

The dark side of buyer–supplier relationships: A social capital perspective[☆]

Verónica H. Villena^{a,*}, Elena Revilla^a, Thomas Y. Choi^b

^a Department of Operation and Technology Management, IE Business School, María de Molina 12, 5^ª Planta, 28006 Madrid, Spain

^b Department of Supply Chain Management, Arizona State University, Tempe, AZ 874706, USA

ARTICLE INFO

Article history:

Received 31 March 2010

Received in revised form 31 August 2010

Accepted 10 September 2010

Available online 27 October 2010

Keywords:

Buyer–supplier relationships

Value creation

Performance

Social capital

ABSTRACT

The literature on supply chain management (SCM) has consistently promoted the “bright side” of collaborative buyer–supplier relationships (BSRs). Based on the social capital argument, SCM scholars have investigated how a buyer can gain access to and leverage resources through its collaborative BSRs. Our study extends this research stream by considering the “dark side” of social capital in BSRs. It evaluates how social capital in its cognitive, relational, and structural forms contributes to or impedes value creation within BSRs. Both primary survey measures and secondary objective measures have been used in data analysis. The results show the presence of both the bright side, confirming the existing literature, and the dark side, extending the literature. There is an inverted curvilinear relationship between social capital and performance: Either too little or too much social capital can hurt performance. This study confirms that building social capital in a collaborative BSR positively affects buyer performance, but that if taken to an extreme it can reduce the buyer’s ability to be objective and make effective decisions as well as increase the supplier’s opportunistic behavior. Our study also examines how a buyer can delay the emergence of the dark side. It opens up new research avenues in the collaborative BSR context and suggests directions for future research and practice.

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

The literature on supply chain management (SCM) is unequivocal regarding the value of collaborative buyer–supplier relationships (BSRs) (for a review, see Chen and Paulraj, 2004; Terpend et al., 2008). SCM scholars have studied how building social capital creates value for firms participating in collaborative BSRs¹ (Autry and Griffis, 2008; Cousins et al., 2006; Cousins and Menguc, 2006; Krause et al., 2007; Lawson et al., 2008; Min et al., 2008). These scholars suggest that building social capital between buyers and suppliers allows them to gain access to and leverage resources residing in their relationships. They highlight that social capital

reduces the likelihood of conflicts and promotes cooperative behavior because of its association with shared vision, trusting relations, and social ties. Clearly, the SCM literature has hitherto focused on the *bright side* of social capital.

However, further consideration needs to be given to the risks and potential negative consequences associated with social capital, which we shall refer to as the *dark side* of social capital. Sociologists (Granovetter, 1985; Portes and Sensenbrenner, 1993) and strategy scholars (Adler and Kwon, 2002; Gargiulo and Benassi, 1999; Uzzi, 1997) have warned us of the presence of the dark side. Considering the dark side of social capital in BSRs has important managerial implications, given that buying firms invest significant resources in building social capital with their suppliers (Adler and Kwon, 2002; Autry and Griffis, 2008). Hard-earned social capital may in fact lead to loss of objectivity (Locke, 1999), opportunistic behaviors (Granovetter, 1985), and poor decision making (Grover et al., 2006; McFadyen and Cannella, 2004). Therefore, blindly calling for building higher levels of social capital within BSRs can lead to a waste of resources and frustrations (Portes and Landolt, 1996), and the indiscriminate promotion of social capital may actually hurt rather than enhance performance.

Our study aims to consider both the bright and the dark sides of collaborative BSRs. Some leading firms may be taking on this perspective. For example, Toyota and Johnson Controls Inc. (JCI) have enjoyed their collaborative relationship since 1984 when Toyota

[☆] We thank Manuel Becerra and Steven West for their helpful comments on an earlier version of this paper. We are also grateful for the suggestions by the faculty mentors of the Operations Management Doctoral Consortium at the 2009 Academy of Management Meeting, in particular to Aleda Roth, Thomas Gattiker, and Johnny Rungtusanatham. We finally acknowledge the helpful comments of Associate Editor and three reviewers.

* Corresponding author. Tel.: +34 91 568 97 33.

E-mail addresses: veronica.villena@ie.edu (V.H. Villena), elena.revilla@ie.edu (E. Revilla), thomas.choi@asu.edu (T.Y. Choi).

¹ We conceptualize collaborative BSR as a relationship based on partnership or alliance. Both the buyer and the supplier voluntarily enter into an agreement that involves the exchange, sharing, or co-development of products, technologies, or services (Gulati, 1998).

first arrived in Georgetown, KY, to produce the all-time best selling Camry sedans (www.johnsoncontrol.com). However, presently, they appear to be re-evaluating their celebrated long-term, collaborative relationship. There have been signs of restructuring in their relationship. Toyota and JCI are phasing out a long-standing partnership at Trim Masters, their joint-venture company (www.autonews.com). With this measure, Toyota seems to be looking for more competition among seat suppliers while JCI seems to be pursuing more autonomy to explore other potential customers and ventures. Both firms seem to be acknowledging the downside of their long-term partnership. Our study aims to investigate the underlying dynamics of such a phenomenon—how a well-established BSR, on the one hand, generates value (the bright side) but, on the other, causes relational inertia (the dark side) that inhibits partners' capacity to meet changing market demands.

We take the SCM literature beyond the bright side of collaborative BSRs by considering the bright side and dark side in a single model. We do so theoretically and empirically by using the concept of social capital. Consistent with previous studies (e.g., Krause et al., 2007; Lawson et al., 2008), we accept that building social capital within BSRs has a positive impact on buyer performance, at least initially. However, we offer additional theoretical precision to this argument. We posit that the synergies emerging from accumulated social capital are subject to diminishing returns. That is, the value of social capital might begin to decay and the rate of benefits slow down as inherent risks and costs of social capital increase. As a result, we postulate that the accumulation of social capital improves performance up to a point where increasing risks and costs offset the benefits and that beyond this point buyer performance declines. We thus suggest that the relationship between social capital and performance has a curvilinear rather than a linear effect. This curvilinear relationship might also explain why some studies analyzing collaborative mechanisms in BSRs have been unable to show the expected performance gains (Gulati and Sych, 2007; Petersen et al., 2005; Swink et al., 2007).

Further, previous studies have limited the analysis of social capital to its relational dimension (Cousins et al., 2006; Johnston et al., 2004), structural dimension (Capaldo, 2007), or a combination of the two (Autry and Griffis, 2008; Lawson et al., 2008). Very few studies have investigated all three forms of social capital (Nahapiet and Ghoshal, 1998) in a single model, with the notable exception of Krause et al. (2007). The current study jointly examines three forms of social capital—cognitive (e.g., shared culture and goals), relational (e.g., trust, friendship, respect, and reciprocity), and structural (e.g., social ties), thereby addressing the different ways these forms influence performance outcomes.

Also, most previous studies have framed the benefits of social capital primarily within a narrow range of operational performance outcomes. However, in reality, buyers attempt to advance a much wider range of performance goals within their BSRs (Krause et al., 2007; Sanders, 2008; Im and Rai, 2008). Our study thus considers a set of strategic benefits (e.g., the development of new products and markets) in addition to operational performance measures used in previous studies. In doing so, we provide a more comprehensive examination of a buyer's performance gain based on the building of social capital with its collaborative supplier.

The paper is organized as follows. We first review the literature on social capital and performance, and then we develop hypotheses based on how the three dimensions of social capital impact performance. The unit of analysis is framed as the buyer–supplier dyad. The research methodology section discusses how objective and subjective data from 132 Spanish firms were collected and analyzed. The results confirm that there is an inverted curvilinear relationship between social capital and performance. The results also show that it takes longer to reach the threshold when buyers and suppliers work together to achieve strategic benefits com-

pared with when they seek operational benefits. Finally, we discuss theoretical and managerial implications and offer future research directions.

2. Theoretical foundation

2.1. Social capital theory

Social capital is defined as a valuable asset that stems from access to resources made available through social relationships (Coleman, 1990; Granovetter, 1992). Nahapiet and Ghoshal (1998) synthesize social capital in three dimensions: cognitive, relational, and structural. The cognitive dimension represents shared meaning and understanding between actors; the relational dimension refers to trust, friendship, respect, and reciprocity developed through a history of interactions; and the structural dimension involves the patterns of relationships between actors. In this section, we review the literature pertaining to these three dimensions of social capital. We then consider the performance implications based on an observation that social capital can facilitate as well as inhibit actions required to improve performance (Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998).

2.1.1. Cognitive social capital

Cognitive social capital refers to “the resources providing shared representations, interpretations and systems of meaning among parties” (Nahapiet and Ghoshal, 1998, p. 244). It provides a shared vision that embodies the collective goals and aspirations (Tsai and Ghoshal, 1998). Inkpen and Tsang (2005) highlight shared culture and congruent goals as the main dimensions of cognitive capital. Shared culture refers to the degree to which norms of behavior govern relationships, whereas congruent goals represent the degree to which parties share a common understanding and approach to the achievement of common tasks and outcomes.

Parties with similar cultures facilitate individual actions and constrain undesirable behavior in favor of the collective interests (Coleman, 1988). The set of institutionalized rules and norms that govern appropriate behavior by parties facilitates common actions within a social structure (Gulati et al., 2000). These rules and norms provide a harmony of interests and suppress the possibility of opportunistic behaviors, leading to lower monitoring costs and higher commitment (Ouchi, 1980). Furthermore, the establishment of congruent goals can guide the nature, direction, and magnitude of the efforts of the parties (Jap and Anderson, 2003). Committed parties have a deeper understanding of *why* the relationship exists and *how* they can contribute to the attainment of compatible goals. In this manner, goal congruence cannot only reduce the likelihood of conflicts (Jap, 1999) but also improve the joint returns for both parties because they perceive the synergistic potential of the relationship (Tsai and Ghoshal, 1998). However, a lack of cultural similarities and compatible goals may not only trigger conflicts that result in frustration and have negative effects on performance (Inkpen and Tsang, 2005; Lei and Pitts, 1997) but also detract from developing and implementing innovative strategies because of the time and energy spent resolving disputes (Holcomb and Hitt, 2007).

In sum, cognitive capital in the form of shared culture and congruent goals provides a shared vision through which committed parties gain a better understanding of the behavioral norms and common goals within the relationship. Herein, the role of social relations lies in establishing whether there is a potential for aligning business philosophies and achieving better terms of negotiation that lead to congruent goals. Parties who aim to enhance their competitiveness in the short and long terms should thus commit to developing some similarities in organizational cultures and seek to attain congruent goals that benefit their relationship.

2.1.2. Relational social capital

Relational social capital refers to trust, obligations, respect, and friendship that actors have developed with each other through a history of interactions (Granovetter, 1985; Kale et al., 2000; Nahapiet and Ghoshal, 1998). Through repeated transactions, the parties have proved trustworthiness and affirmed norms of friendship and reciprocity within the relationship. In this regard, relational capital entails the strength of the relationship built over time, whereas cognitive capital refers to the commitment to align cultures and goals within the relationship.

Trust is one of the key aspects of relational social capital (Coleman, 1990; Fukuyama, 1995; Inkpen and Tsang, 2005). When trust is built through repeated transactions, decision makers tend to be less concerned about the opportunistic behavior of others (Blau, 1964; Jarillo, 1988). They are more willing to engage in open communication and show greater behavioral transparency. As trust develops, decision makers progress gradually from engaging in less risky to more risky business interactions (Blau, 1964). In much the same way, friendship, respect, and reciprocity are also developed through repeated transactions (Kale et al., 2000). Decision makers commit to preserving their firms' reputations for being trustworthy partners, creating a mutual confidence that they would not exploit the other's vulnerability even if there were an opportunity to do so (Sabel, 1993). They also adhere to reciprocity norms that serve to transform decision makers from self-centered partners into members of a relationship with shared interests and a sense of the common good (Portes, 1998; Putman, 1993). Thus, relational capital reduces opportunistic behavior and facilitates cooperative behavior. Conversely, a lack of relational capital increases the uncertainty within the relationship and causes partnering firms to withhold potentially relevant resources (Dyer and Chu, 2003; Perrone et al., 2003; Uzzi, 1997).

In sum, relational capital focuses on the kind of personal relationships decision makers of the partnering firms have developed with each other through a history of interactions. Such relationships develop trust, respect, friendship, and reciprocity over time that reduce monitoring cost and enhance cooperation within the relationship. Thus, social interactions between decision makers of partnering firms can influence their behaviors beyond the contractual setting (Bendoly et al., 2010; Granovetter, 1992).

2.1.3. Structural social capital

Structural social capital refers to the pattern of connections between parties—that is, whom you know and how you reach them (Burt, 1992). It is related to the impersonal configuration of linkages within a social structure (Nahapiet and Ghoshal, 1998) and can be analyzed from the perspective of social ties (Bolino et al., 2002; Inkpen and Tsang, 2005). These social ties among contacts possess the potential for gaining access to valuable information (Coleman, 1990). In this regard, unlike cognitive capital, which is concerned about the pursuit of shared culture and congruent goals of the parties, and relational capital, which refers to the strength of connections, structural capital rests on the existence of connections and their configurations within a social structure.

In the social capital literature, much attention is given to its structural dimension (e.g., Capaldo, 2007; Gargiulo and Benassi, 2000; Koka and Prescott, 2002). Some scholars have suggested that partnering companies need to create a structure with dense interactions and multiple connections in order to exchange more reliable and diverse information (Capaldo, 2007; Koka and Prescott, 2002). In the case of dense interactions (i.e., a high frequency of interactions among contacts), information is more readily accessible and can therefore be available early (Burt, 1992). There is also a tendency for partners to possess similar information that enables the validation of exchanged information, enhancing its reliability. In the case of multiple connections (i.e., interactions among diverse

points of contact), partners can design a structure with different contact points within and across different levels of organization. Here, the number and, more importantly, the characteristics of the new contacts and their relationships are important for ensuring information diversity. The main benefit of this type of structure is that partners can access more consistent, non-redundant, and diverse information. An absence of structural social capital, on the other hand, makes the acquisition of meaningful information costly and, in some cases, impossible.

In sum, structural social capital recognizes the advantages derived from the configuration of the network of contacts within a given social structure. Partners that enhance the frequency and interaction of multiple contacts at different levels (e.g., managerial and technical) and various functions (e.g., operations, quality, and marketing) allow the creation of a social structure that benefits both parties in terms of the volume and diversity of information.

2.2. Performance

The SCM literature recognizes that the value creation process extends beyond the boundaries of the firm and involves integrated business processes among various supply chain members including suppliers, manufacturers, and customers (Stevens, 1989; Tan et al., 1998). The teamwork of these different entities is expected to lead to superior performance. Achieving this requires individual firms to invest in mechanisms that foster integration, collaboration, and coordination across supply chain members (Sanders, 2008). In this study, we focus on how the buyer builds social capital within the BSR in order to leverage supplier capabilities.

Consider Toyota as a buyer. This company invests a large amount of resources in social relations with its supply base, creating, for example, consulting teams and inter-firm employee transfer programs. These social mechanisms have provided the infrastructure that supports its “learning dynamic capability” (Dyer and Nobeoka, 2000). Toyota first analyzes whether it has compatibility in business philosophies with chosen suppliers and, if so, the company commits to developing supplier capabilities to achieve common goals (Liker and Choi, 2004). Toyota has clear norms for participation in such social mechanisms and promotes a philosophy of “co-existence and co-prosperity” that links Toyota's success and that of its suppliers (Dyer and Nobeoka, 2000). Relations characterized by trust, respect, and reciprocity emerge between Toyota and its chosen suppliers that facilitate the exchange of know-how and information. Toyota also encourages frequent interactions between its personnel and those of suppliers across different hierarchical levels to ensure information accessibility (Adler et al., 2009; Liker and Choi, 2004). By creating and fostering social relations in which personnel from suppliers and Toyota continuously interact and experiment jointly, Toyota develops social capital with its suppliers that is instrumental in attaining performance improvement.

The performance improvement in essence comes from promoting both parties' cooperative behavior that increases the *efficiency* and the *creativity* of their actions (Nahapiet and Ghoshal, 1998). The former highlights the achievement of *operational* improvements in terms of costs, quality, lead time, and the like. The latter encourages the accomplishment of more *strategic* outcomes such as the development of new products and markets. Most SCM studies have analyzed the impact of social capital on buyer performance as a single construct that includes a narrow range of operational performance outcomes such as cost, quality, lead time, flexibility, and delivery (e.g., Cousins et al., 2006; Lawson et al., 2008). More recently, however, some studies have suggested that buyers pursue not only traditional operational improvements but also strategic benefits such as product innovation, market creation, technological development, and the like from their BSRs (Im and Rai, 2008; Sanders, 2008; Terpend et al., 2008). Therefore, more complete

measures should be considered in order to obtain a comprehensive evaluation of performance (Sanders, 2008; Krause et al., 2007). In this study, we include both types of benefits (i.e., operational and strategic) that buyers aim to achieve from their collaborative BSRs.

3. Hypothesis development

Although social capital can create value for partnering buyers and suppliers, a few sociologists and strategy scholars have warned us about its potential dark side (Adler and Kwon, 2002; Granovetter, 1985; Inkpen and Tsang, 2005; Portes and Sensenbrenner, 1993). Gargiulo and Benassi (1999) note that the enthusiasm with the bright side of social capital neglects the fact that social bonds may at times have harmful effects and produce social liability. For instance, a buyer might lose flexibility in its decision making (Gargiulo and Benassi, 1999) or discriminate against new, potentially better suppliers (Kern, 1998) due to obligations and reciprocity with established suppliers. This may restrict the buyer from effectively responding or adapting to environmental changes and thus ultimately jeopardize its performance. The rigidity inherent in accumulated social capital might explain why some empirical studies analyzing the positive impact of collaborative mechanisms on performance did not find a significant relationship (e.g., Gulati and Sytch, 2007; Petersen et al., 2005; Swink et al., 2007).

Building upon previous research (Granovetter, 1985; Gargiulo and Benassi, 1999; Uzzi, 1997), we postulate that social capital has both bright and dark sides. The bright side comes from fostering teamwork and reducing undesirable behavior, both of which can positively influence buyer performance. However, synergies created due to accumulated social capital are subject to diminishing returns. As social capital increases, the rate of benefits slows down as associated rigidities set in. There should be a threshold at which these rigidities offset the benefits of social capital, and beyond which buyer performance declines. We thus suggest that the social capital–performance relationship is unlikely to be as simple as the previously proposed linear model. Rather, we posit that the three forms of social capital follow an inverted curvilinear relationship with performance, which explains how social capital in fact becomes a social liability within BSRs.

3.1. Cognitive social capital

Building cognitive social capital within the BSR initially has a positive impact on performance. Cognitive social capital facilitates resource exchange because the buyer and supplier see the potential value of their resource integration and combination (Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998). It provides a referent frame of behavioral norms and common understanding of collective goals that increases commitment to exploiting synergisms and reduces the likelihood of conflicts (Gulati et al., 2000; Inkpen and Tsang, 2005; Jap and Anderson, 2003; Rossetti and Choi, 2005). This enhances both the buyer's and the supplier's willingness to jointly improve operational and strategic performance. Operational benefits manifest in cycle time (Hult et al., 2004), cost, quality, delivery, and flexibility (Krause et al., 2007). Strategic benefits come from exploring new opportunities to create value (e.g., the development of new products) and taking on additional investment and risk that can potentially increase long-term competitiveness. Cognitive social capital thus provides the buyer and supplier with a shared vision that increases their commitment to fully taking advantage of synergies while inhibiting undesirable behaviors within the BSR.

However, as the level of cognitive social capital increases, performance begins to suffer because phenomena like “groupthink” (Janis, 1982) and “isomorphism” (Uzzi, 1997) set in. The risk is that the buyer and supplier may become too homogeneous in

their thinking, which can reduce their capacity to formulate challenging questions and explore creative solutions and, ultimately, cause them to make suboptimal decisions (Bendoly et al., 2010; Janis, 1982). In other words, routines and mental models emerging from accumulated cognitive capital create rigidities that discourage independent thinking and creativity within the BSR (Autry and Griffis, 2008; Das et al., 2006) and, consequently, produce forms of “collective blindness.” The buyer and supplier begin to think alike and, hence, tend to be less likely to countenance alternative views and critically evaluate the existing relationship. Additionally, as the relationship reaches maturity, the buyer and supplier would fail to concentrate primarily on daily activities and ongoing operations. In such a situation, fostering continuous learning within the BSR loses its salience and is taken for granted (Jap and Anderson, 2003). Thus the buyer and supplier would suffer from a lack of creativity and continuous learning that have detrimental performance consequences, as well as make costly investments to building high levels of cognitive social capital.

Therefore, as cognitive social capital increases, performance improves initially. As it rises to high levels, however, the risks of groupthink and isomorphism become stronger, and costly investments to build such a level of cognitive capital may end up being detrimental for buyer performance. What this means is that the rate of buyer performance improvements would slow down and then eventually bottom out. There should be a threshold at which buyer performance actually starts to decline as negative outcomes of excessive cognitive capital offset its benefits.

Hypothesis 1. There is an inverted curvilinear relationship between cognitive social capital and buyer performance (strategic and operational).

3.2. Relational social capital

Relational social capital helps improve performance within BSRs. Trust, friendship, respect, and reciprocity are essential requirements for supply chain collaboration (Johnston et al., 2004; Kale et al., 2000; Zaheer et al., 1998). They contribute to reducing monitoring costs and increasing willingness to cooperate beyond contractual provisions. Relational capital, for example, permits privileged access to key resources (Kale et al., 2000; Uzzi, 1997), provides incentives to engage in value-added initiatives (Dyer and Singh, 1998; Zaheer et al., 1998; Johnston et al., 2004; Lawson et al., 2008), and increases the willingness to explore new opportunities (Ring and Van de Ven, 1992). Empirical studies have shown the benefits of relational capital in terms of improved cost, flexibility, productivity, quality (Cousins et al., 2006; Dyer and Chu, 2003; Gulati and Sytch, 2007; Lawson et al., 2008; Zaheer et al., 1998), and innovation (Capaldo, 2007). Thus, relational capital increases the buyer's and supplier's willingness to take additional risks and assume higher investments in achieving improved operational and strategic benefits.

However, as relational capital increases, it can create occasions for opportunistic behavior (Granovetter, 1985). Excessive levels of trust may lead the buyer to reduce its efforts of monitoring, vigilance, and safeguards to a point where it can be subject to malfeasance by the supplier. Such reduction in control mechanisms puts the supplier in a better position to take greater advantage of the buyer if it wishes to (Gargiulo and Ertug, 2006; Wuyts and Geyskens, 2005). For instance, the supplier may be able to achieve performance goals without a full effort, becoming complacent in its role given the relation-specific knowledge it has gained over time. Also, the supplier may be less motivated to provide high levels of performance if it feels that its business interests are secured. The supplier can even carefully devise a way to systematically cheat the buyer under the veil of close social relations (Anderson and

Jap, 2005). At the same time, the buyer may be less likely to objectively acknowledge performance deterioration and detect cheating given its reduced level of monitoring. This delays the timing of the buyer's corrective actions, forcing it to endure more performance losses (Gargiulo and Ertug, 2006). Further, strengthened reciprocity norms might develop “unnecessary” obligations that commit resources and constrain choices beyond what would be optimal (Bendoly and Swink, 2007; Gargiulo and Benassi, 1999; Gargiulo and Ertug, 2006; Malhotra, 2004; Uzzi, 1997). Excessive reciprocity norms might force a buyer to assist its supplier or attend to its demands even when the buyer expects few benefits from future exchanges. Fears of disrupting the relationship with the supplier stem from an emotional attachment created by the buyer (Mayer et al., 1995) or from its concern that it may generate a negative reputation as a reliable partner for future relations with suppliers in its supply base (Gulati, 1995). A supplier can excessively take advantage of such reciprocity norms and hence hinder buyer performance. Thus, to further invest in building relational capital beyond an optimal point might be counterproductive.

There are additional factors that make the buyer vulnerable. First, in high levels of relational capital, buyers become more reluctant to switch suppliers due to a strong attachment toward the continuity of existing relationships (Kim et al., 2006; Li et al., 2006), preference in working with proven suppliers (Gargiulo and Benassi, 1999), and fear of potential loss of relationship-specific assets (Anderson and Jap, 2005; Poppo et al., 2008). All of these conditions may lead the buyer to become trapped in an unhealthy BSR and struggle to meet performance goals. Second, timely and accurate feedback might be lost in high levels of relational capital. It becomes difficult for the buyer to generate optimal solutions to problems because its supply chain manager would tend to avoid the unpleasant situations caused by conflicts in order to maintain the friendship developed with its counterpart (Jeffries and Reed, 2000; Selnes and Sallis, 2003). This leads to limited inter-firm learning and hence jeopardizes buyer performance. Finally, the buyer invests heavily in relationship-specific socialization mechanisms that are costly and time consuming (Cousins et al., 2006). As it channels much of its efforts into increasing relational capital with established suppliers, however, the buyer may inadvertently lose opportunities for finding new, more capable suppliers (Kern, 1998; Bendoly et al., 2010). Thus, while we expect to see an initially positive relationship between relational capital and performance, we anticipate that increasing relational capital would eventually lead to declining performance.

Hypothesis 2. There is an inverted curvilinear relationship between relational social capital and buyer performance (strategic and operational).

3.3. Structural social capital

Building structural social capital is important for achieving benefits in the BSR (Krause et al., 2007; Lawson et al., 2008). The promotion of frequent interactions among multiple contact points between the buyer and its supplier provides them with a diversity of reliable information (Koka and Prescott, 2002). A buyer that encourages frequent interactions between its operations personnel and those of its supplier promotes the sharing of information conducive to faster problem resolution and synchronized inter-firm processes (Dyer and Nobeoka, 2000; Heide and Miner, 1992; Uzzi, 1997). At the top management level, likewise, the promotion of frequent interactions creates close ties that incentivize the exchange of sensitive information and the formulation of common strategies that lead to strategic benefits (e.g., the creation of new markets). Thus, when a buyer builds social capital with its supplier based

on frequent interactions and across different hierarchical levels, it often discovers unique opportunities that assist in meeting diverse competitive priorities (Lawson et al., 2008).

As interactions within a BSR increase, a point may be reached at which the incremental value of additional information starts to decrease. Information exchanged may become redundant (Coleman, 1990; Koka and Prescott, 2002), and, if there is too much information, it may make timely decision making progressively more difficult. The excessive interactions with the same suppliers limits the buyer's search for other, more capable suppliers due to information-processing limitations and misplaced confidence that it has captured all relevant information in the existing BSRs (Koka and Prescott, 2002). Too much interaction may even reduce the buyer's ability to engage in activities that are also critical to improving its own performance (McFadyen and Cannella, 2004). Furthermore, information sharing beyond the processing capacity of the buyer's managers might cause stress and confusion between what is and what is not critical for the relationship, thus lowering effective decision making (O'Reilly, 1980; Grover et al., 2006). Grover et al. (2006) suggest that too much information creates a cognitive burden in decision makers who characteristically have a limited capacity to process information (March and Simon, 1958). Thus, the buyer should acknowledge the fact that promoting interactions within BSRs does not necessarily mean the additional information gathered would be considered relevant during decision making. There should be a threshold at which the benefits of building high levels of structural capital are offset by the redundancy, complexity, and investments from dealing with such high levels of information.

Therefore, one would expect that buyer performance initially improves as structural social capital increases. Structural capital assists in providing valid, diverse information to achieve coordinated activities, speed up problem resolution, and formulate common strategies. However, as structural capital reaches high levels, the marginal benefits of more information might become negligible and, in the extreme, lead to negative outcomes for the buyer, given the lack of learning derived from the overloading of information, the greater difficulty in decision making, and the expenditure of resources to maintain frequent, diverse interactions.

Hypothesis 3. There is an inverted curvilinear relationship between structural social capital and buyer performance (strategic and operational).

3.4. Social capital and performance

There has been increasing interest among SCM scholars in investigating how the contribution of suppliers can lead to improvements in the buying firm (Modi and Mabert, 2007; Krause et al., 2007). The social capital accrued within a BSR would impact operational and strategic performance gains, as discussed before. Operational gains pertain to the small-scale, incremental benefits, while strategic gains occur at the large, radical scale (Henderson and Clark, 1990; Dewar and Dutton, 1986; Sanders, 2008). We now examine how the curvilinear relationship discussed heretofore might behave differently with respect to these two types of performance outcomes.

Operational benefits encompass the capacity for improving the buyer's existing products and processes. This benefit type is usually realized by promoting exploitative activities such as refinement, efficiency, productivity, and process control within the BSR. It typically entails short-term, tactical issues with minimal risk-taking and is associated with short-term results. In contrast, strategic benefits address the capacity for developing new products and markets that seek to improve the buyer's long-term competitive-

ness. This benefit type usually requires explorative activities such as search, discovery, experimentation, and innovation that involve risk-taking with implications for long-term results within the BSR (March, 1991; Sanders, 2008).

We posit, therefore, that the inverted curvilinear relationship between social capital and performance would attenuate more slowly when the buyer aims to achieve strategic benefits as opposed to when it seeks operational benefits. First, pursuing strategic benefits, as compared with operative benefits, implies more risks for the buyer and supplier and, hence, would require more social capital within the relationship. In other words, explorative activities based on developing new products and markets involve more risk compared with exploitative activities designed to improve existing products and processes (Liefer et al., 2000; Utterback and Abernathy, 1975). For example, explorative activities require a higher level of commitment to share values and goals given that these activities require more risky investments. Likewise, a higher degree of trust, respect, and reciprocity is needed given the greater difficulty of monitoring explorative activities (Mayer et al., 1995; Das and Teng, 1998). A higher frequency of social interactions is also necessary to carry out explorative activities in order to ensure the effective identification of market opportunities and their effective deployment (Lawson et al., 2008). Given that strategic benefits are achieved through the promotion of more risky activities, as compared with operational benefits, additional social capital is necessary. What this means is that the rate of attenuation for strategic benefits could take place more slowly as social capital develops, and consequently it would take longer for them to reach the dark side.

Second, pursuing strategic benefits would involve a longer time horizon compared to when trying to attain operational benefits. That means strategic benefits would expend a higher level of social capital within the BSR. For instance, explorative activities require experimentation with new alternatives and establishment of new ways to create value, whereas exploitative activities involve the refinement and extension of existing capabilities, competencies, technologies, and paradigms (Im and Rai, 2008; March, 1991; Sanders, 2008). In other words, achieving strategic benefits through explorative activities involves actions that establish new patterns in the technology, organization, or markets with benefits occurring over a longer time horizon, while realizing operational benefits through exploitative activities involve actions that refine existing and proven patterns with benefits occurring in a more immediate time span (March, 1991; Sanders, 2008). This means that pursuing strategic benefits through promotion of explorative activities requires longer-term periods to realize the synergistic potential. Therefore, a higher level of social capital becomes imperative. Naturally, it would then take longer for strategic benefits to reach the dark side.

Finally, the results of explorative activities (e.g., the development of new products that serve existing markets or open a new market) would depend more on market dynamism compared with those of exploitative activities (e.g., productivity improvements). Consequently, explorative activities would need to deal more with what competitors are doing, the type of emerging technologies, or the institutional forces acting on the market. There are multiple external forces that play a critical role in the success of explorative activities (Thompson, 1967; Pfeffer and Salancik, 1978). To rapidly attend to external forces' demands and customers' changing needs, the buyer would require a high level of flexibility from its suppliers (Fisher et al., 1994). The buyer would hence need to build a higher level of social capital when it seeks strategic benefits as compared with operational benefits. What this means is that it would take longer for the buyer to reach the threshold when pursuing strategic benefits.

Hypothesis 4. As social capital increases, the curvilinear relationship between performance and social capital attenuates more slowly for strategic benefits than for operational benefits.

4. Research methodology

4.1. Unit of analysis

The focus of this study is on social capital between the buyer and its partnering supplier and how it can impact performance. We also recognize that the origin of social capital is in social relations between individuals representing their respective firms (Cousins et al., 2006; Ketchen and Hult, 2007). At the collective level, however, the buyer and supplier as companies are responsible for establishing the tone and creating the means to foster and manage such social relations. This study thus uses the BSR at the firm-to-firm level as the unit of analysis and evaluates the value created or diminished based on the buyer's actions to develop social capital with its collaborative supplier.

4.2. Sample and data collection

The target population is composed of Spanish firms. The list of these companies was obtained from the *Sistemas de Análisis de Balances Ibéricos (SABI)* database.² We selected firms from this database using the following criteria: the extent to which SCM is an important activity of their operations, the diversity of industrial sectors, and the size of organizations (medium- and large-sized). Small firms were excluded because in general they tend to rely on individual managers' social capital to gain access to new resources and because they tend to lack resources to invest in building social capital with supply chain partners. Service organizations (e.g., consultants and auditors) were excluded from our target population because they operate based on intangible resources (Chase et al., 2006). The list gave us 1014 firms. Of these, 284 firms could not be contacted due to incorrect contact information, so our final list included 730 firms.

We used a combination of primary survey data and secondary archival data to test the hypotheses. In the first case, a pilot survey was designed and developed from a thorough literature review. The pilot survey was validated through a pre-test with four academics and five practicing supply chain managers. They reviewed and critiqued the pilot survey and offered suggestions for improving its wording, design, and administration. With this feedback, the final survey was obtained. We sent the survey to the sample firms in October 2009, along with a cover letter explaining the study's purpose, the criteria for choosing a collaborative supplier, and the person who should complete the survey. We offered the assurance of anonymity for respondents. The data collection effort yielded responses from 132 firms, with a response rate of 18.12% (132/730). While this response rate is not ideal, we consider it acceptable given that this rate compares favorably with those observed by past social capital studies in the BSR context (Cousins and Menguc, 2006; Lawson et al., 2008) and other studies in SCM (Johnston et al., 2004; Modi and Mabert, 2007). This rate is also similar to other recent studies conducted in Spain (Cruz et al., 2010; Molina-Morales and Martínez-Fernández, 2009; Villena et al., 2009). Table 1 shows the profile of the sample, which reflects the diversity that exists among the participating firms based on the number of employees, annual sales, and industry sectors.

The targeted respondents of our survey consisted of supply chain managers at decision-making levels and in strategically

² The SABI database is similar to the COMPUSTAT database in the United States, except that it includes firms that are not publicly traded.

Table 1
Profile of the sample.

	Frequency	%
Number of employees		
10–50	4	3.03%
51–100	22	16.67%
101–200	43	32.58%
201–500	41	31.06%
501–1000	18	13.64%
>1000	4	3.03%
Total	132	100%
Total annual sales (Euros Million)		
0–19.99	35	26.52%
20–39.99	36	27.27%
40–99.99	39	29.55%
100–499.99	16	12.12%
>500	6	4.55%
Total	132	100%
Industry sector		
Food & beverage	34	25.76%
Chemical & pharmaceutical	32	24.24%
Automotive	24	18.18%
Textile	19	14.39%
Paper	8	6.06%
Electronic	7	5.30%
Metal	3	2.27%
Other	5	3.79%
Total	132	100%

oriented positions. This is because the investment and decision-making activities of building social capital with suppliers are strategic initiatives designed by these professionals. Respondents were asked to provide information about their firm's relationship with one supplier that they consider relevant for their operations and with which they have had a long-term relationship. To ensure the validity of our data, we evaluated the respondents' competency and knowledge of the subject under investigation. We measured the respondent's years of working with his or her firm and with the chosen supplier. Buyer respondents averaged 13.5 years of experience in their companies (median = 12 years) and 8 years of experience working with the chosen supplier (median = 5 years). Collectively, there is assurance that the selected respondents were competent to complete the survey. Table 2 shows the distribution of titles of the respondents.

In the second case, the secondary data came from the SABI database, which compiles information from the annual reports filed by Spanish firms in the 2005–2008 period. This database includes firm size, industry sector, financial information, operational rates, and other pertinent data for each company. We used this database to validate the survey-based measures, following previous research (Hitt et al., 1996). The results show survey-based demographic information of all participating firms to be significantly correlated with SABI-based information in terms of number of employees ($r = 0.51, p < 0.001$), years in business ($r = 0.52, p < 0.001$) and industry sector ($r = 0.94, p < 0.001$). Furthermore, SABI was used to check for non-response bias and to calculate many of the control variables used in the analysis.

Table 2
Profile of survey respondents.

Titles of respondents	Frequency	%
CEO/General Director	6	4.55%
Supply Chain Director	43	32.58%
Logistic/Purchasing Manager	34	25.76%
Logistic/Purchasing Coordinator	23	17.42%
Operations Manager	12	9.09%
Senior Buyer	7	5.30%
Other	7	5.30%
Total	132	100%

4.3. Measurement development and assessment

The measures were first adapted from previous studies. They were then refined through in-depth interviews during the pilot testing. A small number of items were revised to enhance clarity. Five-point Likert scales were used (1 = strongly disagree; 5 = strongly agree). The measurement items, the results of exploratory and confirmatory factor analyses, and the values of Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) are reported in Appendix 1.

4.3.1. Independent variables

Cognitive social capital is measured by four items adapted from the works of Jap (1999), Kale et al. (2000), and Sarkar et al. (2001). These items are mainly concerned with congruence in organizational culture, business philosophies, goals, and a shared vision between parties. Relational social capital is measured by five items adapted from Kale et al. (2000) that examine close interpersonal interactions, trust, friendship, respect, and reciprocity. Structural social capital is measured by three items adapted from Inkpen and Tsang (2005), Levin and Cross (2004), and Tsai and Ghoshal (1998). These items measured the frequency of interaction and the multiple connections across diverse hierarchical levels and functions between the buyer and supplier.

4.3.2. Dependent variables

We used a complete set of performance outcomes to provide a comprehensive understanding of performance as suggested by previous research (He and Wong, 2004; Im and Rai, 2008; Sanders, 2008). Operational performance is measured by five items that indicate the extent to which the buyer's operations have improved due to teamwork with its supplier in terms of cost, quality, flexibility, lead time, and processes. Strategic performance is measured by five items that evaluate the extent to which the buyer's operations have improved due to teamwork with its supplier in terms of development of new products, opening of new markets, entrance into new technology fields, and learning about customers and markets. These two types of performance measures capture performance gains achieved by the buyer due to the teamwork with its collaborating supplier in the last 3–5 years. These perceptual measures are consistent with performance measures used in previous social capital studies in BSRs (e.g., Cousins et al., 2006; Krause et al., 2007; Lawson et al., 2008).

4.3.3. Control variables

To ensure the robustness of results, this study included several control variables. The first set of control variables concerns firm characteristics, namely size and prior performance. All of these variables may co-vary with the nature of BSRs and performance outcomes. Information on these variables was gathered from the SABI database. Firm size was measured as the value of net sales for the year 2008. Previous research shows that large organizations may be more likely to enjoy improved performance because of their extensive resource bases (Tsai, 2001) and their power differential in BSRs (Benton and Maloni, 2005; Subramani and Venkatraman, 2003). Prior firm performance was measured using the average rate of productivity for the 2005–2007 period. Previous research has suggested that more productive firms can afford to devote more resources to improving their own innovative and operational capabilities (Hill and Rothaermel, 2003) and that they see less gain from collaborative efforts within the supply chain (Villena et al., 2009). This control variable was included to better capture the performance gains and losses based on teamwork with the chosen supplier.

Table 3
Assessment of discriminant validity.

Test #	Description	ML estimate Phi (ϕ)	t-Value	χ^2 constrained (df)	χ^2 unconstrained (df)	Difference
1	Cognitive capital with structural capital	0.33	3.06**	146.73 (14)	27.16 (13)	119.57 (1)***
2	Cognitive capital with relational capital	0.18	3.44**	164.56 (27)	61.17 (26)	103.39 (1)***
3	Relational capital with structural capital	0.14	2.62*	181.53 (20)	36.18 (19)	145.35 (1)***
4	Strategic performance with operational performance	0.47	4.6***	131 (20)	30.66 (19)	100.34 (1)***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The second set of control variables refers to *industry membership*. Previous research suggests that firms in some industries (e.g., the automobile and pharmaceutical sectors) might be more likely to engage in building social capital with supply chain members because the acquisition of new knowledge is more critical in these sectors (Yli-Renko et al., 2001). Social capital research also indicates that the social capital–performance relationship is contingent on the industry context because some sectors require higher investments in exploration activities, while others benefit more from exploitation activities (Rowley et al., 2000). We used industry membership reported by each firm in SABI. As the samples in some sectors were small, we had to group the 62 registered categories in SABI into six clusters: food and beverage (25.76%), chemical and pharmaceutical (24.24%), automotive (18.18%), textile (14.39%), paper (6.06%), and others (11.36%). Because each sector was treated as a dummy variable, it was necessary to omit one cluster from the analysis. We omitted the “others” sector.

The third set of control variables entails relationship characteristics such as commitment and criticality that might influence our hypotheses. *Commitment* was measured by a three-item scale adapted from Jap and Anderson (2003) and Heide and Miner (1992). Consistent with previous research (Krause et al., 2007), performance improvements sought by a buyer are often only possible when it commits to a long-term relationship with its collaborative suppliers. This long-term perspective increases the buyer's willingness to make investments in building social capital. *Relationship criticality* was measured by asking the percent range of buyer requirement satisfied by the supplier (Modi and Mabert, 2007). If a buyer procures a larger percent of its requirement from a supplier, it is more likely to invest in social capital with the supplier. This research controls for these two effects since they would influence the level of social capital built in BSRs.

The fourth set of control variables pertains to *environmental uncertainty*. This variable was measured by a four-item scale adapted from Klein et al. (1990) and Jansen et al. (2006). Dynamic environments characterized by changes in sales volume, competition, and customer needs would influence the buyer's behavior in terms of promoting more explorative than exploitative activities given that these markets require the development of new products and services (Jansen et al., 2006). In this type of markets, the buyer might also be more willing to build higher levels of social capital with its supplier in order to gain more flexibility. Therefore, since environmental uncertainty can influence this study's hypothesized relationships, we control for this effect.

4.3.4. Measurement assessment

We assessed the construct validity of our measures following the guidelines outlined by Anderson and Gerbing (1988). First, our exploratory factor analysis for all the items of multi-item scales resulted in theoretically expected factor solutions. We then computed the reliability coefficients (Cronbach's alpha), which ranged between 0.70 and 0.84, well exceeding the minimum limit of 0.6 (Nunnally, 1978). We also computed the values of composite reliability (CR), which were in the range of 0.70–0.87, and of average variance explained (AVE), which were in the range of 43.3–68.8. Third, we conducted confirmatory factor analyses

(CFA) to assess the convergent and discriminant validity. The CFA results suggested that the model provided an acceptable fit for the data: $\chi^2(278) = 373.51$, $p = 0.01$, CFI = 0.91, RMSEA = 0.05, and SRMR = 0.06 (Hu and Bentler, 1999). All individual items' standardized coefficients from measurement model were highly significant ($p < 0.001$), indicating that the constructs exhibited convergent validity. None of the confidence intervals of the correlations for the constructs (i.e., phi values) contained a value of one (Anderson and Gerbing, 1988), showing support for discriminant validity. Additionally, we assessed discriminant validity by comparing the unconstrained model with the constrained model in which the correlation between the two constructs was set to one. If the fit of the unconstrained model is significantly better than that of the constrained model, the discriminant validity test is deemed satisfied (Venkatraman, 1989). We repeated this test for each pair of constructs of social capital dimensions and for two constructs of performance. As can be seen in Table 3, the test results for chi-square difference between the constrained and the unconstrained solutions were significant. Collectively, these results provided strong evidence of convergent and discriminant validity.

4.3.5. Tests for non-response bias and common method variance

Non-response bias was tested in two ways (Lambert and Harrington, 1990). First, we compared the pertinent characteristics of respondents ($n = 132$) and non-respondents ($n = 598$). Based on SABI 2008 data, we assessed non-response bias using a t -test of demographic variables, which showed no significant difference for number of employees ($t = -0.03$, $p = 0.97$), sales ($t = 0.97$, $p = 0.33$), return on assets ($t = 0.80$, $p = 0.42$), return on equity ($t = -0.47$, $p = 0.26$), productivity ($t = 1.10$, $p = 0.26$), and stock turnover ($t = 0.72$, $p = 0.63$). Second, the responses of early and late waves of returned surveys were compared. The sample of 132 firms was split into three equal parts. The first and the last 44 responses were used to perform a t -test on the responses of all measurement items used in our study. The t -test did not yield any significant differences for the majority of the items—only one of the 37 survey items used was significant at the 0.05 level. These results collectively suggest that a non-response bias is not an issue and that participating firms represent the population from which they were drawn.

Common method variance (CMV) was also examined in two ways. First, the Harmon's single-factor approach was used to test this potential problem. If CMV exists, a single factor will emerge from a factor analysis of all survey items (Podsakoff and Organ, 1986), or one general factor will account for most of the common variance in the data (Doty and Glick, 1998). An un-rotated factor analysis using the eigen-value-greater-than-one criterion revealed six distinct factors that accounted for 66.35% of the variance, which suggested absence of the CMV problem. The first factor captured only 27.14% of the variance. Second, a common-method model following the guidelines of Podsakoff et al. (2003) was estimated. This model includes a common-method factor along with the constructs estimated in the hypothesized model. This common-method factor was created assuming that all scale items load in the same factor. The fit indices for the common-method model were: $\chi^2(257) = 352.01$, $p = 0.01$, CFI = 0.92, RMSEA = 0.05 and SRMR = 0.07.

Table 4
Means, standard deviations and correlations.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Firm size ^a	3.46	1.13														
2 Firm past performance ^b	5.56	4.12	0.12													
3 Food & beverage	0.26	0.44	0.05	0.05												
4 Chemical & pharmaceutical	0.24	0.43	0.11	0.22**	-0.33**											
5 Automobile	0.18	0.39	0.00	0.05	-0.27**	-0.26**										
6 Textile	0.14	0.35	-0.13	-0.21*	-0.24	-0.23	-0.19*									
7 Paper	0.06	0.24	0.09	-0.06	-0.15	-0.14	-0.12	-0.10								
8 Commitment	4.01	0.69	-0.03	-0.01	0.07	-0.08	-0.16	0.01	0.06							
9 Criticality ^c	3.58	1.39	-0.16	0.10	0.05	-0.05	-0.03	-0.02	-0.06	0.25**						
10 Environmental uncertainty	3.06	0.98	-0.13	0.07	-0.18*	-0.12	0.15	0.18*	-0.06	0.01	0.21*					
11 Cognitive capital	3.19	0.92	0.00	0.11	0.02	-0.12	0.11	0.04	-0.04	0.08	0.15	0.28**				
12 Relational capital	4.05	0.61	-0.04	-0.08	0.21*	-0.12	0.02	-0.10	-0.08	0.22**	-0.01	-0.06	0.39**			
13 Structural capital	3.36	0.97	0.27**	0.11	0.10	-0.01	-0.01	-0.17*	-0.05	0.05	0.06	0.09	0.33**	0.25**		
14 Strategic performance	3.07	1.03	0.03	-0.13	0.12	-0.13	0.03	0.07	-0.10	-0.06	0.04	0.13	0.42**	0.34**	0.31**	
15 Operational performance	3.79	0.84	-0.04	-0.11	0.09	-0.03	-0.04	0.04	0.08	-0.09	-0.17*	0.09	0.30**	0.31**	0.08	0.43**

^a Size was recoded: (1) 0–19 million, (2) 20–39 million, (3) 40–99 million, (4) 100–500 million, (5) >500 million.

^b Past performance is the average of productivity rates for the 2005–2007 period.

^c What percentage of your company's total annual needs for this product is obtained from this supplier? 1 (0–5%), 2 (6–15%), 3 (16–30%), 4 (31–50%) and 5 (>50%).

* $p < 0.05$, ** $p < 0.01$.

Although the result from this analysis indicated that the method factor marginally improved model fit (CFI by 0.01), it accounted for only 17% of the total variance, which is significantly less than the amount of method variance (25%) suggested by Williams et al. (1989). Based on the results of these analyses, we concluded that the results would not be inflated due to the existence of common-method variance in the data.

4.4. Analysis

We tested the hypotheses using ordinary least squares (OLS) regression. First, the data were examined for violations of assumptions of normality and multi-collinearity. All variables' residuals approximated normal distribution with the exception of firm sales. This variable was transformed by taking its logarithm. Examining pairwise correlations showed that, with the exception of the square terms, the correlations were fairly low. Second, we centered all independent variables to zero prior to creating the squared size term in order to minimize potential multi-collinearity in the square terms (Aiken and West, 1991). Variance inflated factor (VIF) scores were calculated for the variables in each regression model. All VIF scores were below 4, and most were below 2, suggesting that multi-collinearity was not a serious problem in the analysis. Third, we examined the presence of outliers in order to reduce the possibility that a small number of extreme values will overly influence results (Cohen et al., 2003). Cook distance values were calculated for all cases, and these were below 0.6, suggesting that our analysis would not be influenced by extreme values. Table 4 provides means, standard deviations, and correlations. All statistics are based on raw data prior to centering.

5. Results

Tables 5 and 6 present the regression results. These tables report the increments to adjusted R^2 at each step and the significance of each regression equation. First, we regressed performance on the three dimensions of social capital (see Model 1 in Tables 5 and 6) after controlling for all control variables. In this model, we introduced cognitive, relational, and structural capital to assess their possible linear effects on each measure of performance. We found significant main effects for cognitive ($\beta = 0.20$, $p < 0.05$) and relational ($\beta = 0.32$, $p < 0.01$) capital in the case of operational performance, and a significant main effect for cognitive ($\beta = 0.30$, $p < 0.01$), relational ($\beta = 0.22$, $p < 0.01$), and structural ($\beta = 0.25$, $p < 0.01$) capital in the case of strategic performance. These results

are consistent with previous research findings (e.g., Krause et al., 2007; Lawson et al., 2008; Cousins et al., 2006), suggesting that buyers that build social capital within their collaborative suppliers benefit from leveraging resources available in their BSRs.

Second, we regressed performance on the main and quadratic terms of the three social capital dimensions (see Model 2 in Tables 5 and 6). In the case of operational performance, results demonstrated that the main ($\beta = 0.24$, $p < 0.05$) and quadratic ($\beta = -0.28$, $p < 0.01$) effects of relational capital were significant. The quadratic ($\beta = -0.21$, $p < 0.05$) effect of structural capital was also significant. In the case of strategic performance, results showed that the main ($\beta = 0.15$, $p < 0.10$) and quadratic ($\beta = -0.19$, $p < 0.05$) effects of relational capital were significant. Overall, these results provide support only for Hypotheses 2 and 3. Figs. 1a, b, and 2 provide graphs of the quadratic associations. For operational per-

Table 5
Effects of social capital on operational performance.

Variables	Operational performance ^a		
	Base model	Model 1	Model 2
Firm control variables			
Firm size	0.02	0.04	0.03
Firm past performance	-0.12	-0.10	-0.15
Industry control variables			
Food & beverage	0.37*	0.25	0.25†
Chemical & pharmaceutical	0.22	0.22	0.30*
Automobile	0.21	0.13	0.15
Textile	0.12	0.14	0.12
Paper	0.23*	0.21*	0.21*
Relationship control variables			
Commitment	-0.060	-0.19†	-0.17†
Criticality	-0.19†	-0.16	-0.11
Market control variable			
Environmental uncertainty	0.100	0.02	0.03
Predictor variables			
Cognitive capital		0.20*	0.18†
Cognitive capital square			-0.06
Relational capital		0.32**	0.24*
Relational capital square			-0.28**
Structural capital		0.00	-0.11
Structural capital square			-0.21*
R^2 (adjusted)	3.40%	18.70%	30.80%
R^2 (adjusted) change		15.30%	12.10%
R^2	13.00%	29.00%	41.90%
F	1.35	6.63***	6.09***

^a Standardized betas are reported.

† <0.1.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6
Effects of social capital on strategic performance.

Variables	Strategic performance ^a		
	Base model	Model 1	Model 2
Firm control variables			
Firm size	0.09	0.04	0.03
Firm past performance	-0.14	-0.14	-0.18 [†]
Industry control variables			
Food & beverage	0.27	0.12	0.17
Chemical & pharmaceutical	-0.03	-0.03	0.01
Automobile	0.22	0.13	0.16
Textile	0.10	0.14	0.17
Paper	0.15	0.14	0.14
Relationship control variables			
Commitment	-0.08	-0.22 ^{**}	-0.22 ^{**}
Criticality	0.09	0.13	0.16 [†]
Market control variable			
Environmental uncertainty	0.07	-0.06	-0.08
Predictor variables			
Cognitive capital		0.30 ^{**}	0.33 ^{**}
Cognitive capital square			0.14
Relational capital		0.22 ^{**}	0.15 [†]
Relational capital square			-0.19 [†]
Structural capital		0.25 ^{**}	0.21 [†]
Structural capital square			-0.12
R ² (adjusted)	3.90%	34.70%	37.80%
R ² (adjusted) change		30.80%	3.10%
R ²	13.50%	43.20%	47.30%
F	0.14	15.15 ^{***}	2.54 [†]

^a Standardized betas are reported.

[†] <0.1.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

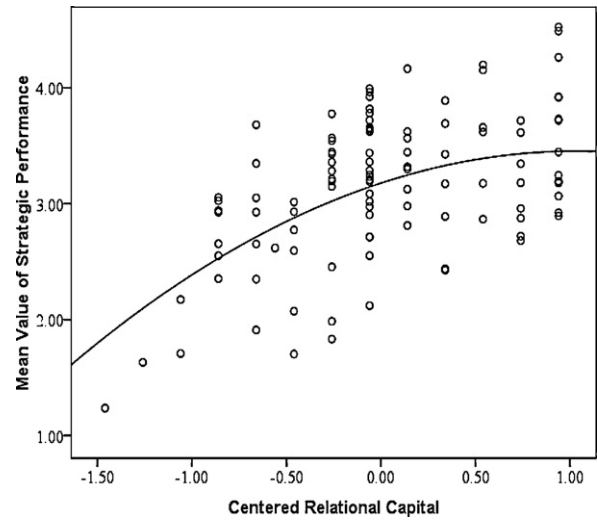


Fig. 2. Strategic performance and relational capital.

formance, we note that the threshold occurs approximately with a 0.46 standard deviation from the mean value of relational capital (see Fig. 1a) and with a 0 standard deviation from the mean value of structural capital (see Fig. 1b). For strategic performance, we observe that the threshold occurs approximately with a 1.1 standard deviation from the value mean of relational capital (see Fig. 2).

Third, we assessed whether the social capital–performance relationship differs when the buyers seek strategic benefits as opposed to when they work to achieve operational benefits from their collaborative BSRs (Hypothesis 4). We test this hypothesis following the guidelines of Cudeck and Du Toit (2002). Since relational capital is the only dimension of social capital that shows significant linear and quadratic effects across both types of performance (see Tables 5 and 6), we apply this procedure only to the relational capital. We first re-parameterized our regression equations so that all parameters of our quadratic model became interpretable. On the threshold, the estimated value of relational social capital for operative benefits was 0.46, but for strategic benefits it was 1.1. Given that the increment of relational capital in the threshold of these two types of benefits ($\hat{y}_x = 1.1 - 0.46 = 0.64$) was higher than its standard error, $se(\hat{y}_x) = 0.12$, we can conclude that it takes longer for strategic benefits to reach the threshold than for operational benefits (Cudeck and Du Toit, 2002). Fig. 3 shows a plot of perfor-

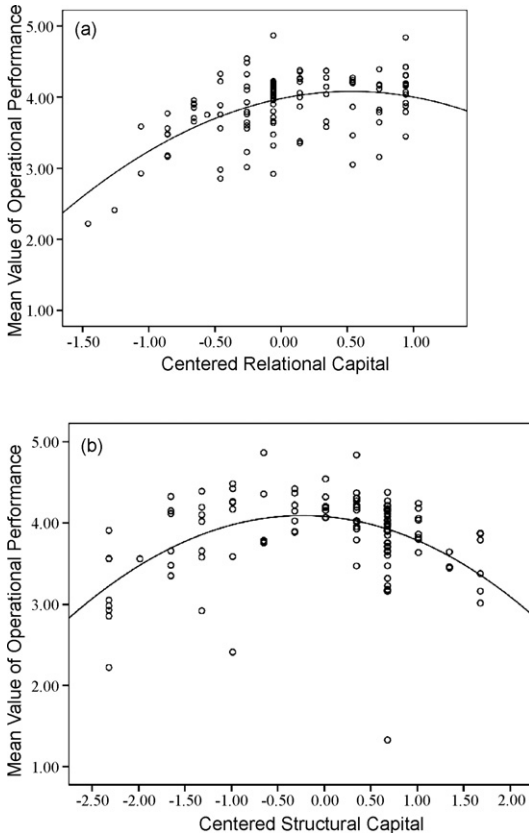


Fig. 1. (a) Operational performance and relational capital. (b) Operational performance and structural capital.

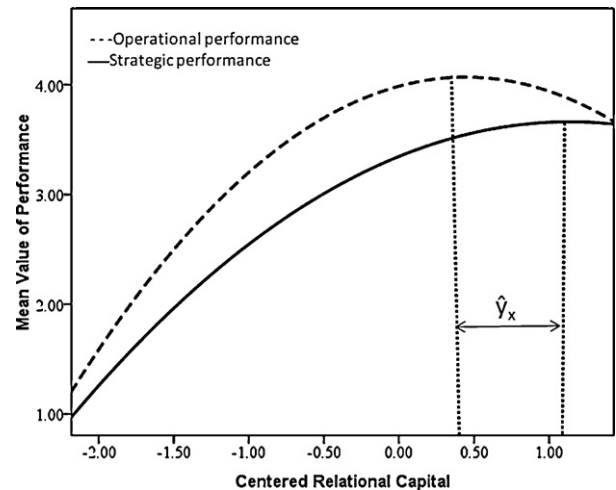


Fig. 3. Performance types and relational capital.

mance types and relational social capital in which the thresholds are shown. Thus, H4 is supported in the case of relational social capital.

We note that, for operational performance, both relational and structural dimensions show significant linear and quadratic effects (see Table 5). In a post hoc analysis, we proceed to investigate which dimension has the larger marginal effect on operational performance following the guidelines of McFadyen and Cannella (2004). We took the first-order derivative of mean operational performance with respect to relational and structural capital. We then computed a point estimate (z) for the linear combination of the coefficients to examine whether or not the coefficients for the relational and structural capital differed significantly from each other, thus testing the null hypothesis ($\beta_{\text{structuralcapital}} - \beta_{\text{relationalcapital}} = 0$). If z was greater than zero, the marginal effect of structural capital would be greater than that of relational capital. If z was not significantly different from zero, then the two would have approximately the same marginal effect. The test yielded a z of -2.82 ($p < 0.01$), indicating that relational capital had a higher marginal effect on operational performance than did structural capital.

Turning our attention to industry control variables (see Tables 5 and 6), it is interesting to note that the sectors of food & beverage ($\beta = 0.37$, $p < 0.05$) and paper ($\beta = 0.23$, $p < 0.05$) were positively related to operational performance, indicating that buyer firms in these sectors might show higher levels of performance gains than firms in sectors such as metal and machinery—those represented in the omitted dummy variable. In the case of strategic performance, there were no significant differences in performance gains across industries. Furthermore, we compared other relationship variables across industries. Buyers in the electronic sector reported the highest mean value for criticality and commitment, most likely suggesting that these firms are perceived as critical customers for the supplier due to the volume of business and the dedication in developing social capital. In contrast, buyers in the paper, metal, and machinery industries reported the lowest mean values in these two aspects, indicating that these firms are perceived as less critical customers and less interested in promoting social capital. Additionally, the highest mean value of relationship duration was registered for buyers in the paper industry, while the lowest was for buyers in the electronics industry. This suggests that electronics firms might be willing to renew their BSRs faster than paper-making firms, which is most likely due to higher market uncertainty and technology disruption that would force them to constantly seek new knowledge and scan the market for new suppliers with better innovative capabilities.

6. Discussion

Our study reveals the paradox surrounding social capital. It can improve performance, but it can also hurt performance. Buying companies can build social capital to leverage resources in their BSRs and achieve operational and strategic benefits, but, if overly excessive, social capital can take away those benefits. Our study lends support to previous research that examined the bright side of social capital in the BSRs (e.g., Cousins et al., 2006; Krause et al., 2007; Lawson et al., 2008), but it also extends this research stream by offering evidence for the dark side. By doing so, we refine the existing SCM literature by suggesting a duality involving social capital—collaboration between supply chain members can become a key mechanism to reduce conflicts and foster teamwork, but, if taken to extreme, it can also inhibit the partnering companies' capabilities to effectively adapt to changing market needs (Gargiulo and Benassi, 1999).

We theoretically and empirically examine the three dimensions of social capital and their relationships with performance. We find

that the three forms of social capital have a positive linear relationship to strategic and operational performance improvement (see Model 1 in Tables 5 and 6). Our results also show that the structural capital and relational capital lead to an inverted curvilinear relationship with buyer performance, providing support for H2 and H3 (see Model 2 in Tables 5 and 6). This curvilinear relationship suggests the presence of the dark side wherein social capital can become a liability for the buyer. Initially, the promotion of frequent, close social interactions allows the buyer to gain access to valuable resources and exploit synergies created in its BSR. Yet, as additional social capital is accumulated, the risks of opportunism, loss of objectivity, ineffective decision making, and costly investments may begin to outweigh the benefits and, ultimately, jeopardize buyer performance. Our results offer one explanation of why some empirical studies did not find a positive linear relationship between collaboration and performance (Cousins et al., 2006; Gulati and Sytch, 2007; Petersen et al., 2005; Swink et al., 2007). It also expands on some studies that suspected the potentially negative outcomes from a high level of collaboration in BSRs (Anderson and Jap, 2005; Das et al., 2006).

Interestingly, our Hypothesis 1, addressing a curvilinear relationship between cognitive capital and performance, is not supported (see Model 2 in Tables 5 and 6). When compared with relational capital and structural capital (i.e., all three linear and quadratic terms were included in the same equation), its quadratic term is shown to be insignificant. In other words, the negative impact of the risk of being too much alike, as argued under the cognitive social capital hypothesis, is not as pronounced in terms of its negative impact when compared with the other two dimensions of social capital. We note that the results instead support a linear relationship as previous research suggests (Krause et al., 2007; Lechner et al., 2010). One explanation for this result is that, compared with the other two dimensions, cognitive social capital associated with shared vision is much more enduring and sustained. Alternatively, this particular result could be something peculiar to our sample in that participating firms are not characterized by high levels of cognitive social capital with their suppliers. Taking into account descriptive statistics, the mean value of cognitive capital ($\bar{X} = 3.19$) is lower than those for relational capital ($\bar{X} = 4.05$) and structural capital ($\bar{X} = 3.36$). This might indicate that our participating firms have not achieved high levels of cognitive social capital and, therefore, might not have reached the threshold point. Clearly, this aspect of cognitive social capital warrants further investigation in future studies.

Under Hypothesis 4, our study considers an important contingency factor (i.e., type of performance) that might influence the curvilinear relationship. In order to examine this hypothesis, the curvilinear relationship of each social capital dimension needs to be significant across the two types of performance. Among the three dimensions of social capital, only the relational dimension fits this requirement (see Fig. 3). For the other two dimensions, the curvilinear relationship was significant for operational performance but not for strategic performance. We then wondered why the curvilinear relationship was significant for strategic performance only in the case of relational social capital. A potential explanation is that relational social capital is more critical as compared with cognitive or structural social capital when the buyer and supplier pursue strategic benefits. That is, a high level of relational social capital is indispensable when both firms engage in more strategic goals for the relationship. As relational capital is built over time, it allows firms more flexibility to adapt to changes strategically; however, that also means it can make its potential negative effects more pronounced. In the case of relational social capital, then, the results clearly show that it takes longer for strategic benefits to reach the threshold than for operational benefits, as we proposed. Strategic performance, compared with operational performance, requires

additional social capital with suppliers to see the expected level of performance benefits because these outcomes involve longer-term issues, additional risk taking, and higher dependence on external forces. This additional social capital makes the rate of attenuation for strategic benefits slower than that for operational benefits. Therefore, the buyers that pursue various goals from their BSRs should be cautioned that they might reach the dark side faster when pursuing operational benefits through relational social capital.

We also conducted a post hoc analysis to rule out other possible alternate explanations for why some buyers might linger in the dark side of collaboration. We found that 86% of participating firms have at least one satisfactory supplier and that 50% of these firms have more than three satisfactory suppliers. More than the 90% of the sample firms do not have any equity in the capital of the chosen suppliers. We also found that 35.5% of supplied products were made-to-order, 37.5% were standard products, and 27% a combination of the two. All these results help reject alternate explanations of why buying firms remain in the dark side of collaborative BSRs due to the aforementioned rigidities in this study rather than the lack of alternative suppliers (Gulati and Sytch, 2008; Poppo et al., 2008), the presence and impact of equity sharing in the relationship (Kale et al., 2000), or the complexity of supplied products (Modi and Mabert, 2007).

6.1. Theoretical implications

Our study contributes to the SCM literature in several ways. First, it is one of the few studies that examine both the bright and the dark sides of collaborative BSRs. We bring to the fore the theoretical importance of considering the existence of diminishing returns when investing in social capital in the BSR context. Second, we analyze the three dimensions of social capital in a single model, which has rarely been done in previous studies. All three dimensions of social capital in one model improve our understanding of how each dimension uniquely influences performance outcomes. Our results suggest that the strength of social relations (relational capital) has a higher marginal effect on performance than the frequency and diversity of contacts (structural capital) and that a shared vision (cognitive capital) has a positive linear relationship with performance. Third, we use a complete set of performance measures that allows us to develop a more complete view of how social capital facilitates or impedes value creation. Our results suggest that buyers should expect that when they are working with a collaborative supplier to achieve operational benefits they will reach the point of diminishing return faster than when they are pursuing strategic benefits.

This study also contributes to social capital theory by analyzing the dark side of social capital at the inter-organizational level. Scholars in this area have made repeated calls for such a research (Inkpen and Tsang, 2005; Tsai and Ghoshal, 1998; Van Deth and Zmerli, 2010; Zaheer et al., 2010), but very few empirical efforts have responded to this call. Using the BSR context, our study theorizes the paradox of social capital and provides empirical evidence of a curvilinear relationship between social capital and performance at the inter-organizational level. Its results are consistent with some recent studies analyzing the curvilinear effect of social capital and performance at the individual (McFadyen and Cannella, 2004), group (Lechner et al., 2010), and network (Molina-Morales and Martínez-Fernández, 2009) levels.

6.2. Managerial implications

According to researchers (Sytch and Gulati, 2008) and practitioners (Accenture survey, 2010), today's supply chain managers should have a good understanding of how partnering with suppliers helps their firms create value and overcome global challenges.

As such recognition for the importance of close BSR increases, we argue that the recognition for its downside should also increase. Managers should be aware of associated risks and costly investments in the building of this type of relationships. As the relationships deepen and pass a threshold point, a buying firm's manager needs to be cognizant of the loss of objectivity and ineffective decision making, supplier's potential opportunistic behavior, and the excessive cost of building high levels of social capital. We suggest that managers need to do more than merely promote social capital within BSRs; they should monitor the relationships with their partnering suppliers to identify whether there might be any signs of counterproductive outcomes, especially when their firm faces competitive markets.

Such counterproductive outcomes reside in the dark side of social capital. The question is how a buying firm can best prepare for the dark side. Supply chain managers should know that blindly building a deep supplier relationship is not recommended. That is, they are likely to make a mistake if they ignore or underestimate harmful effects of excessive levels of social capital. As our results suggest, managers should carefully establish the optimal level of relational capital so that it would not move past the threshold point. They also need to find ways to reduce the level of relational capital when they discover they are moving into the dark side. For instance, as discussed earlier in this paper, we believe Toyota has taken steps to do exactly this—as the buying firm, it seems to have re-evaluated its relationship with the supplier JCI and begun restructuring its relationship by bringing in additional players and by taking away JCI's involvement in Trim Master (www.autonews.com).

Another important managerial implication pertains to how the buying company may interface the supplier. For instance, consider replacing individual negotiators with a team of negotiators and consider rotating different teams in and out. This type of practice is designed to alleviate the strong attachment and familiarity created by these individuals within the BSR. This practice may also help guard against the power acquired by these negotiators as their firms' business activities become more dependent on the relationship (Anderson and Jap, 2005; Kim et al., 2006)—thus ensuring more objectivity. Furthermore, the creation of a team that is responsible for managing a firm's key BSRs might be desirable (Kale and Singh, 2009). This team could constantly monitor market trends and technologies that help identify new competent suppliers and ensure impartiality when working with the existing suppliers.

Finally, it is important to note the cultural differences in managing social relations in a business context (Luk et al., 2008; Hofstede, 2001; Putman, 1993). Business practices in Spain revolve around inter-personal and inter-firm ties that value friendly and close relationships (Harland, 1996). This type of business culture makes relationship building between buyers and suppliers more complex yet significant. However, we could not expect the same to happen in countries where relationships may be more distant, non-friendly, and characterized by more systematized information exchange (Hofstede, 2001). The type of collaborative BSR in Spain might be comparable with practice of *guanxi* in China (Cai et al., 2010; Luo, 2000; Park and Luo, 2001) or of *keiretsu* in Japan (Gerlach, 1987; Dyer and Nobeoka, 2003). The benefits and pitfalls of these styles of managing BSRs have been amply studied in the SCM literature (Lincoln et al., 1998; Nishiguchi, 1994; Womack et al., 1991). With the presence of cultural differences in the interpretation of social relations in business, managers should carefully examine the specific mechanisms that may translate a social structure into social capital or social liability (Leenders and Gabbay, 1999).

6.3. Future research directions

As the body of SCM literature continues to grow, it will be important to balance many emerging studies focusing on the benefits of

collaborative BSRs with other studies that consider the risks of such BSRs. Our study takes the first step in this direction. We believe it offers an exciting new research avenue for analyzing both the bright and the dark sides. Future studies might develop specific measurement scales that capture the dark side of BSRs. Beyond the variables that have been amply studied such as joint problem solving and information sharing, other interesting variables that may be considered in future studies are the loss of objectivity, the ineffectiveness of decision making, and the emergence of opportunism in collaborative BSRs.

While focusing on analyzing the complexities in the relationship between the buyer and the supplier, our study overlooks the fact that both firms are embedded within a larger context of social networks (Choi and Kim, 2008). In this sense, the buyer and supplier that belong to a dense network might be less likely to invest in excessive levels of social capital, given that they can take advantage of the social capital of firms involved in the extended network (Rowley et al., 2000). This type of network would make the partners in a dyad less likely to fall prey to the dark side of collaboration. Likewise, the buyer's and supplier's positions in their immediate network can provide advantages or constraints that may affect the value of social capital (Koka and Prescott, 2008; Burt, 2010). It will certainly be interesting to reconsider the logic used to build

our hypotheses given the embedded nature of the buyer–supplier dyads.

Our study investigates the direct effects of social capital on performance without paying great attention to the intervening mechanisms of how social capital can impact performance. Future research should consider examining the mediating variables in the social capital–performance relationship. Also, this study analyzes the three forms of social capital and their unique contributions to various performance outcomes. Subsequent research efforts might analyze their inter-relationships and interactions.

Given that social relations are dependent upon cultural context (Putman, 1993; Leenders and Gabbay, 1999), our study's results may not be generalizable beyond the Spanish sample. It will be very interesting to see replications in other countries that can be compared with our results to see whether they would strengthen the validity of the dark side or refute it. Finally, the life cycle of social relations within BSRs could be a fertile area for longitudinal research. One could potentially investigate how a new BSR is born and subsequently develops into a mature relationship that may or may not reach the dark side.

Appendix 1. Survey items

Factor and scale items	Principal component factor loading ^a	Measurement model		
		Standard coefficient	Standard error	t-Value
Criticality; please indicate what percentage of your company's total annual needs for this product is obtained from this supplier? ^b		–	–	–
Commitment: CR = 0.74, AVE = 48.2, α = 0.73, eigen value = 1.40; please indicate the extent to which				
• your company expect that the relationship with this supplier will last far into the future	0.72	0.68	0.07	7.46
• your company expect to continue working with this supplier on a long-term basis	0.83	0.71	0.08	7.78
• it is assumed that renewal of agreements with this supplier will generally occur	0.82	0.69	0.01	7.47
Environmental uncertainty: CR = 0.70, AVE = 43.4, α = 0.70, eigen value = 1.21; please indicate the extent to which				
• your firm's market share is volatile	0.85	0.90	0.18	5.77
• overall industry sales volume is volatile	0.79	0.65	0.15	5.22
• the nature of competition in your market is intense ^c				
• changes in end-user needs and preferences is rapid	0.52	0.41	0.12	3.28
Cognitive capital: CR = 0.80, AVE = 50.2, α = 0.80, eigen value = 1.49; please indicate the extent to which your company and this supplier share				
• similar corporate culture/values and management style	0.53	0.65	0.09	7.47
• similar philosophies/approaches to business dealings	0.81	0.55	0.10	6.05
• compatible goals and objectives	0.82	0.64	0.09	7.32
• the same vision of business in the relationship	0.57	0.76	0.11	8.99
Relational capital CR = 0.81, AVE = 46.2, α = 0.80, eigen value = 3.12; please indicate the extent to which the relationship between your company and this supplier is characterized by				
• a close personal interaction between the parties	0.66	0.63	0.07	7.55
• mutual respect between the parties	0.77	0.58	0.05	6.87
• mutual trust between the parties	0.80	0.64	0.05	7.74
• personal friendship between the parties	0.63	0.68	0.08	8.29
• reciprocity between the parties	0.73	0.82	0.06	10.56
Structural capital: CR = 0.87, AVE = 68.8, α = 0.83, eigen value = 2.02; please indicate the extent to which your company and this supplier promote				
• a frequent and intensive interaction between the personnel	0.79	0.70	0.09	8.75
• an interaction between the personnel across different levels (e.g., managers and engineers)	0.86	0.92	0.09	12.15
• an interaction between the personnel across different functions (e.g., logistics and marketing)	0.81	0.77	0.09	9.80
Strategic performance: CR = 0.82, AVE = 54.8, α = 0.84, eigen value = 6.69; please indicate the extent to which your firm is receiving the following benefits as a result of its relationship with this supplier in the last 3–5 years:				
• introduce new generation of products	0.72	0.75	0.10	9.60
• extend product range	0.77	0.78	0.09	10.09
• open up new markets	0.76	0.70	0.10	8.77
• enter new technology fields	0.73	0.73	0.10	9.18
• learn about customers and markets for our products ^c				

Factor and scale items	Principal component factor loading ^a	Measurement model		
		Standard coefficient	Standard error	t-Value
Operational performance: CR = 0.85, AVE = 59.5, α = 0.83, eigen value = 2.37; please indicate the extent to which your firm is receiving the following benefits as a result of its relationship with this supplier in the last 3–5 years:				
• reduce total costs				
• improve existing product quality	0.77	0.68	0.07	8.37
• improve flexibility of processes	0.84	0.80	0.08	10.53
• reduce lead time	0.64	0.64	0.08	7.82
• improve current processes	0.82	0.84	0.07	11.25

^a Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization. Explained variance: 67.66%.

^b 1 (0–5%), 2 (6–15%), 3 (16–30%), 4 (31–50%), and 5 (>50%). It is a single item scale CR: Composite Reliability; AVE: Average Variance Extracted.

^c Items dropped after EFA and CFA.

References

- Accenture survey, 2010. Accenture-UN Global Compact 2010 Study, Accessed 08.01.10 at: https://microsite.accenture.com/sustainability/Documents/Accenture_UNGC_Study_2010.pdf.
- Adler, P.S., Kwon, S.-W., 2002. Social capital: prospects for a new concept. *Academy of Management Review* 27 (1), 17–40.
- Adler, P.S., Benner, M., Brunner, D.J., MacDuffie, J.P., Osono, E., Staats, B.R., Takeuchi, H., Tushman, M., Winter, S.G., 2009. Perspectives on the productivity dilemma. *Journal of Operations Management* 27 (2), 99–113.
- Aiken, L.S., West, S.G., 1991. *Multiple Regression: Testing and Interpreting Interactions*. Sage, Thousand Oaks, CA.
- Anderson, E., Jap, S.D., 2005. The dark side of close relationships. *MIT Sloan Management Review* 46 (3), 75–82.
- Anderson, J.C., Gerbing, D.W., 1988. Structural equation modelling in practice: a review and recommended two-step approach. *Psychological Bulletin* 103 (3), 441–443.
- Autry, Ch.W., Griffis, S., 2008. Supply chain capital: the impact of structural and relational linkages on firm execution and innovation. *Journal of Business Logistics* 29 (1), 157–173.
- Benton, W.C., Maloni, M., 2005. The influence of power driven buyer/seller relationships on supply chain satisfaction. *Journal of Operations Management* 23 (1), 1–22.
- Bendoly, E., Croson, R., Goncalves, P., Schultz, K., 2010. Bodies of knowledge for research in behavioral operations. *Production and Operations Management*. *Journal of Operations Management* 19 (4), 434–452.
- Bendoly, E., Swink, M., 2007. Moderating effects of information access on project management behavior, performance and perceptions. *Journal of Operations Management* 25 (3), 604–622.
- Blau, P.M., 1964. *Exchange and Power in Social Life*. Wiley, New York.
- Bolino, M.C., Turnley, W.H., Bloodgood, J.M., 2002. Citizenship behavior and the creation of social capital in organizations. *Academy of Management Review* 27 (4), 505–522.
- Burt, R.S., 1992. *Structural Holes: The Social Structure of Competition*. Harvard University Press, Cambridge, MA.
- Burt, R.S., 2010. *Neighbor Networks*, 1st ed. Oxford University Press Inc., New York.
- Cai, S., Jun, M., Yang, Z., 2010. Implementing supply chain information integration in China: the role of institutional forces and trust. *Journal of Operations Management* 28 (3), 257–268.
- Capaldo, A., 2007. Network structure and innovation: the leveraging of a dual network as a distinctive relational capability. *Strategic Management Journal* 28 (6), 585–608.
- Chase, R.B., Jacobs, R.B., Aquilano, N.J., 2006. *Operations Management for Competitive Advantage*, 11th ed. McGraw-Hill Irwin, New York.
- Chen, I.J., Paulraj, A., 2004. Towards a theory of supply chain management: the constructs and measurements. *Journal of Operations Management* 22 (3), 119–150.
- Choi, T., Kim, Y., 2008. Structural embeddedness and supplier management: a network perspective. *Journal of Supply Chain Management* 44 (4), 5–13.
- Cohen, J., Cohen, P., West, S.G., Aiken, L.S., 2003. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 3rd ed. Erlbaum, Mahwah, NJ.
- Coleman, J.S., 1988. Social capital in the creation of human capital. *American Journal of Sociology* 94, 95–120.
- Coleman, J.S., 1990. *Foundations of Social Theory*. The Belknap Press of Harvard University Press, Cambridge, MA.
- Cousins, P.D., Handfield, R.B., Lawson, B., Petersen, K.J., 2006. Creating supply chain relational capital: the impact of formal and informal socialization processes. *Journal of Operations Management* 24 (6), 851–863.
- Cousins, P.D., Menguc, B., 2006. The implications of socialization and integration in supply chain management. *Journal of Operations Management* 24 (5), 604–620.
- Cruz, C., Gómez-mejía, L.R., Becerra, M., 2010. Perceptions of benevolence and the design of agency contracts: CEO-TMT relationships in family firms. *Academy of Management Journal* 53 (1), 69–89.
- Cudeck, R., Du Toit, S.H.C., 2002. A version of quadratic regression with interpretable parameters. *Multivariate Behavioral Research* 37 (4), 501–520.
- Das, A., Narasimhan, R., Talluri, S., 2006. Supplier integration: finding an optimal configuration. *Journal of Operations Management* 24 (5), 563–582.
- Das, T.K., Teng, B.-S., 1998. Between trust and control: developing confidence in partner cooperation in alliances. *Academy of Management Review* 23 (3), 491–512.
- Dewar, R.D., Dutton, J.E., 1986. The adoption of radical and incremental innovations: an empirical analysis. *Management Science* 32 (11), 1422–1433.
- Doty, D.H., Glick, W.H., 1998. Common method bias: does common method variance really bias results? *Organizational Research Methods* 1, 374–406.
- Dyer, J.H., Singh, H., 1998. The relational view: cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review* 23 (4), 660–679.
- Dyer, J.H., Nobeoka, K., 2000. Creating and managing a high-performance knowledge-sharing network: the Toyota case. *Strategic Management Journal* 21 (3), 345–367.
- Dyer, J.H., Nobeoka, K., 2003. Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal* 21 (3), 345–367.
- 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. *Organization Science* 14 (1), 57–68.
- Fisher, M.L., Hammond, J.H., Obermeyer, W.R., Raman, A., 1994. Making supply meet demand in an uncertain world. *Harvard Business Review* 72 (3), 83–93.
- Fukuyama, F., 1995. *Trust: Social Virtues and the Creation of Prosperity*. Hamish Hamilton, London.
- Gargiulo, M., Benassi, M., 2000. Trapped in your own net? Network cohesion, structural holes, and the adaptations of social capital. *Organization Science* 11 (2), 183–196.
- Gargiulo, M., Benassi, M., 1999. The dark side of social capital. In: Leenders, R.T.H.A.J., Gabbay, S.M. (Eds.), *Corporate Social Capital and Liability*. Kluwer, Boston, pp. 298–322.
- Gargiulo, M., Ertug, G., 2006. The dark side of trust. In: *Handbook of Trust Research*. Elgar, Cheltenham, UK/Northampton, MA, pp. 165–186.
- Gerlach, M.L., 1987. Business alliances and the strategy of the Japanese firm. In: Carroll, G., Vogel, C. (Eds.), *Organizational Approaches to Strategy*. University of California Press, Berkeley, CA.
- Granovetter, M., 1985. Economic action and social structure: the problem of embeddedness. *The American Journal of Sociology* 91 (3), 481–510.
- Granovetter, M., 1992. Economic institutions as social constructions: a framework for analysis. *Acta Sociologica* 35 (1), 3–11.
- Grover, V., Lim, J., Ayyagari, R., 2006. The dark side of information and market efficiency in E-markets. *Decision Sciences Journal* 37 (3), 297–324.
- Gulati, R., 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal* 38 (1), 85–112.
- Gulati, R., 1998. Alliances and networks. *Strategic Management Journal* 19, 293–317.
- Gulati, R., Nohria, N., Zaheer, A., 2000. Strategic networks. *Strategic Management Journal* 21 (Special issue), 203–215.
- Gulati, R., Sytch, M., 2007. Dependence asymmetry and joint dependence in interorganizational relationships: effects of embeddedness on a manufacturer's performance in procurement relationships. *Administrative Science Quarterly* 52 (1), 32–69.
- Gulati, R., Sytch, M., 2008. Does familiarity breed trust? Revisiting the antecedents of trust. *Managerial & Decision Economics* 29 (2/3), 165–190.
- Harland, C.M., 1996. Supply chain management: relationships, chains and networks. *British Journal of Management* 7, 63–80.
- He, Z.-L., Wong, P.-K., 2004. Exploration vs. exploitation: an empirical test of the ambidexterity hypothesis. *Organization Science* 15 (4), 481–494.
- Heide, J.B., Miner, A.S., 1992. The shadow of the future: effects of anticipated interaction and frequency of contact on buy-seller cooperation. *Academy of Management Journal* 35 (2), 265–291.
- Henderson, R.M., Clark, K.B., 1990. Architectural innovation: the reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly* 35 (1), 9–30.
- Hill, C.W.L., Rothaermel, F.T., 2003. The performance of incumbent firms in the face of radical technological innovation. *Academy of Management Review* 28 (2), 257–274.
- Hitt, M.A., Hoskisson, R.E., Johnson, R.A., Moesel, D.D., 1996. The market for corporate control and firm innovation. *Academy of Management Journal* 39 (5), 1084–1119.
- Hofstede, G., 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations*, 2nd ed. SAGE Publications, Thousand Oaks, CA.
- Holcomb, T.R., Hitt, M.A., 2007. Toward a model of strategic outsourcing. *Journal of Operations Management* 25 (2), 464–481.

- Hu, L., Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling* 6, 1–55.
- Hult, G.T.M., Ketchen, D.J., Slater, S.F., 2004. Information processing, knowledge development and strategic supply chain performance. *Academy of Management Journal* 47 (2), 241–253.
- Im, G., Rai, A., 2008. Knowledge sharing ambidexterity in long-term interorganizational relationships. *Management Science* 54 (7), 1281–1296.
- Inkpen, A.C., Tsang, E.W.K., 2005. Social capital, networks, and knowledge transfer. *Academy of Management Review* 30 (1), 146–165.
- Janis, I.L., 1982. *Groupthinking: Psychological Studies of Policy Decisions and Fiascos*. Houghton Mifflin, Boston.
- Jansen, J.J.P., Van Den Bosch, F.A.J., Volberda, H.W., 2006. Exploratory innovation, exploitative innovation, and performance: effects of organizational antecedents and environmental moderators. *Management Science* 52 (11), 1661–1674.
- Jap, S.D., 1999. Pie-expansion efforts: collaboration processes in buyer–supplier relationships. *Journal of Marketing Research* 36 (4), 461–475.
- Jap, S.D., Anderson, E., 2003. Safeguarding interorganizational performance and continuity under ex post opportunism. *Management Science* 49 (12), 1684–1701.
- Jarillo, J.C., 1988. On strategic networks. *Strategic Management Journal* 9 (1), 31–41.
- Jeffries, F.L., Reed, R., 2000. Trust and adaptation in relational contracting. *Academy of Management Review* 25 (4), 873–882.
- Johnston, D.A., McCutcheon, D.M., Stuart, F.I., Kerwood, H., 2004. Effects of supplier trust on performance of cooperative supplier relationships. *Journal of Operations Management* 22 (1), 23–38.
- Kale, P., Singh, H., Perlmutter, H., 2000. Learning and protection of proprietary assets in strategic alliances: building relational capital. *Strategic Management Journal* 21 (3), 217–228.
- Kale, P., Singh, H., 2009. Strategic Alliances: What do we know, and where do we go from here? *Academy of Management Perspectives* 23 (3), 45–62.
- Kern, H., 1998. Lack of trust, surfeit of trust: some causes of the innovation crisis in German industry. In: Lane, C., Bachmann, R. (Eds.), *Trust Within and Between Organizations*. Oxford University Press, New York, pp. 203–213.
- Ketchen, D.J., Hult, G.T.M., 2007. Toward greater integration of insights from organization theory and supply chain management. *Journal of Operations Management* 25 (2), 455–458.
- Kim, T.-Y., Oh, H., Anand, S., 2006. Framing interorganizational network change: a network inertia perspective. *Academy of Management Review* 31 (3), 704–720.
- Klein, S., Frazier, G.L., Roth, V.J., 1990. A transaction cost analysis model of channel integration in international markets. *Journal of Marketing Research* 27 (2), 196–208.
- Koka, B.R., Prescott, J.E., 2002. Strategic alliances as social capital: a multidimensional view. *Strategic Management Journal* 23 (9), 795–817.
- Koka, B.R., Prescott, J.E., 2008. Designing alliance networks: the influence of network position, environmental change and strategy on firm performance. *Strategic Management Journal* 29 (6), 639–661.
- Krause, D.R., Handfield, R.B., Tyler, B.B., 2007. The relationships between supplier development, commitment, social capital accumulation and performance improvement. *Journal of Operations Management* 25 (2), 528–545.
- Lambert, D.M., Harrington, T.C., 1990. Measuring nonresponse bias in customer service mail surveys. *Journal of Business Logistics* 11 (2), 5–25.
- Lawson, B., Tyler, B.B., Cousins, P.D., 2008. Antecedents and consequences of social capital on buyer performance improvement. *Journal of Operations Management* 26 (3), 446–460.
- Lechner, Ch., Frankenberger, K., Floyd, S.W., 2010. Task contingencies in the curvilinear relationship between inter-group networks and performance. *Academy of Management* 53 (4), 865–889.
- Leenders, Th.A.J., Gabbay, S.M., 1999. *Corporate Social Capital and Liability*. Kluwer, Boston.
- Lei, D., Pitts, R., 1997. Building cooperative advantage: managing strategic alliances to promote organizational learning. *Journal of World Business* 32 (3), 203–223.
- Levin, D.Z., Cross, R., 2004. The strength of weak ties you can trust: the mediating role of trust in effective knowledge transfer. *Management Science* 50 (11), 1477–1490.
- Li, S., Madhok, A., Plaschka, G., Verma, R., 2006. Supplier-switching inertia and competitive asymmetry: a demand-side perspective. *Decision Sciences* 37 (4), 547–576.
- Liefer, R., McDermott, C., O'Connor, G., Peters, L., Rice, M., Veryzer, R., 2000. *Radical Innovation: How Mature Companies can Outsmart Upstarts*. Harvard Business School Press, Boston.
- Liker, J.K., Choi, T.Y., 2004. Building deep supplier relationships. *Harvard Business Review* 82 (12), 104–113.
- Lincoln, J.R., Ahmadjian, C., Mason, E., 1998. Organizational learning and purchase–supply relations in Japan: Hitachi, Matsushita, and Toyota compared. *California Management Review* 40 (3), 264–441.
- Locke, D., 1999. Some reservations of social capital. *Academy of Management Review* 24 (1), 8–9.
- Luk, C.-L., Yau, O.H.M., Syn, L.M.Y., Tse, A.C.B., Chow, R.P.M., Lee, J.S.Y., 2008. The effects of social capital and organizational innovativeness in different institutional contexts. *Journal of International Business Studies* 39 (4), 589–612.
- Luo, Y., 2000. *Guanxi and Business*. World Scientific, New York.
- Malhotra, D., 2004. Trust and reciprocity decisions: the differing perspectives of trustors and trusted parties. *Organizational Behaviour and Human Decision Processes* 94, 61–73.
- March, J.G., 1991. Exploration and exploitation in organizational learning. *Organization Science* 2 (1), 71–87.
- March, J.G., Simon, H., 1958. *Organizations*. John Wiley & Sons, New York.
- Mayer, R.C., Davis, J.H., Schoorman, F.D., 1995. An integrative model of organizational trust. *Academy of Management Review* 20 (3), 709–734.
- McFadyen, M.A., Cannella Jr., A.A., 2004. Social capital and knowledge creation: diminishing returns of the number and strength of exchange relationships. *Academy of Management Journal* 47 (5), 735–746.
- Min, K., Stephen, K., Chen, H., 2008. Developing social identity and social capital for supply chain management. *Journal of Business Logistics* 29 (1), 283–304.
- Modi, S.B., Mabert, V.A., 2007. Supplier development: improving supplier performance through knowledge transfer. *Journal of Operations Management* 25, 42–64.
- Molina-Morales, F.X., Martínez-Fernández, M.T., 2009. Too much love in the neighborhood can hurt: how an excess of intensity and trust in relationships may produce negative effects on firms. *Strategic Management Journal* 30 (9), 1013–1023.
- Nahapiet, J., Ghoshal, S., 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review* 23 (2), 242–266.
- Nishiguchi, T., 1994. *Strategic Industrial Sourcing: The Japanese Advantage*. Oxford University Press, New York.
- Nunnally, J., 1978. *Psychometric Theory*. McGraw Hill, New York.
- O'Reilly, C.A., 1980. Individuals and information overload in organizations: is more necessarily better? *Academy of Management Journal* 23 (4), 684–696.
- Ouchi, W.G., 1980. Markets, bureaucracies, and clans. *Administrative Science Quarterly* 25 (1), 129–141.
- Park, S.H., Luo, Y., 2001. Guanxi and organizational dynamics: organizational networking in Chinese firms. *Strategic Management Journal* 22 (5), 455–478.
- Petersen, K.J., Handfield, R.B., Ragatz, G.L., 2005. Supplier integration into new product development: coordinating product, process and supply chain design. *Journal of Operations Management* 23 (3–4), 371–388.
- Perrone, V., Zaheer, A., McEvily, B., 2003. Free to be trusted? Organizational constraints on trust in boundary spanners. *Organization Science* 14 (4), 422–439.
- Pfeffer, J., Salancik, G., 1978. *The External Control of Organizations*. Harper & Row, New York.
- Podsakoff, P.M., Organ, D.W., 1986. Self-reports in organizational research: problems and prospects. *Journal of Management* 12, 531–544.
- Podsakoff, P.M., MacKenzie, S.B., Lee, Y., Podsakoff, N.P., 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88, 879–903.
- Poppo, L., Zhou, K., Ryu, S., 2008. Alternative origins to interorganizational trust: an interdependence perspective on the shadow of the past and the shadow of the future. *Organization Science* 19 (1), 39–55.
- Portes, A., 1998. Social capital: its origins and applications in modern sociology. *Annual Review of Sociology* 24 (1), 25.
- Portes, A., Sensenbrenner, J., 1993. Embeddedness and immigration: notes on the social determinants of economic action. *American Journal of Sociology* 6, 1320–1351.
- Portes, A., Landolt, P., 1996. The downside of social capital. *The American Prospect* 7 (26), 18–21.
- Putman, R.D., 1993. The prosperous community: social capital and public life. *The American Prospect* 13, 35–42.
- Ring, P.S., Van de Ven, A.H., 1992. Structuring cooperative relationship between organizations. *Strategic Management Journal* 13 (October), 483–498.
- Rossetti, Ch.L., Choi, T.Y., 2005. On the dark side of strategic sourcing: experiences from the aerospace industry. *Academy of Management Executive* 19 (1), 46–60.
- Rowley, T., Behrens, D., Krackhardt, D., 2000. Redundant governance structures: an analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strategic Management Journal* 21 (3), 369–376.
- Sabel, Ch.F., 1993. Studied trust: building new forms of cooperation in a volatile economy. *Human Relations* 46 (9), 1133–1170.
- Sanders, N.R., 2008. Pattern of information technology use: the impact on buyer–supplier coordination and performance. *Journal of Operations Management* 26 (3), 349–367.
- Sarkar, M.B., Echambadi, R., Cavusgil, S.T., Aulakh, P.S., 2001. The influence of complementarity, compatibility, and relationship capital on alliances performance. *Journal of the Academy of Marketing Science* 29 (4), 358–373.
- Selnes, F., Sallis, J., 2003. Promoting relationship learning. *Journal of Marketing* 67, 80–95.
- Stevens, J., 1989. Integrating the supply chain. *International Journal of Physical Distribution and Materials Management* 19 (8), 3–8.
- Subramani, M.R., Venkatraman, N., 2003. Safeguarding investments in asymmetric inter-organizational relationships: theory and evidence. *Academy of Management Journal* 46 (1), 46–62.
- Swink, M., Narasimhan, R., Wang, C., 2007. Managing beyond the factory walls: effects of four types of strategic integration on manufacturing plant performance. *Journal of Operations Management* 25 (1), 148–164.
- Sytch, M., Gulati, R., 2008. Creating value together. *MIT Sloan Management Review* 50 (1), 12–13.
- Tan, K.C., Kannan, V.R., Handfield, R.B., 1998. Supply chain management: supplier performance and firm performance. *International Journal of Purchasing and Materials Management*, summer, 2–9.
- Tsai, W., 2001. Knowledge transfer in intraorganizational networks: effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal* 44 (5), 996–1004.

- Terpend, R., Tyler, B.B., Krause, D.R., Handfield, R.B., 2008. Buyer–supplier relationships: derived value over two decades. *Journal of Supply Chain Management: A Global Review of Purchasing & Supply* 44 (2), 28–55.
- Thompson, J.D., 1967. *Organizations in Action*. McGraw-Hill, New York.
- Tsai, W., Ghoshal, S., 1998. Social capital and value creation: the role of intrafirm networks. *Academy of Management Journal* 41 (4), 464–476.
- Utterback, J.M., Abernathy, W.J., 1975. A dynamic model of process and product innovation. *Omega* 3 (6), 649–656.
- Uzzi, B., 1997. Social structure and competition in interfirm networks: the paradox of embeddedness. *Administrative Science Quarterly* 42 (1), 35–67.
- Van Deth, J.W., Zmerli, S., 2010. Introduction: civiness, equality, and democracy—a “dark side” of social capital? *The American Behavioral Scientist* 53 (5), 631–639.
- Venkatraman, N., 1989. Strategic orientation of business enterprises: the construct dimensionality and measurement. *Management Science* 35 (8), 942–962.
- Villena, V.H., Gomez-Mejia, L., Revilla, E., 2009. The decision of the supply chain executive to support or impede supply chain integration: a multidisciplinary behavioral agency perspective. *Decision Sciences Journal* 40 (4), 635–665.
- Williams, L.J., Cote, J.A., Buckley, M.R., 1989. Lack of method variance in self-reported affect and perceptions of work: reality or artifact? *Journal of Applied Psychology* 74, 462–468.
- Womack, J.P., Jones, D.T., Roos, D., 1991. *The machine that changed the world: the story of lean production*. Harper Perennial.
- Wuyts, S., Geyskens, I., 2005. The formation of buyer–supplier relationships: detailed contract drafting and close partner selection. *Journal of Marketing* 69 (4), 103–117.
- Yli-Renko, H., Autio, E., Sapienza, H.J., 2001. Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic Management Journal* 22 (6/7), 587–604.
- Zaheer, A., McEvily, B., Perrone, V., 1998. Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organization Science* 9 (2), 141–159.
- Zaheer, A., Gözübüyük, R., Milanov, H., 2010. It's the connections: the network perspective in inter-organizational research. *Academy of Management Journal* 24 (1), 62–77.