firm size as well as ten other randomly selected items across the two groups. These tests suggest that the groups were very similar ($p < 0.05$). As a more rigorous test of non-response bias, we also used the follow-up approach (Rogelberg and Stanton, 2007), which involved contacting 200 randomly selected non-responding firms and collecting minimal data regarding their firm size (no. of employees and annual sales volume). Comparison of firm size between the 200 non-responding and the 241 responding firms yielded no significant differences ($p < 0.05$), suggesting the absence of non-response bias.

### 3.4. Common method variance

We anchored non-performance and performance measures differently with the ambition of minimizing the potential for common method variance (CMV); we also included these measures in separate sections (Podsakoff et al., 2003). The design considerations, along with the survey length, made sure that the respondents did not directly link items spanning performance and non-performance (Paulraj et al., 2014). To assess CMV, we first used a single-method-factor confirmatory factor approach (Olson et al., 2005). We compared this single-factor model to our measurement model, which involved three traits. The model fit indices for the single-method-factor confirmatory model (Comparative Fit Index [CFI] = 0.74; Non-Normed Fit Index [NNFI] = 0.67; Root Mean Square Error of Approximation [RMSEA] = 0.26) were considerably worse when compared to our measurement model (CFI = 0.98; NNFI = 0.98; RMSEA = 0.06). Overall, CMV is not a concern in our study.

### 3.5. Assessment of psychometric properties

We tested for *validity* and *unidimensionality* using confirmatory factor analysis. The results from these analyses are provided in Table 1. The model fit indices, standardized coefficients, and t-values suggest that the indicators exhibit construct validity. Specifically, while all t-values were significant at the 99 % confidence level, all standardized coefficients were above 0.50, thereby establishing convergent validity (Chen and Paulraj, 2004). Additionally, the model fit indices clearly suggest that our measurement items are unidimensional in nature (Paulraj et al., 2008). During these analyses, one indicator representing *innovation partnership* was deleted. We also conducted additional tests to assess *discriminant validity*. We used the Fornell and Larcker (1981) criterion. The correlation coefficients given in Table 2 were compared to the average variance extracted (AVE) values given in Table 1. None of the AVE values of the constructs was lower than the squared correlations. In addition, we also assessed discriminant validity using the heterotrait-monotrait (HTMT) analysis, which compares the correlations within as well as between constructs (Henseler et al., 2015). The HTMT values (0.152 for trust and interdependence, 0.182 for trust and innovation partnership, and 0.547 for interdependence and innovation partnership) were below the cut-off value of 0.85. These results suggest that our indicators exhibit discriminant validity.

We assessed reliability using multiple methods. We use both coefficient alpha and coefficient omega (Deng and Chan, 2017); as indicated in Table 1, these values were above 0.70. The lower limits of the confidence intervals for these coefficients (Raykov and Shrout, 2002) for all the constructs were above 0.70 (the lowest lower limit was for interdependence: $\alpha = 0.73$; $\Omega = 0.73$). We calculated the robust estimates for these coefficients, as these estimates are sensitive to outliers and missing data (Zhang and Yuan, 2016); the robust estimates of coefficient alpha and coefficient omega were also above 0.70. We also used the composite reliability (CR) values to assess *reliability*. As evident from Table 1, the CR values for all the constructs were greater than 0.70. Additionally, all AVE values were also above 0.50. Overall, our measurement items were found to be reliable using all these different measures/approaches.

### 3.6. Hypothesis testing

The summated average of the underlying measurement items was used to represent the latent theoretical constructs of trust, interdependence, and innovation partnerships. In our study, we hypothesized the combined effects of trust and interdependence on innovation partnerships. But the reverse relationships are also plausible given the fact that partnerships could also enhance the levels of trust as well as interdependence between the exchange partners (Mohr and Spekman, 1994). This alludes to the presence of endogeneity in our hypothesized model (Antonakis et al., 2010). To correct for this potential endogeneity, we included valid instruments and estimated two-stage hierarchical ordinary least squares (OLS) regression models (Hamilton and Nickerson, 2003). We included three instruments to correct for endogeneity; in addition to their theoretical appropriateness, these instruments were also found to be statistically sound. Specifically, we used (1) "self--interest seeking behavior" of the supplier as an instrument for trust, (2) "replaceability" of the supplier as the first instrument for interdependence, and (3) "loyalty" towards the supplier as an instrument for both trust and interdependence. More details pertaining to the instruments are provided in Appendix B. The instrumental variables were found to be

**Table 2**
Descriptive statistics and correlation.

| Factors | Mean | S.D. | TR | ID | IP | C1 | C2 | C3 | C4 | C5 | C6 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trust (TR) | 3.90 | 0.79 | 1 | | | | | | | | |
| Interdependence (ID) | 3.60 | 0.83 | 0.182 | 1 | | | | | | | |
| Innovation Partnership (IP) | 3.43 | 0.90 | 0.136 | 0.543 | 1 | | | | | | |
| Self-interest behavior of supplier (C1) | 1.95 | 0.91 | −0.604 | −0.114 | 0.003 | 1 | | | | | |
| Replacement of supplier (C2) | 3.69 | 1.13 | 0.125 | 0.607 | 0.244 | −0.067 | 1 | | | | |
| Loyalty towards supplier (C3) | 2.88 | 1.08 | 0.223 | 0.348 | 0.096 | −0.107 | 0.326 | 1 | | | |
| Rate of new product introduction (C4) | 3.63 | 1.07 | 0.155 | 0.096 | 0.347 | −0.001 | −0.019 | 0.013 | 1 | | |
| Annual sales volume (C5) | 12222.42 | 40704.15 | 0.063 | −0.004 | 0.136 | 0.045 | −0.008 | 0.043 | 0.052 | 1 | |
| Market share (C6) | 3.25 | 1.12 | 0.054 | 0.148 | 0.116 | 0.023 | 0.118 | 0.092 | 0.104 | −0.078 | 1 |
| Intensity of competition (C7) | 4.14 | 0.96 | −0.020 | −0.001 | 0.066 | −0.155 | −0.129 | −0.078 | 0.107 | −0.083 | −0.094 |

strongly correlated to trust and/or interdependence in comparison to innovation partnerships. The descriptive statistics and the correlation matrix for the theoretical constructs, instrumental variables, and controls are provided in Table 2.

In the first stage, we regressed (1) trust on self-interest-seeking behavior and loyalty and (2) interdependence on the difficulty in replacing the supplier and loyalty; in both these models, we included all the control variables. We found both self-interest-seeking behavior (*beta [b]* = −0.62; *t-value [t]* = −10.19; *p-value [p]* < 0.001) and loyalty ($b = 0.14$; $t = 2.36$; $p < 0.05$) to be significantly related to trust; in the case of interdependence, replaceability of the supplier ($b = 0.56$; $t = 8.89$; $p < 0.001$) as well as loyalty ($b = 0.16$; $t = 2.59$; $p < 0.05$) were found to be significant as well. Subsequently, we calculated the predicted scores of trust and interdependence using the regression equation derived in the first step; these predicted scores were used to represent trust and interdependence in the models (Models 1 through 4 in Table 3) that were evaluated in the second stage. A polynomial regression analysis, along with interaction and curvilinear effects, was used to test our hypotheses. As opposed to the traditionally used approaches such as difference scores and profile similarity indices that suffer from methodological limitations that lead to inaccurate results (Edwards and Parry, 1993), the polynomial regression analysis helps us to overcome these limitations by incorporating linear, curvilinear, and interaction terms in the same model (Liu and Wei, 2021). Additionally, in doing so, the polynomial regression analysis allows us to assess the variation in the outcome variable at all levels of congruence/incongruence in the independent variables.

We created the curvilinear and interaction terms after scale centering the predicted scores of trust and interdependence (i.e., subtracting the mid-point 3 of the 5-Point Likert scale from the predicted scores); scale

**Table 3**
Results of polynomial regression.

| Variables | Model 1 | | Model 2A | | Model 2B | | Model 3A | | Model 3B | | Model 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Constant | 2.085 | | 1.910 | | 3.427 | * | 2.400 | | 0.900 | | 3.171 | + |
| | (1.46) | | (1.32) | | (2.39) | | (1.58) | | (0.50) | | (1.82) | |
| Rate of new product introduction | 0.241 | *** | 0.243 | *** | 0.253 | *** | 0.188 | ** | 0.174 | * | 0.162 | * |
| | (3.74) | | (3.76) | | (4.02) | | (2.74) | | (2.49) | | (2.46) | |
| Annual sales volume | 0.014 | | 0.012 | | 0.006 | | 0.018 | | 0.026 | | 0.018 | |
| | (0.51) | | (0.45) | | (0.24) | | (0.64) | | (0.89) | | (0.66) | |
| Market share | 0.020 | | 0.022 | | 0.010 | | 0.019 | | 0.002 | | 0.014 | |
| | (0.34) | | (0.37) | | (0.18) | | (0.30) | | (0.03) | | (-0.23) | |
| Intensity of competition | 0.031 | | 0.033 | | −0.006 | | 0.041 | | 0.060 | | 0.012 | |
| | (0.42) | | (0.45) | | (0.08) | | (0.54) | | (0.77) | | (0.16) | |
| Trust (TR) | −0.416 | | −0.412 | | −0.667 | + | −0.360 | | −0.032 | | −0.505 | |
| | (-1.26) | | (-1.23) | | (-1.97) | | (-1.02) | | (-0.08) | | (-1.25) | |
| Interdependence (ID) | 0.460 | + | 0.431 | + | 0.641 | * | 0.347 | | 0.680 | * | 0.877 | ** |
| | (1.85) | | (1.72) | | (2.56) | | (1.30) | | (2.03) | | (2.76) | |
| TR2 | 0.129 | | 0.166 | | 0.196 | | 0.077 | | 0.006 | | 0.182 | |
| | (0.55) | | (0.70) | | (0.81) | | (0.31) | | (0.02) | | (0.72) | |
| TR * ID | 0.264 | | 0.226 | | 0.272 | | 0.310 | | 0.099 | | 0.197 | |
| | (0.96) | | (0.81) | | (0.81) | | (1.04) | | (0.31) | | (0.53) | |
| ID2 | −0.291 | | −0.282 | | −0.443 | * | −0.297 | | −0.364 | | −0.591 | * |
| | (-1.44) | | (-1.39) | | (-2.02) | | (-1.34) | | (-1.59) | | (-2.39) | |
| Power (P) | | | 0.078 | | −0.276 | + | | | | | −0.468 | ** |
| | | | (1.19) | | (-1.73) | | | | | | (-2.67) | |
| P * TR | | | | | 0.691 | * | | | | | 0.916 | * |
| | | | | | (1.98) | | | | | | (2.30) | |
| P * ID | | | | | −0.418 | * | | | | | −0.490 | * |
| | | | | | (-2.26) | | | | | | (-2.60) | |
| P * TR2 | | | | | −0.504 | * | | | | | −0.595 | * |
| | | | | | (-1.99) | | | | | | (-2.00) | |
| P * TR * ID | | | | | −0.509 | * | | | | | −0.597 | * |
| | | | | | (2.21) | | | | | | (2.37) | |
| P * ID2 | | | | | 0.224 | | | | | | 0.332 | + |
| | | | | | (1.32) | | | | | | (1.74) | |
| Relationship Length (L) | | | | | | | 0.003 | | −0.048 | + | −0.016 | |
| | | | | | | | (0.83) | | (-1.67) | | (-0.56) | |
| L * TR | | | | | | | | | 0.049 | | −0.012 | |
| | | | | | | | | | (1.16) | | (-0.27) | |
| L * ID | | | | | | | | | 0.040 | | 0.054 | * |
| | | | | | | | | | (1.45) | | (2.02) | |
| L * TR2 | | | | | | | | | 0.013 | | 0.039 | |
| | | | | | | | | | (0.54) | | (1.64) | |
| L * TR * ID | | | | | | | | | −0.061 | + | −0.051 | |
| | | | | | | | | | (-1.81) | | (-1.51) | |
| L * ID2 | | | | | | | | | 0.011 | | −0.017 | |
| | | | | | | | | | (0.47) | | (-0.71) | |
| F | 4.300 | ** | 3.980 | ** | 4.150 | ** | 2.320 | * | 1.850 | * | 2.990 | * |
| R2 | 0.189 | | 0.196 | | 0.283 | | 0.139 | | 0.167 | | 0.321 | |
| ΔR2 | | | 0.007 | | 0.087 | ** | 0.004 | | 0.028 | | 0.154 | *** |
| N | 175 | | 174 | | 174 | | 155 | | 155 | | 155 | |

Note: ***p ≤ 0.001, **p ≤ 0.01, *p ≤ 0.05, + p ≤ 0.10.
Calculation of ΔR2: All models were compared to Model 1 with similar number of observations.
t-values are provided in paranthesis

centering is considered appropriate when conducting polynomial regression involving curvilinear and interaction terms (Edwards, 1994; Shanock et al., 2010). The testing of our hypotheses was based on the response surfaces generated by the polynomial regression analysis (Edwards and Parry, 1993; Myers et al., 2009). The response surface approach provides a powerful approach to graphically as well as statistically visualize the coefficients in a polynomial regression equation. More importantly, since the interpretation of the results of the polynomial regression is often considered to be difficult to interpret, the use of response surface methodology allows researchers to precisely describe as well as evaluate the three-dimensional response surface that corresponds to the polynomial regression equations (Edwards and Parry, 1993). The significance of the response surface's slopes and curvatures are assessed to provide support for our hypotheses. Refer to Appendix C for a brief description of how the slopes and curvatures along the response surfaces are determined. The moderation effects of bargaining power and relationship length were assessed using the moderated polynomial regression approach (Edwards, 2014). Refer to Appendix D for a brief description of the procedure used to test the moderation hypotheses.

### 3.7. Results

The regression results are presented in Table 3. The statistics for the response surface are presented in Table 4. Hypothesis 1 focused on the combined effects of trust and interdependence (Model 1 results in Tables 3 and 4). $H_{1a}$ predicted that interdependence will have a significantly better effect on innovation partnership as opposed to trust (i.e., a negative slope – asymmetry line). The slope was negative and significant ($-0.876$; $p < 0.05$). This result supports the notion that interdependence could play a much more dominant role than trust in impacting innovation partnership. $H_{1b}$ hypothesized that increasingly congruent levels of trust and interdependence will be positively related to innovation partnership. However, as evident from Table 4 (Model 1), the symmetry line's slope was found to be insignificant (0.045; *ns*). In effect, our results do not find support for hypothesis $H_{1b}$. Fig. 2 presents the response surface for hypotheses $H_{1a}$ and $H_{1b}$. The results of our hypotheses are summarized in Table 5. Refer to Appendix E for the additional analyses conducted to ensure the robustness of our results.

**Table 4**
Response surface.

| Model / Moderator(s) | Symmetry line | | Asymmetry line | |
|---|---|---|---|---|
| | Slope | Curvature | Slope | Curvature |
| **Model 1** | 0.045 | 0.102 | -0.876* | -0.426 |
| | F(1, 165) = 0.01 | F(1, 165) = 0.14 | F(1, 165) = 4.48 | F(1, 165) = 0.66 |
| **Model 2: Bargaining Power** | | | | |
| Low Bargaining Power (μ – σ) | -0.309 | -0.213 | -2.458*** | 0.298 |
| | F(1, 158) = 0.39 | F(1, 158) = 0.36 | F(1, 158) = 12.86 | F(1, 158) = 0.17 |
| High Bargaining Power (μ + σ) | 0.257 | 0.263 | -0.159 | -1.336 |
| | F(1, 158) = 0.19 | F(1, 158) = 0.51 | F(1, 158) = 0.08 | F(1, 158) = 2.30 |
| **Model 3: Relationship Length** | | | | |
| Shorter Relationship Length (μ – σ) | -0.810 | 0.353 | -0.861 | -1.850 |
| | F(1, 139) = 1.47 | F(1, 139) = 0.83 | F(1, 139) = 1.11 | F(1, 139) = 2.51 |
| Longer Relationship Length (μ + σ) | 2.107+ | -0.871 | -0.564 | 0.935 |
| | F(1, 139) = 2.77 | F(1, 139) = 1.90 | F(1, 139) = 0.29 | F(1, 139) = 0.67 |
| **Model 4: Bargaining Power and Relationship Length** | | | | |
| Bargaining Power – Low Relationship Length – Shorter | -0.762 | -0.098 | -1.754+ | -0.919 |
| | F(1, 133) = 1.41 | F(1, 133) = 0.06 | F(1, 133) = 3.89 | F(1, 133) = 0.52 |
| Bargaining Power – Low Relationship Length – Longer | 0.623 | -1.018 | -3.927** | 1.491 |
| | F(1, 133) = 0.20 | F(1, 133) = 1.94 | F(1, 133) = 8.06 | F(1, 133) = 1.47 |
| Bargaining Power – High Relationship Length – Shorter | 0.120 | 0.595 | 1.163 | -2.703* |
| | F(1, 133) = 0.02 | F(1, 133) = 1.24 | F(1, 133) = 1.32 | F(1, 133) = 4.92 |
| Bargaining Power – High Relationship Length – Longer | 1.505 | -0.325 | -1.010 | -0.292 |
| | F(1, 133) = 1.54 | F(1, 133) = 0.28 | F(1, 133) = 0.78 | F(1, 133) = 0.03 |

Hypotheses 2 and 3 focused on the moderation effect of bargaining power and relationship length, respectively. In the case of bargaining power (refer to Model 2B in Table 3), the $\Delta R^2$ (0.087; $p < 0.01$) was significant; alternatively, as evident in the results for Model 3B in Table 3, the $\Delta R^2$ (0.028; *ns*) for relationship length was found to insignificant. While looking at $\Delta R^2$ is one way of assessing the significance of the moderating effect, a more rigorous way to assess the significance of the moderation effect is to use the significance of the slope and curvature for the response surface (given in equations (7) and (8) included in Appendix D) at low and high values of bargaining power and relationship length (refer to Models 2 and 3 in Table 4) (Edwards and Cable, 2009; Liu et al., 2021). Specifically, since our moderation hypotheses conjecture that the negative slope along the asymmetry line will become insignificant, assessing the slope and curvature for the response surface at low and high values of the moderators would be the best way to assess their significance (Liu and Wei, 2021; Liu et al., 2021).

When bargaining power is low, we find the slope along the asymmetry line to be significant ($-2.458$; $p < 0.001$). However, when bargaining power is high, the slope along the asymmetry line was insignificant ($-0.159$; *ns*). The response surfaces for the low and high values of bargaining power are presented in Fig. 3. As evident from Fig. 3 as well as the insignificant slope along the asymmetry line when bargaining power was high, we can conclude that $H_2$ was supported. In the case of relationship length, the slope along the symmetry line is found to be positive and marginally significant (2.107; $p < 0.10$). However, as hypothesized, the slope along the asymmetry line was found to be insignificant when the relationship length was high ($-0.564$; *ns*). The response surfaces for the low and high values of relationship length are presented in Fig. 4. Though the negative slope along the asymmetry line was insignificant in cases of both short- and long-term relationships, the results were in line with what we had hypothesized; i.e., the slope along the asymmetry line was insignificant at high levels of relationship length. Therefore, even though the $\Delta R^2$ value was insignificant, we conclude that we find support for hypothesis $H_3$. To shed additional light on the moderation effects of bargaining power and

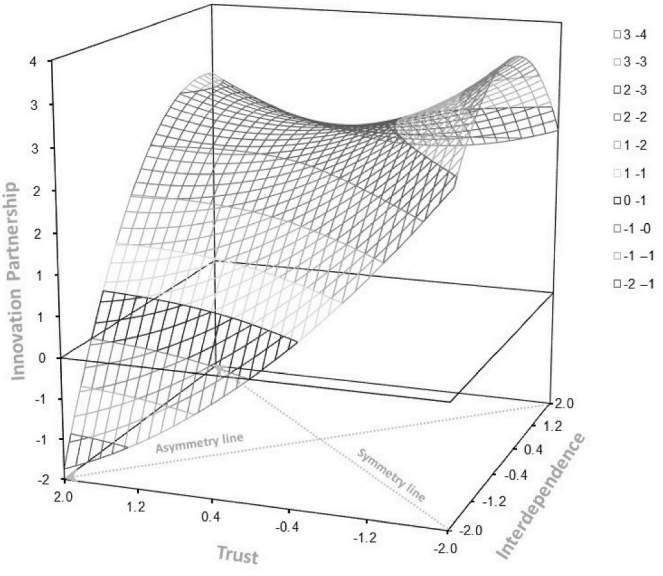


**Fig. 2.** Joint effects of trust and interdependence on innovation partnership.

**Table 5**
Results of hypothesis testing.

| Hypothesis | Description | Model Reference | Result |
|---|---|---|---|
| H1a | Higher level of interdependence and trust is better; negative slope along the asymmetry line | Table 3 - Model 1<br>Table 4 - Model 1 | Supported |
| H1b | Trust and interdependence will complement each other; positive slope along the symmetry line | Table 3 - Model 1<br>Table 4 - Model 1 | Not Supported |
| H2 | Bargaining power will moderate the combined effect of trust and interdependence | Table 3 - Model 2B<br>Table 4 - Model 2 | Supported |
| H3 | Relationship length will moderate the combined effect of trust and interdependence | Table 3 - Model 3B<br>Table 4 - Model 3 | Supported |

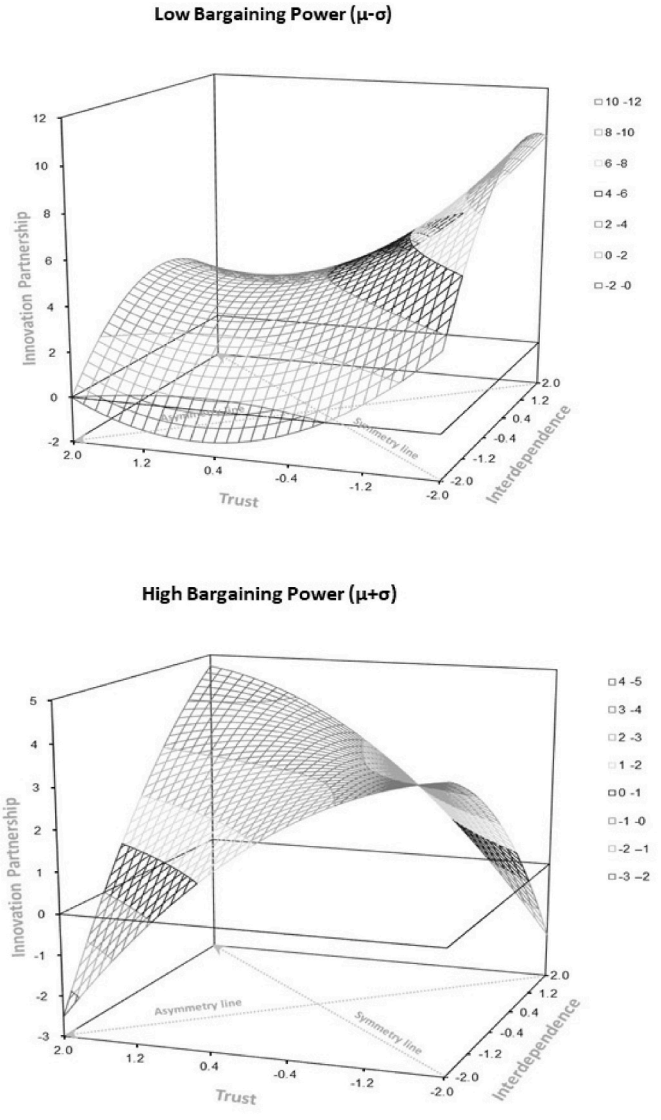


**Fig. 3.** Joint effects of trust and interdependence on innovation partnership. (Moderation effect of bargaining power).

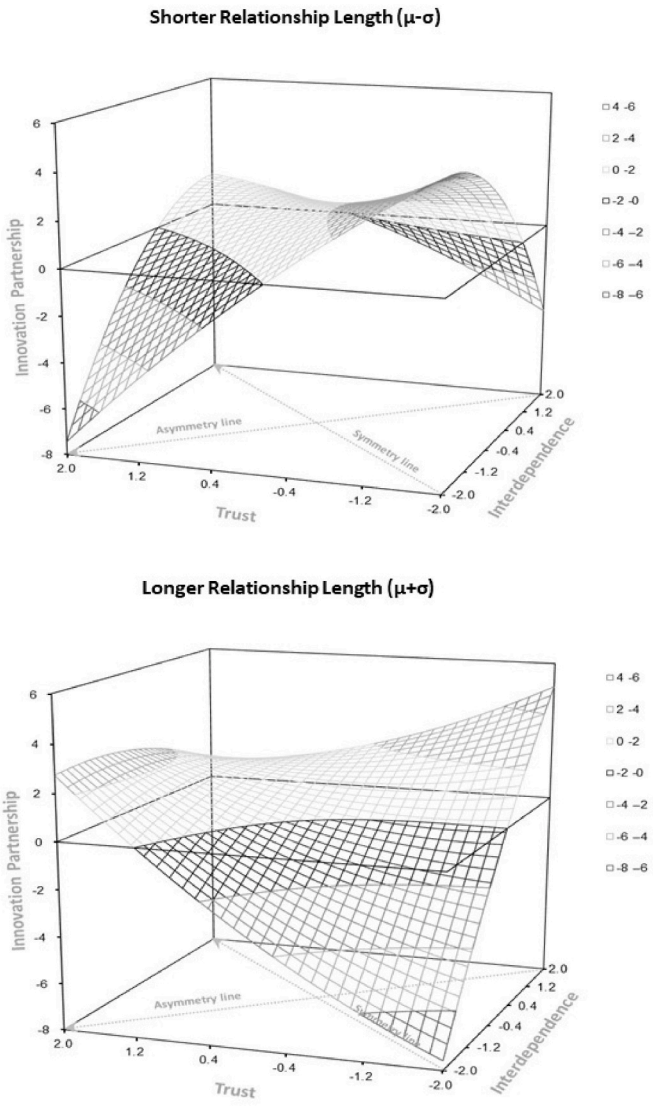


**Fig. 4.** Joint effects of trust and interdependence on innovation partnership. (Moderation effect of relationship length).

relationship length, we conducted further post-hoc analysis involving both moderators in a single model; refer to Appendix F for more details.

## 4. Discussion and concluding remarks

Given the double-edged effect of innovation partnerships, in this study we conjectured that the effect of these fundamental mechanisms could be different in that the unique nature of such partnerships could trigger the other sides of trust (dark side) and interdependence (bright side). Our main hypotheses ($H_{1a}$ and $H_{1b}$) forward that apart from a complementary effect, higher levels of interdependence could drive innovation partnerships. While the complimentary effect was not supported, we find support for the significant positive effect of interdependence. Specifically, we find that interdependence, as opposed to trust, plays a much more important role when it comes to innovation partnerships. We also formally tested and found support for the contingent role of both bargaining power and relationship length. However, we find the two collaborative mechanisms to complement each other only at certain levels of the contingency variables. Only at certain levels of bargaining power and relationship length do we find (1) interdependence to have a significant positive effect on innovation partnership and (2) the dark side of trust to be prevalent.

### 4.1. Theoretical implications

The elaboration of RDT by Casciaro and Piskorski (2005) hints that a high level of mutual dependence will increase a firm's ability to deal with sources of external constraints through inter-organizational mechanisms such as, e.g., long term contracts, or interfirm collaboration. Our study adheres to this view, and in doing so, enriches the available knowledge on the effects of mutual dependence on interfirm collaboration by showing that high interdependence not only promotes commitment (Geyskens et al., 1996), relational orientation (Izquierdo and Cillan, 2004) and increased communication in conflict resolution (Guo et al., 2023) but also innovation partnership. While the tenets of the RET consider trust as a key social mechanism in managing buyer-supplier relationships (Macneil, 1980; Morgan and Hunt, 1994), we align with the scholars that allude to the dark side of trust (Molina-Morales et al., 2011; Stevens et al., 2015; Villena et al., 2011) and conjecture that this dark side could play a more dominant role in the case of innovation partnerships (Dahlander and Gann, 2010; Martinez-Noya et al., 2013).

Our findings on the superiority of interdependence, as opposed to trust, in driving innovation partnerships seem to overshadow studies that allude to the potential negative effects of high interdependence (Laaksonen et al., 2008; Wicks et al., 1999) and, instead, support the belief that under conditions of high symmetric mutual dependence, interfirm collaboration can thrive even when trust is low (Yilmaz et al., 2005). While past research highlights that deep interdependence could actually increase opportunism and uncertainty (Gulati and Singh, 1998; Laaksonen et al., 2008), our results emulate the ideology that given its ability to promote mutual idiosyncratic investments and high switching costs, interdependence could alternatively help the partners to maintain mutually beneficial innovation partnerships (Kumar et al., 1995). As we conjectured, the double-edged effect of innovation partnerships seems to favor the other (positive) side of interdependence. Though interdependence could manifest due to nonmobility or non-substitutability of physical or monetary assets that are specific to the relationship (Dyer and Singh, 1998), by this very account, it also has the unique ability to create a sense of embeddedness in relationships (Gulati and Sytch, 2007).

Our findings also seem to be in line with extant research that cautions about the potential dark side of trust (Molina-Morales et al., 2011; Stevens et al., 2015; Villena et al., 2011). Even though trust binds, beyond a certain point, it might blind partners (Williamson, 1993). Juxtaposing RET and RDT, we conjectured that when high levels of trust are matched with the same levels of interdependence, the dark side of trust could be minimized, and together, these two could lead to innovation partnerships. However, even though the slope along the symmetry line is positive, it was found to be insignificant. The positive curvature further suggests that the level of innovation partnerships reduces beyond a certain point; the curvature was also insignificant. Overall, these results contrast the notion that whenever trust is matched with interdependence, trust could be considered optimal no matter how high it is (Wicks et al., 1999). Instead, our results suggest that the dark side of trust will still be a force to contend with due to the double-edged nature of innovation partnerships.

Interestingly, the joint effects of trust and interdependence seem quite intriguing after incorporating the moderating effect of bargaining power and relationship length. Looking at the contingencies individually, our results suggest that bargaining power has a significant moderating effect. Though not hypothesized, when there is a higher imbalance in bargaining power, the congruence between trust and interdependence seems to be more conducive for innovation partnerships than any other combination of trust and interdependence (refer to Fig. 3). As we had hypothesized, whenever bargaining power is high, the positive effects of interdependence on innovation partnerships diminish significantly (Crook and Combs, 2007). Relationship length was also found to have a significant moderating effect. Though not hypothesized, the congruence between trust and interdependence seems to be more conducive to innovation partnerships than any other combination of trust and interdependence in the case of relationships with shorter lengths (refer to Fig. 4).

Alternatively, the response surfaces at longer ($\mu+\sigma$) relationship lengths seem to suggest that when the relationship length is longer (refer to Fig. 4), high trust combined with low interdependence no longer brings about the dark side of trust. Therefore, whenever the relationship length is longer, high levels of trust need not be poisoned chalice and could instead help strengthen the innovation ties with its partner (Katsikeas et al., 2009; Morgan and Hunt, 1994; Ring & Van De Ven, 1992). Essentially, in the case of mature relationships, the configuration of high trust/low interdependence is equally effective as the configuration of high interdependence/low trust. Overall, this finding align with what was envisioned by Tangpong et al. (2015), who describe "free will/voluntary collaborative collaboration" as a relationship formed on a voluntary basis rather than a strategic necessity. However, our study reveals that longer relationship length is of the essence for this configuration to be beneficial. As an added observation, though not significant, we also notice that the extent of innovation partnerships increases as the congruence level of trust and interdependence increases when the relationship length is longer (refer to Fig. 4). This observation suggests that the pattern proposed by Wicks et al. (1999) holds true for innovation partnerships whenever the relationship length is longer. In the longer run, firms seem to overcome the dark side of trust and rather make it a formidable force within which innovation partnerships could thrive (McEvily et al., 2003; Poppo et al., 2008).

While we did not hypothesize the combined effects of bargaining power and relationship length, we would like to document a couple of qualitative observations that showcase the intriguing effects of congruence and incongruence in trust and interdependence (refer to Appendix F). First, interdependence surprisingly does not seem to be the ideal mechanism to drive innovation partnerships whenever the relationship length is shorter and bargaining power is high. Instead, a congruence between trust and interdependence seems to be better at driving innovation partnerships. However, even though bargaining power is high, the positive effect of interdependence again becomes prevalent in the case of mature long-term relationships. Second, while relationships with longer lengths do minimize the dark side of trust (Fig. 4: the insignificant slope along the asymmetry line), whenever such relationships also have low bargaining power, we notice that the slope along the asymmetry line becomes significant (refer to Appendix F). Interestingly, this observation suggests that high interdependence/low trust is a better configuration than high trust/low interdependence whenever bargaining power is low in mature relationships.

### 4.2. Managerial implications

Managers must be cognizant of the complexities involved in developing innovation partnerships with their key suppliers. While building trust and ensuring partner interdependency could be beneficial in their own accord, managers must understand that interdependence could be more effective than trust when it comes to innovation partnerships; this understanding becomes especially salient given the double-edged nature of innovation partnerships. On a related note, managers should be aware of the manifestation of the potential dark side of trust within the context of innovation partnerships. Though increasing levels of trust could bind partners, it could also blind them. Therefore, managers must ensure that they combine trust with appropriate levels of interdependence to overcome the dark side of trust.

Our results also imply that managers should sufficiently comprehend the contingent roles that bargaining power and relationship length could play. Though interdependence could be a better mechanism in the general sense, it need not be effective in newer relationships that are riddled with bargaining power. Specifically, the weaker party's willingness to engage in innovation-oriented activities is hindered by the

credible threat that the resulting payoffs may not be equally shared, and interdependence may not provide sufficient incentive to overcome this reluctance. Finally, the results on the moderating effect of relationship length seem to suggest an interesting cue on how to possibly organize an innovation partnership strategy that develops in time. Since trust may not be expected to immediately appear in a relationship, the managers of two firms may start by adopting only moderate yet congruent levels of trust and interdependence. Over time, their ability has to be in keeping the matching of the two factors, while a virtuous interplay among them is likely to accompany their harmonious growth, overcoming the dark side of trust and promoting superior levels of innovation partnership.

### 4.3. Research limitations

Our study has some limitations that could pave the way for future research. First, since we collected data from a single respondent, future research could collect data from multiple respondents to validate our results. Additionally, though our research design and respondent selection minimize the possibility of exception fallacy (Hair, 2011; Roh et al., 2013), we recommend future research to extend our study by collecting dyadic data. Second, given that our sample was based on US manufacturing firms, it does not capture the potential effects that culture could have on the different hypothesized relationships. Therefore, scholars could replicate our studies in countries with different cultures so as to tease out the potential effects of culture. Third, in this study, we have only taken two major mechanisms of collaboration: trust and interdependence. The inclusion of other factors, such as commitment and opportunism, could potentially give us more insights into their congruence/incongruence. Fourth, we call for future research to examine the phenomenon in fast changing technological industry, thereby confirming if interdependence plays a dominant role in driving innovation partnership as opposed to trust. Finally, while we consider innovation partnerships as the outcome, our operationalization does not consider the actual number of innovations that are the result of such partnerships. Therefore, we recommend future research to study the effect of congruence and incongruence in trust and interdependence on the performance outcomes of innovation partnerships.

## CRediT authorship contribution statement

**Antony Paulraj:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Paolo Barbieri:** Writing – review & editing, Writing – original draft. **Constantin Blome:** Writing – review & editing, Writing – original draft. **Christopher Rajkumar:** Writing – review & editing, Writing – original draft. **Sabari R. Prasanna:** Writing – review & editing, Writing – original draft.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pursup.2025.101054.

## Data availability

The data that has been used is confidential.

## References


Ambulkar, S., Blackhurst, J., Grawe, S., 2015. Firm's resilience to supply chain disruptions: scale development and empirical examination. J. Oper. Manag. 33, 111–122.

Antonakis, J., Bendahan, S., Jacquart, P., Lalive, R., 2010. On making causal claims: a review and recommendations. Leadersh. Q. 21 (6), 1086–1120.

Barney, J.B., 2014. How marketing scholars might help address issues in resource-based theory. J. Acad. Market. Sci. 42 (1), 24–26.

Belderbos, R., Carree, M., Lokshin, B., 2004. Cooperative R&D and firm performance. Res. Pol. 33 (10), 1477–1492.

Benson, J.K., 1975. The interorganizational network as a political economy. Adm. Sci. Q. 229–249.

Bergkvist, L., Rossiter, J.R., 2007. The predictive validity of multiple-item versus single-item measures of the same constructs. J. Mark. Res. 44 (2), 175–184.

Blau, P.M., 1964. Exchange and Power in Social Life. Wiley.

Blome, C., Paulraj, A., Preuss, L., Roehrich, J.K., 2023. Trust and opportunism as paradoxical tension: implications for achieving sustainability in buyer-supplier relationships. Ind. Mark. Manag. 108, 94–107. https://doi.org/10.1016/j.indmarman.2022.11.006.

Boulding, W., Staelin, R., 1993. A look on the cost side: market share and the competitive environment. Mark. Sci. 12 (2), 144–166.

Capaldo, A., Giannoccaro, I., 2015. Interdependence and network-level trust in supply chain networks: a computational study. Ind. Mark. Manag. 44, 180–195.

Casciaro, T., Piskorski, M.J., 2005. Power imbalance, mutual dependence, and constraint absorption: a closer look at resource dependence theory. Adm. Sci. Q. 50 (2), 167–199.

Chen, I.J., Paulraj, A., 2004. Towards a theory of supply chain management: the constructs and measurements. J. Oper. Manag. 22 (2), 119–150.

Cheng, L., Craighead, C.W., Crook, T.R., Eckerd, S., 2020. Leaving it on the table? An examination of unrealized bargaining power in multimarket buyer–supplier exchanges. J. Oper. Manag. 67 (3), 382–406.

Chicksand, D., 2015. Partnerships: the role that power plays in shaping collaborative buyer–supplier exchanges. Ind. Mark. Manag. 48, 121–139.

Cho, W., Ke, J.-y. F., Han, C., 2019. An empirical examination of the use of bargaining power and its impacts on supply chain financial performance. J. Purch. Supply Manag. 25 (4), 100550.

Crook, T.R., Combs, J.G., 2007. Sources and consequences of bargaining power in supply chains. J. Oper. Manag. 25 (2), 546–555.

Dahlander, L., Gann, D.M., 2010. How open is innovation? Res. Pol. 39 (6), 699–709.

Das, T.K., Teng, B.-S., 2000. A resource-based theory of strategic alliances. J. Manag. 26 (1), 31–61.

Deng, L., Chan, W., 2017. Testing the difference between reliability coefficients alpha and omega. Educ. Psychol. Meas. 77 (2), 185–203.

Dyer, J.H., Chu, W., 2003. The role of trustworthiness in reducing transaction costs and improving performance: empirical evidence from the United States, Japan, and Korea. Organ. Sci. 14 (1), 57–68.

Dyer, J.H., Singh, H., 1998. The relational view: cooperative strategy and sources of interorganizational competitive advantage. Academy of Management. The Academy of Management Review 23 (4), 660–679. https://doi.org/10.2307/259056.

Edwards, J., Cable, D., 2009. The value of value congruence. J. Appl. Psychol. 94 (3), 654.

Edwards, J.R., 1994. The study of congruence in organizational behavior research: Critique and a proposed alternative. Organ. Behav. Hum. Decis. Process. 58 (1), 51–100.

Edwards, J.R., 2014. Moderated polynomial regression. http://public.kenan-flagler.unc.edu/faculty/edwardsj/ModeratedPolynomialRegression.htm.

Edwards, J.R., Parry, M.E., 1993. On the use of polynomial regression equations as an alternative to difference scores in organizational research. Academy of Management journal 36 (6), 1577–1613.

Emerson, R.M., 1962. Power-dependence relations. Am. Sociol. Rev. 31–41.

Fornell, C., Larcker, D., 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. 18 (1), 39–50.

Geyskens, I., Steenkamp, J.-B.E., Scheer, L.K., Kumar, N., 1996. The effects of trust and interdependence on relationship commitment: a trans-Atlantic study. Int. J. Res. Market. 13 (4), 303–317.

Gulati, R., Singh, H., 1998. The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances. Adm. Sci. Q. 781–814.

Gulati, R., Sytch, M., 2007. Dependence asymmetry and joint dependence in interorganizational relationships: effects of embeddedness on a manufacturer's performance in procurement relationships. Adm. Sci. Q. 52 (1), 32–69.

Gundlach, G.T., Cadotte, E.R., 1994. Exchange interdependence and interfirm interaction: research in a simulated channel setting. J. Mark. Res. 31 (4), 516–532.

Guo, W., Lu, W., Hao, L., Gao, X., 2023. Interdependence and information exchange between conflicting parties: the role of interorganizational trust. IEEE Trans. Eng. Manag. 70 (1), 156–172.

Hair, J.F., 2011. Multivariate data analysis: an overview. In: Lovric, M. (Ed.), International Encyclopedia of Statistical Science. Springer Berlin Heidelberg, pp. 904–907. https://doi.org/10.1007/978-3-642-04898-2_395.

Hald, K.S., Cordón, C., Vollmann, T.E., 2009. Towards an understanding of attraction in buyer–supplier relationships. Ind. Mark. Manag. 38 (8), 960–970.

Hamilton, B.H., Nickerson, J.A., 2003. Correcting for endogeneity in strategic management research. Strateg. Organ. 1 (1), 51–78.

Heide, J.B., John, G., 1990. Alliances in industrial purchasing: the determinants of joint action in buyer-supplier relationships. J. Mark. Res. 27 (1), 24–36.

Heide, J.B., Miner, A.S., 1992. The shadow of the future: effects of anticipated interaction and frequency of contact on buyer-seller cooperation. Acad. Manag. J. 35 (2), 265–291.
Henseler, J., Ringle, C., Sarstedt, M., 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. J. Acad. Market. Sci. 43 (1), 115–135.
Hillman, A.J., Withers, M.C., Collins, B.J., 2009. Resource dependence theory: a review. J. Manag. 35 (6), 1404–1427.
Ireland, R.D., Webb, J.W., 2007. A multi-theoretic perspective on trust and power in strategic supply chains. J. Oper. Manag. 25 (2), 482–497.
Izquierdo, C.C., Cillan, J.G., 2004. The interaction of dependence and trust in long-term industrial relationships. Eur. J. Market. 38 (8), 974–994.
Jap, S.D., Anderson, E., 2003. Safeguarding interorganizational performance and continuity under ex post opportunism. Manag. Sci. 49 (12), 1684–1701.
Jap, S.D., Anderson, E., 2007. Testing a life-cycle theory of cooperative interorganizational relationships: Movement across stages and performance. Manag. Sci. 53 (2), 260–275.
Katila, R., Ahuja, G., 2002. Something old, something new: a longitudinal study of search behavior and new product introduction. Acad. Manag. J. 45 (6), 1183–1194. https://doi.org/10.2307/3069433.
Katsikeas, C.S., Skarmeas, D., Bello, D.C., 2009. Developing successful trust-based international exchange relationships. J. Int. Bus. Stud. 40 (1), 132–155.
Khilji, S.E., Mroczkowski, T., Bernstein, B., 2006. From Invention to innovation: toward developing an integrated innovation model for Biotech firms. J. Prod. Innovat. Manag. 23 (6), 528–540. https://doi.org/10.1111/j.1540-5885.2006.00222.x.
Kim, P.H., Pinkley, R.L., Fragale, A.R., 2005. Power dynamics in negotiation. Acad. Manag. Rev. 30 (4), 799–822.
Kogut, B., Zander, U., 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. Organ. Sci. 3 (3), 383–397.
Krause, D.R., Handfield, R.B., Tyler, B.B., 2007. The relationships between supplier development, commitment, social capital accumulation and performance improvement. J. Oper. Manag. 25 (2), 528–545.
Krishnan, R., Martin, X., Noorderhaven, N.G., 2006. When does trust matter to alliance performance? Acad. Manag. J. 49 (5), 894–917.
Kumar, N., Scheer, L.K., Steenkamp, J.-B.E., 1995. The effects of perceived interdependence on dealer attitudes. J. Mark. Res. 32 (3), 348–356.
Laaksonen, T., Pajunen, K., Kulmala, H.I., 2008. Co-evolution of trust and dependence in customer–supplier relationships. Ind. Mark. Manag. 37 (8), 910–920.
Lado, A.A., Dant, R.R., Tekleab, A.G., 2008. Trust-opportunism paradox, relationalism, and performance in interfirm relationships: evidence from the retail industry. Strateg. Manag. J. 29 (4), 401–423.
Liu, H., Wei, S., 2021. Leveraging interorganizational governance for bridging responses to supply chain disruptions: a polynomial regression analysis. Int. J. Oper. Prod. Manag.
Liu, Y., Jia, X., Jia, X., Koufteros, X., 2021. CSR orientation incongruence and supply chain relationship performance—a network perspective. J. Oper. Manag. 67 (2), 237–260.
Lumpkin, G.T., Dess, G.G., 1996. Clarifying the entrepreneurial orientation construct and linking it to performance. Acad. Manag. Rev. 21 (1), 135–172. https://doi.org/10.5465/AMR.1996.9602161568.
Luo, Y., 2008a. Procedural fairness and interfirm cooperation in strategic alliances. Strateg. Manag. J. 29 (1), 27–46.
Luo, Y., 2008b. Structuring interorganizational cooperation: the role of economic integration in strategic alliances. Strateg. Manag. J. 29 (6), 617–637.
Macneil, I.R., 1980. The New Social Contract. Yale University Press.
Mahapatra, S.K., Narasimhan, R., Barbieri, P., 2010. Strategic interdependence, governance effectiveness and supplier performance: a dyadic case study investigation and theory development. J. Oper. Manag. 28 (6), 537–552.
Martinez-Noya, A., Garcia-Canal, E., Guillen, M.F., 2013. R & D outsourcing and the effectiveness of intangible investments: is proprietary core knowledge walking out of the door? J. Manag. Stud. 50 (1), 67–91.
McCutcheon, D., Stuart, F.I., 2000. Issues in the choice of supplier alliance partners. J. Oper. Manag. 18 (3), 279–301.
McEvily, B., Perrone, V., Zaheer, A., 2003. Trust as an organizing principle. Organ. Sci. 14 (1), 91–103.
Miller, D., 1992. The Icarus paradox: how exceptional companies bring about their own downfall. Bus. Horiz. 35 (1), 24–35.
Mohr, J., Spekman, R., 1994. Characteristics of partnership success: partnership attributes, communication behavior, and conflict resolution techniques. Strateg. Manag. J. 15 (2), 135–152.
Molina-Morales, F.X., Martínez-Fernández, M.T., Torlò, V.J., 2011. The dark side of trust: the benefits, costs and optimal levels of trust for innovation performance. Long. Range Plan. 44 (2), 118–133.
Morgan, R., Hunt, S., 1994. The commitment-trust theory of relationship marketing. J. Market. 58 (3), 20–38.
Myers, R.H., Montgomery, D.C., Anderson-Cook, C.M., 2009. Response Surface Methodology: Process and Product Optimization Using Designed Experiments. Wiley.
Nooteboom, B., Berger, H., Noorderhaven, N.G., 1997. Effects of trust and governance on relational risk. Acad. Manag. J. 40 (2), 308–338.
Olson, E.M., Slater, S.F., Hult, G.T.M., 2005. The performance implications of fit among business strategy, marketing organization structure, and strategic behavior. J. Market. 69 (3), 49–65. https://doi.org/10.1509/jmkg.69.3.49.66362.
Pace, C.R., 1939. Factors influencing questionnaire returns from former university students. J. Appl. Psychol. 23 (3), 388–397.
Paulraj, A., Jayaraman, V., Blome, C., 2014. Complementarity effect of governance mechanisms on environmental collaboration: does it exist? Int. J. Prod. Res. 52 (23), 1–18.
Paulraj, A., Lado, A.A., Chen, I.J., 2008. Inter-organizational communication as a relational competency: antecedents and performance outcomes in collaborative buyer–supplier relationships. J. Oper. Manag. 26 (1), 45–64.
Pfeffer, J., 1972. Merger as a response to organizational interdependence. Adm. Sci. Q. 382–394.
Pfeffer, J., Salancik, G., 1978. The External Control of Organizations: A Resource-Dependence Perspective. Harper & Row.
Podsakoff, P.M., Mackenzie, S.B., Lee, J.-Y., Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. J. Appl. Psychol. 88 (5), 879–903.
Poppo, L., Zhou, K.Z., Ryu, S., 2008. Alternative origins to interorganizational trust: an interdependence perspective on the shadow of the past and the shadow of the future. Organ. Sci. 19 (1), 39–55.
Prajogo, D., Nair, A., Castka, P., 2020. The effects of external auditors and certification bodies on the operational and market-oriented outcomes of ISO 9001 implementation. IEEE Trans. Eng. Manag. 69 (4), 1447–1458.
Pu, X., Cai, Z., Chong, A.Y.L., Paulraj, A., 2023. Dependence structure, relational mechanisms and performance: teasing out the differences between upstream and downstream supply chain partners. Int. J. Oper. Prod. Manag. https://doi.org/10.1108/IJOPM-04-2022-0235.
Raykov, T., Shrout, P.E., 2002. Reliability of scales with general structure: point and interval estimation using a structural equation modeling approach. Struct. Equ. Model.: A Multidiscip. J. 9 (2), 195–212.
Ring, P.S., Van De Ven, A.H., 1992. Structuring cooperative relationships between organizations. Strateg. Manag. J. 13 (7), 483–498. https://doi.org/10.1002/smj.4250130702.
Ring, P.S., Van de Ven, A.H., 1994. Developmental processes of cooperative interorganizational relationships. Acad. Manag. Rev. 19 (1), 90–118.
Rogelberg, S.G., Stanton, J.M., 2007. Introduction - understanding and dealing with organizational survey nonresponse. Organ. Res. Methods 10 (2), 195–209.
Roh, J.A., Whipple, J.M., Boyer, K.K., 2013. The effect of single rater bias in multi-stakeholder research: a methodological evaluation of buyer-supplier relationships. Prod. Oper. Manag. 22 (3), 711–725.
Sako, M., 1991. The Role of Trust in Japanese buyer-supplier relationships. Ric. Econ. (23), 449–473.
Sako, M., 1992. Price, Quality and Trust: Inter-firm Relations in Britain and Japan. Cambridge University Press.
Sako, M., Helper, S., 1998. Determinants of trust in supplier relations: evidence from the automotive industry in Japan and the United States. J. Econ. Behav. Organ. 34 (3), 387–417.
Salavou, H., Baltas, G., Lioukas, S., 2004. Organisational innovation in SMEs: the importance of strategic orientation and competitive structure. Eur. J. Market.
Schubert, T., 2016. Infringement of intellectual property in innovation partnerships. R&D Management 46 (S2), 596–611.
Shanock, L.R., Baran, B.E., Gentry, W.A., Pattison, S.C., Heggestad, E.D., 2010. Polynomial regression with response surface analysis: a powerful approach for examining moderation and overcoming limitations of difference scores. J. Bus. Psychol. 25 (4), 543–554.
Simonin, B., 1999. Ambiguity and the process of knowledge transfer in strategic alliances. Strateg. Manag. J. 20 (7), 595–623.
Son, B.-G., Kim, H., Hur, D., Subramanian, N., 2021. The dark side of supply chain digitalisation: supplier-perceived digital capability asymmetry, buyer opportunism and governance. Int. J. Oper. Prod. Manag. 41 (7), 1220–1247.
Stevens, M., MacDuffie, J.P., Helper, S., 2015. Reorienting and recalibrating inter-organizational relationships: Strategies for achieving optimal trust. Organ. Stud. 36 (9), 1237–1264.
Tangpong, C., Michalisin, M.D., Traub, R.D., Melcher, A.J., 2015. A review of buyer-supplier relationship typologies: Progress, problems, and future directions. J. Bus. Ind. Market. 30 (2), 153–170.
Vijayasarathy, L.R., 2010. Supply integration: an investigation of its multi-dimensionality and relational antecedents. Int. J. Prod. Econ. 124 (2), 489–505.
Villena, V.H., Revilla, E., Choi, T.Y., 2011. The dark side of buyer–supplier relationships: a social capital perspective. J. Oper. Manag. 29 (6), 561–576.
Wagner, S.M., Bode, C., 2014. Supplier relationship-specific investments and the role of safeguards for supplier innovation sharing. J. Oper. Manag. 32 (3), 65–78.
Wicks, A.C., Berman, S.L., Jones, T.M., 1999. The structure of optimal trust: Moral and strategic implications. Acad. Manag. Rev. 24 (1), 99–116.
Williamson, O.E., 1985. The Economic Institutions of Capitalism. Free Press.
Williamson, O.E., 1993. Calculativeness, trust, and economic organization. J. Law Econ. 36 (1), 453–486.
Yam, R.C., Chan, C., 2015. Knowledge sharing, commitment and opportunism in new product development. Int. J. Oper. Prod. Manag.
Yan, T., Dooley, K., 2014. Buyer–supplier collaboration quality in new product development projects. J. Supply Chain Manag. 50 (2), 59–83.
Yilmaz, C., Sezen, B., Ozdemir, O., 2005. Joint and interactive effects of trust and (inter) dependence on relational behaviors in long-term channel dyads. Ind. Mark. Manag. 34 (3), 235–248.
Zaheer, A., McEvily, B., Perrone, V., 1998. Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. Organ. Sci. 9 (2), 141–159.
Zhang, Z., Yuan, K.-H., 2016. Robust coefficients alpha and omega and confidence intervals with outlying observations and missing data: Methods and software. Educ. Psychol. Meas. 76 (3), 387–411.