The Architecture of Relational Capabilities: Building and Managing Strategic Supplier Relationships

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Abstract

1. Introduction

The resource-based view (RBV) holds that, within the firm, unique combinations of inimitable and immobile resources and capabilities form the basis of competitive advantage (Wernerfelt, 1984; Barney, 1991). Others have extended the RBV to include resources that lie outside firm boundaries, noting that inter-organizational relationships provide conduits to knowledge, information, ideas, products, technologies and innovation residing in a firm's network (Gulati, 1998; Madhok, 2002; Lavie, 2006). Working in relationship with other firms can increase strategic flexibility (Sanchez, 1995), provide access to new knowledge (Grant, 1996b), and allow organizations to accomplish goals together which they could not achieve on their own (Dyer and Singh, 1998; Madhok and Tallman, 1998). Actively cultivating a cooperative network of suppliers and partners effectively increases the pool of available resources that, when combined with the firm's own resources, will collectively meet organizational and customer needs (Dyer, 1996; Gulati et al., 2000; Narasimhan and Das, 2001).

To access the complementary resources residing in networks and trading partners, firms and their sourcing organizations should actively develop the governance skills and *relational capabilities* necessary to create an exchange environment that engenders trust, enables information flow, and facilitates knowledge creation or transfer (Lorenzoni and Lipparini, 1999; Madhok, 2002; Lavie, 2006). Collis (1994, p. 145) define organizational capabilities as, "the socially complex routines that determine the efficiency with which firms physically transform inputs into outputs." Capabilities are tangible or intangible processes, specific to the firm, and over time are created through complex interactions among the firm's resources and human capital (Amit and Schoemaker, 1993). Amit and Schoemaker (1993) also note that capabilities can be considered intermediate goods, developed to enhance the productivity of organizational resources. In the context of relationships, a firm's *relational capability* (RC) involves the inter-organizational routines and human capital that combine to transform the inputs of each party into outputs. Notably, the inputs include the complementary resources residing within and in-between firm boundaries, and RC is an intermediate good directed at improving the productivity of the combination of complementary and firm-owned resources.

Jacobides (2006) calls for more research in the area of capabilities, especially regarding the effects of *organizational architecture* on knowledge creation and capability development. Acknowledging that organizational architecture lacks a robust definition, he identifies the organizational structure, division of labour, resource allocation mechanisms, and interdepartmental coordination as key elements of the construct. Others have included strategy, structure, processes, culture, people, and evaluation/rewards in the set of architectural elements (Howard,

1992; Nadler et al., 1992; Smith and Tushman, 2005). Building on this foundation, we can apply the notion of architecture to inter-organizational relationships, creating a *relational architecture* (RA). A subset of organizational architecture, decisions regarding resource allocation, the structure of a firm's boundary spanning resources, the division of labour between firms, and processes and mechanisms of inter-organizational coordination are foundational to RA. The manner in which these elements are structured will affect a firm's RC, or its ability to access and leverage the resources in its network.

The primary outputs of the relationship process are jointly produced resources (Madhok, 2002), which can be leveraged to create relational rents, the supernormal profits only available through inter-firm efforts (Dyer and Singh, 1998). Another, less tangible output of organizational relationships is *social capital*, which generally refers to the accumulated goodwill (Adler and Kwon, 2002) and overall asset created by gaining access to actual and potential resources embedded in networks (Granovetter, 1992; Nahapiet and Ghoshal, 1998). A similar construct, *relational capital*, "refers to the level of mutual trust, respect and friendship that arises out of close interaction at the individual level between alliance partners" (Kale et al., 2000, p. 218). These perspectives present social and relational capital as resource stocks (Dierickx and Cool, 1989), to be nurtured and developed for the purpose of leveraging the value residing in network resources (Amit and Schoemaker, 1993; Lorenzoni and Lipparini, 1999). Recently, (Gulati and Kletter, 2005) suggested that a firm's ability to develop positive relationships (i.e., its relational capability) and the subsequently enhanced value of the relationships (i.e., relational capital) are critical to long-term success in today's complex world. Others have linked relational capital to performance improvements for buyers and customers (Collins and Hitt, 2006; Krause et al., 2007; Lawson et al., 2008) and stated that differentials in relational capabilities can be a source of competitive advantage (Peteraf, 1993; Madhok, 2002).

Extant research, however, indicates that the processes of developing stronger relationships and building relational capital are not easily mastered, as the success rates of inter-firm collaboration efforts (Madhok and Tallman, 1998; Fawcett and Magnan, 2002; Cousins and Spekman, 2003; Poirier and Quinn, 2006) and firms' perceived satisfaction with alliances (Khanna et al., 1994; Day, 1995; Dyer et al., 2001) are quite low. While our knowledge of buyer-supplier relationships still needs further development (Goffin et al., 2006), we do know that the inherent challenges in developing closer relationships manifest in both intra- and inter-organizational dynamics (McIvor and McHugh, 2000; Dyer et al., 2001; Stank et al., 2001; Cousins and Spekman, 2003; Golicic et al., 2003; Myhr and Spekman, 2005; Emberson and Storey, 2006; Spekman and Carraway, 2006; Swink, 2006; Fawcett et al., 2008).

Despite the volume of work supporting the relational approach, there are relatively few studies that have examined the relational architecture necessary to support and develop relationships with *strategic suppliers*. In particular there is little research to date that assess those elements that address challenges internal to the buying firm, and how these interact with those factors external to the firm. Given the necessary investments and inherent risks, most firms develop close buyer-supplier relationships with a selective subset of their supply base—their strategic suppliers. By expanding on the concept of relational architecture (Gulati and Kletter, 2005; Jacobides, 2006)

we seek to identify empirically the intra- and inter-organizational activities and underlying organizational elements that enhance relationships with strategic suppliers. Put another way, we seek to better understand the relational architecture which supports the development of relational capital. Using cluster analysis, a typology of maturity regarding strategic supplier relationship management (SSRM) is developed. Intra- and inter-organizational activities promoting relationship development—elements of relational architecture—are analysed across the clusters to identify linkages to enhanced relationship quality and relational capital, strengthening our understanding of SSRM. The remaining sections of the paper will discuss the theoretical underpinnings of relational architecture, the associated relational capabilities, and relationship quality as a measure of the maturity of strategic supplier management. We then develop relevant hypotheses, present the methodology, and end with a discussion of the results and implications.

2. Theoretical background

There has been a growing interest in the way that inter-organizational relationships can be used to grow competitive advantage between firms. This topic sits at the nexus of the fields of economics/theory of the firm (Williamson, 1985; Barney, 1991), strategy (Dyer, 1996; Lorenzoni and Lipparini, 1999; Takeishi, 2001), firm boundaries (Santos and Eisenhardt, 2005; Jacobides and Billinger, 2006), marketing (Dwyer et al., 1987; Heide, 1994; Narayandas and Rangan, 2004; Fink et al., 2006), supply management (Landeros and Reck, 1995; Chen et al., 2004; Das et al., 2006; Saccani and Perona, 2007), operations management (Narasimhan and Das, 2001; Swink et al., 2005), and supply chain management (Paulraj and Chen, 2007). Collaborative relationships effectively blur the boundaries of production and exchange between firms, allowing access to network resources, capabilities and knowledge without the full costs and risks of ownership (Sanchez, 1995; Grant, 1996a).

Empirical research across multiple disciplines supports the position that closer, more collaborative inter-organizational relationships drive improved financial and operational performance for buying firms (Dyer, 1997; Lorenzoni and Lipparini, 1999; Carr and Pearson, 2002; Ulaga, 2003; Corsten and Felde, 2005; Terpend et al., 2008), particularly in uncertain and dynamic environments (Noordewier et al., 1990; Jap, 1999; Fink et al., 2006). Recent empirical research in purchasing and supply management adds to the literature confirming the link between strong buyer-supplier relationships and improved performance (Kannan and Tan, 2006; Cousins and Lawson, 2007; Fink et al., 2007; Krause et al., 2007; Chin-Chun et al., 2008; Lado et al., 2008).

The relevant theoretical foundations of inter-organizational relationships derive from the transaction cost economics (TCE) and resource-based view (RBV) theories of the firm, and the contributions of social exchange and social capital theory. Broadly, relationships and governance structures range from markets (arms-length) on one end and hierarchies (vertical integration) on the other, with the middle ground occupied by various hybrid forms, including joint ventures, equity and non-equity alliances, and contractual relationships (Duffy, 2008). Generally, TCE theory suggests that as asset specificity and dependency increase, firms will move away

from markets and towards vertical integration to reduce the transaction costs related to opportunism and its safeguarding (Williamson, 2002; Williamson, 2005). Critiques of TCE centre on the omission of two themes, differential advantage (Ghoshal and Moran, 1996; Madhok, 1996) and social relations (Morgan and Hunt, 1994; Gulati, 1995). Alternatively described as the capability-based (Kogut and Zander, 1992), knowledge-based (Grant, 1996b) or the resource-based view (RBV), this perspective suggests the unique and inimitable combination of resources, capabilities and knowledge that is the firm can be exploited to create competitive advantage (Barney, 1991; Lavie, 2006). The frame of RBV, focused on growth and advantage, is different from the efficiency and cost minimisation perspective of TCE. The social factors that characterise relationships (e.g., trust, obligation, and relational norms) are critical as they can affect partners' willingness to be opportunistic (and the associated safeguarding costs).

Social exchange theory (SET) rests on the basic assumption that parties enter into and maintain relationships—in which resources are exchanged—for the expected benefits received (Blau, 1964). In their review of SET, Lambe et al. (2001) identify four basic premises, stating a) exchanges result in economic or social outcomes, which are b) compared over time to other exchange alternatives (to determine dependence), c) that positive exchange outcomes, over time, build trust and commitment, as well as d) develop relational norms. Applying SET to a network of organizations elucidates the benefits of relational exchange, expanding the domain of RBV to include the resources present in the network (Gulati, 1998). The capabilities-based or knowledge-based view combines the RBV and SET to consider the broad array of economic and social outcomes, such as the creation of knowledge, resources, and social capital inherent a firm's network. Social capital theory (Nahapiet and Ghoshal, 1998) suggests a firm's ability to access network resources and motivate trading partners to collaborate is a function of its social and relational capital, and when combined with a firm's absorptive capacity, results in sustained advantage (Kogut and Zander, 1992; Dyer and Singh, 1998; Gulati and Kletter, 2005).

2.1 Relational capability, architecture, and capital

2.1.1 Relational capabilities

Organizational capabilities, necessary to convert resources into products and services, are comprised of routines (Collis, 1994). Teece et al. (1997, p.510) updated the concept of capabilities by extending the RBV to high-velocity environments, stating that *dynamic capabilities* comprise the "difficult-to-imitate organizational, functional, and technological skills" that engender the development of new competencies. Eisenhardt and Martin (2000, p. 1107) defined a dynamic capability as the firm's "processes to integrate, reconfigure, gain and release resources—to match and even create market change." Zollo and Winter (2002, p. 310) essentially combined these views, suggesting that a dynamic capability is a "learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness." Routines, too, are predicated on those working within them to learn from and respond to internal or external stimuli (Zollo and Winter, 2002). Repeated exposure to stimuli provides the feedback and experience necessary for learning and improving

routines. (Gavetti and Levinthal, 2000, p. 113) suggest “routines reflect experiential wisdom in that they are the outcome of trial and error learning and the selection and retention of past behaviors.”

Through the lens of the relational view, a firm’s relational capability can be leveraged to access resources and capabilities present in a firm’s network, which are not retained by the focal firm (Dyer and Singh, 1998; Lorenzoni and Lipparini, 1999). Lorenzoni and Lipparini (1999, p. 320) define relational capability as “the ability to develop, integrate, and transfer knowledge across different actors in a network”, and observed that relational capability is supported by the firm’s ability to learn from others (Cohen and Levinthal, 1990) and to develop new knowledge and combine it with existing capabilities (Kogut and Zander, 1992). In doing so, firms must create an exchange environment that facilitates the willingness of trading partners to contribute relational resources and participate in creating new knowledge (Lavie, 2006). Building on the work outlined above, we offer the following definition of relational capability:

> *Relational capability is the collection of resources and processes to access, integrate, develop, and reconfigure network resources and capabilities, and is developed over time through the systematic improvement of intra-and inter-organizational routines.*

Borrowing from Nelson and Winter's (1982) hierarchy of routines, Grant's (1996a) “architecture of capabilities” is built on the idea that higher-order capabilities are developed only through integrating knowledge at lower levels of the hierarchy, making them difficult to imitate and therefore, a source of advantage. Examples of higher-order capabilities include faster time-to-market (Lorenzoni and Lipparini, 1999) and the ability to effectively execute post-acquisition integration processes (Zollo and Winter, 2002). Similarly, we consider a firm’s relational capability as a higher-order capability, as it demands the structure necessary to access resources, the social skills necessary to develop trust, and the technical skills to integrate knowledge across multiple organizations and functions. In the knowledge-based view of the firm, the “know-how” (Kogut and Zander, 1992) of managing relationships takes on greater significance as explicit knowledge not embodied in products cannot be easily transferred through market contracts, nor can firms maintain all of the knowledge required for future products in-house (Grant and Baden-Fuller, 1995; Grant, 1996b; Lorenzoni and Lipparini, 1999). The “know-how” of relationships can be learned, as the development and management of inter-organizational relationships is considered a process (Dwyer et al., 1987), reflected in the routines and sub-processes involved in creating and improving relational capability (Ring and Van De Ven, 1994; Cousins, 2002; Leiblein and Miller, 2003). In the realm of alliances, a similar thread of research promotes alliance capability—the ability to learn from alliance experience and develop repeatable routines for alliance management—as a driver of enhanced alliance performance and firm success (Kale et al., 2002; Heimeriks and Duysters, 2007; Kale and Singh, 2007).

Relational capability’s importance in the relational view (Dyer and Singh, 1998) and the development of sustained advantage (Lado et al., 1997; Madhok and Tallman, 1998; Nahapiet and Ghoshal, 1998) positions it for studies addressing how different facets of it become manifest. Paulraj et al. (2008) demonstrate the importance of

inter-organizational communication, describing it as a relational competency and establishing links to buyer and supplier performance improvement. Cousins et al. (2006) observed that informal socialisation mechanisms such as supplier visits and communication guidelines contribute to improved relationships. Cousins and Spekman (2003) also highlight the role of performance measures in supporting continuous improvement and learning in relationships. Whilst Pfohl and Buse (2000), in their study of the development of relational capability in the context of an auto assembler and its logistics partners, note that the overall collection of routines and collaboration practices were integrated into a relational capability. They also observed that structural elements, such as joint team structures and executive roles, and "infrastructural" elements, such as communication and learning, were buttressed by joint problem solving and subsequent task assignment. They noted specific activities such as devoting meeting time to the rules and norms of collaborative behavior, and the systematic use of previous experience (e.g., improved documentation) were observable facets of these infrastructural elements.

2.1.2 Relational architecture

Gulati and Kletter (2005, p.78) describe relationship-centred organizations as firms that are "shrinking their core and expanding their periphery", in that they are increasing focus on fewer activities and sourcing the rest from "strategic partners." Their model of relationship-centric organizations is very similar to Morgan and Hunt's (1994) relationship marketing model which identified supplier, internal, lateral, and customer partnerships as four primary stakeholder groups requiring behaviors and interactions that tend toward relational exchange (Dwyer et al., 1987). Gulati and Kletter (2005, p.81) identify four stakeholders—suppliers, customers, organizational sub-units, and alliances—to which relational capital is leveraged for the purpose of "extracting full value from their various partners." They depict the relationship-centred organization in the context of its *relational architecture* (RA), presented as a continuum (or "ladder") of four relational levels for each stakeholder group. Rungs of the ladder are ascended as the firm develops its relational capability, enabling it to leverage its relational capital.

Teece (1997) has further linked the ideas of architecture and capabilities, stating the "microfoundations" of dynamic capabilities include distinct skills, processes, procedures, organizational structures, and decision rules. Nadler et al. (1992) ascribe the principles of architecture (i.e., purpose, fit, materials, and collateral technologies) to organizations, and suggest organizational architecture (OA) is "the art of shaping organizational space to meet human needs and aspirations" (Gerstein, 1992, p. 15). They further delineate organizational space to include behavioral space, information space, and cultural space, each of which is affected by structure, processes, information flow, and values. Other characterisations of OA often overlap, and include structure, processes, reward systems, people, and culture (Howard, 1992); decision rights, task bundling, organizational structure, performance evaluation, and allocation of rewards (Brickley et al., 1995); strategy, structure, people, processes, and culture (Nadler and Tushman, 1997); structures, processes, capabilities, and technologies (Sauer and Willcocks, 2002); tasks, formal organization, and culture (Smith and Tushman, 2005); and organizational structure, division of labour, resource allocation mechanisms, and interdepartmental coordination (Jacobides, 2006). In her study of internal collaboration, (Liedtka, 1996,

p. 31) refined (Nadler et al., 1992) definition of OA to include “all of the elements of design of the social and work systems, including formal structure, the design of work practices, operating styles, and processes for selection, socialization, development and reward,” and found that, across all of these areas, high-performance firms exhibited a special emphasis on nurturing collaboration.

Analysing the elements of OA that are applicable to inter-organizational relationships suggests that the formal structure of a firm’s boundary spanning resources, the division of labour within and between firms, resource allocation mechanisms, inter-organizational coordination practices, people, information and communication processes, metrics and rewards, and culture combine to create a firm’s relational architecture (RA). Borrowing from Teece (2007), the elements of RA together provide the foundation on which a firm’s relational capability is developed and nurtured. Several of the studies previously cited have in common the notion that competitive advantage is increasingly reliant on a firm’s ability to interact with other organizations in ways that combine access to knowledge and resources with the capability to jointly reconfigure them into products and services (e.g. Dierickx and Cool, 1989; Amit and Schoemaker, 1993; Morgan and Hunt, 1994; Sanchez, 1995; Dyer et al., 1998; Lorenzoni and Lipparini, 1999; Madhok, 2002; Gulati and Kletter, 2005; Lavie, 2006). Fundamental to the relational view is the design and implementation of relational architectures that facilitate the development and continuous improvement of firms’ relational capability.

2.1.3 Social capital, relational capital, and relational architecture

In addition to economic benefits arising from exchange, success in developing a relational capability will generate social capital for firms, previously described as an accumulated asset or stock resulting from relational encounters and valued for its access to actual and potential resources (Nahapiet and Ghoshal, 1998; Adler and Kwon, 2002). As part of the process of ascribing social theories and constructs to organizations, a multitude of definitions of social capital exist. In their presentation of social capital theory and its link to the creation of intellectual capital and knowledge, Nahapiet and Ghoshal (1998) incorporate two general themes from the literature in their definition of social capital: a) the network and overall structure in which relationships reside, and b) the assets in the network made available through those relationships. They outlined three dimensions of social capital that affect conditions necessary for parties to exchange intellectual capital: structural, cognitive, and relational. The structural dimension refers to the overall pattern of connections and linkages (i.e., how you reach people). The cognitive dimension refers to the shared language, vocabulary, and stories that together enable knowledge exchange and combination. The relational dimension refers to the characteristics of relationships (e.g., trust, norms, and obligations) that engender the anticipation of value and motivation for parties to engage in the exchange of knowledge and intellectual capital.

Acknowledging the difficulty in operationalising and separating these dimensions, Nahapiet and Ghoshal (1998) suggest the use of Granovetter's (1992) distinction between structural and relational embeddedness, in which structural embeddedness refers to interactions generated by an actor’s location in a network, and relational embeddedness refers to the assets created by a history of interaction. However, it

has been found that it is ambiguous to conceptualise social capital as both the structure in which relationships occur *and* the characteristics or outcomes of relationships (Rowley et al., 2000; Moran, 2005). In order to avoid this Adler and Kwon differentiate their importance, arguing that the real "substance" of social capital is the goodwill generated by a relationship's history of interactions, and in their definition of social capital notes that its "source lies in the structure and content of the actor's social relations." (Adler and Kwon, 2002, p. 23) They further distinguish goodwill from its possible effects, which include the value associated with information, influence, and solidarity made available by social capital. Using a river as a metaphor, we might consider its source (i.e., structure) to be the watershed and headwaters, but the river's ultimate carrying capacity (i.e., its goodwill) is affected by the relationship with its environment over time, and its potential to irrigate or flood (i.e., its effects) are determined far downstream from the source. Adler and Kwon's (2002) characterisation is similar to Nahapiet and Ghoshal's (1998) social capital theory, in which the relational and cognitive dimensions of social capital generate the motivation for partners to share intellectual capital and create knowledge, while the structural dimension provides a conduit to sources.

Kale et al. (2000) also separated the goodwill element of social capital from its structural sources, identifying commitment, trust, respect and friendship as primary factors in *relational capital*. The approach used by Cousins et al. (2006), closer to earlier definitions of social capital, defined relational capital in terms of social structure, but assessed it using behavioral elements such as trust and respect. Lawson et al. (2008) separated the constructs of relational capital and structural embeddedness, but did not link them sequentially as intimated by Adler and Kwon (2002). They did find direct effects for relational capital, and the structural elements of managerial communication and technical exchange, on buyer performance, measured by improved product design, process design, lead time, and quality. Krause et al. (2007) separated social capital into its structural, cognitive and relational elements, finding different effects across a range of operational performance metrics. Collins and Hitt (2006) observed a positive relationship between relational capital and successfully transferring tacit knowledge.

Separating relational capital from social capital leaves the structural element of social capital isolated. Nahapiet and Ghoshal (1998, p. 244) described structural embeddedness as the "overall pattern" of connections and linkages, which they restated as "who you reach and how you reach them." Adler and Kwon (2002) described the structural component as the source of social capital, derived from the access and opportunity created. Granovetter's (1992) conception of structural embeddedness has largely been viewed through the lens of networks and the structural configurations of relationships (Moran, 2005). Network concepts such as holes, density, and distance, however, do not adequately capture the complexity and milieu of behavioral, informational, and cultural factors that shape the conditions, or "inter-organizational space", necessary for successful exchange (Nadler et al., 1992; Adler and Kwon, 2002; Lavie, 2006). Further, structural embeddedness and network configurations do not address the organizational routines and processes that combine to form capabilities. In their structural capital construct, Krause et al. (2007) seem to recognise this limitation by including information sharing, supplier evaluation, and supplier development elements, which incorporate a routines-capabilities logic similar to that of Leiblein and Miller (2003).

Nadler et al. (1992) suggest that a firm's organizational space, including its behavioral, informational, and cultural factors, is shaped by architectural decisions regarding structure, processes, information flow, and values. Inter-organizational space, and its behavioral, informational, and cultural factors, is likewise shaped by the decisions regarding relational architecture (Gulati and Kletter, 2005). Earlier we identified several characteristics of relational architecture, including structure, resource allocation mechanisms, inter-organizational coordination practices, people, information and communication processes, and metrics. We propose that the relational architecture concept, due to its holistic nature and connectivity to routines (and therefore to capabilities), is a more appropriate frame for evaluating the "source" of relational capital than the concept of structural embeddedness. Like other capabilities, relational capability, necessary for the development of relational capital (Collins and Hitt, 2006), is created by applying learning to the underlying routines and processes. Relational architecture shapes the behavioral, informational, and cultural factors that configure inter-organizational space. Experience and learning continue to refine RA decisions to support the continuous improvement and development of relational capability and relational capital.

2.2 Strategic supplier relationship management

Two inter-related areas of supply management (make/buy decisions and strategic supply) suggest that inter-organizational relationships are strategically important, so developing the architecture underpinning buyer-supplier relationships is a necessary capability. A third, supplier portfolio analysis, is emerging as a tool to classify an organization's suppliers and/or supplier relationships, providing a starting point for deploying aspects of relational architecture. A brief discussion of each follows, with a view to understanding the strategic parameters within which resources can be allocated to those suppliers with whom relational capital can be built.

Make/buy models acknowledge that companies do not have the resources to be world-class across all the elements of their value chain, and recommend that even strategic inputs should be sourced from firms maintaining a comparative advantage ((Venkatesan, 1992; Maltz and Ellram, 1997; Jennings, 2002; Gottfredson et al., 2005). These decisions are critical as they indirectly shape the capabilities and resources the firm develops internally (Jacobides, 2005). Strategic supply has evolved as a response to outsourcing and changes in the quantity, value and nature of what firms buy. As the practice of outsourcing has grown, so has the overall spend and the reliance on the supply base for innovation, prompting many authors to suggest that firms should elevate the profile of supply management to better align the function with its growing involvement in strategic matters (Kraljic, 1983; Cousins and Spekman, 2003; Day and Lichtenstein, 2006).

As the nature of sourcing has changed, supplier segmentation and portfolio models have developed to provide frameworks by which buyers can organise and classify existing suppliers, to inform supplier selection decisions. They usually contain two multi-dimensional constructs developed from product (e.g., criticality, volume), supply market (e.g., concentration), and supplier and buying firm characteristics (e.g., relational investments, assets, skills), and serve to guide managers in

determining the appropriate supplier relationships and governance structures, given various product and market conditions (Kraljic, 1983; Bensaou, 1999; Wagner and Johnson, 2004)). Each model is different in that researchers have used a multitude of drivers to create portfolios, including relationship intensity and supplier management capabilities (Wagner and Boutellier, 2002), technology and collaboration (Kaufman et al., 2000), dependency risk (Hallikas et al., 2005), asset specificity (Bensaou and Anderson, 1999), complexity and strategic importance (Myhr and Spekman, 2005), certainty and dependency (Cousins, 2002), purchase importance and situation (Olsen and Ellram, 1997), and company and supply market strength (Kraljic, 1983). Generally, portfolio models divide the two dominant constructs into two categories, resulting in a 2x2 matrix, and often the labelling of the quadrant reflecting the most challenging or critical scenario identifies the supplier as "strategic" and/or the relationship should be managed as a "partnership" (Bensaou, 1999; Hallikas et al., 2005; Caniëls and Gelderman, 2007; Saccani and Perona, 2007).

Suppliers are deemed strategic because they possess resources or knowledge desired by the buying firm (Bensaou, 1999), because of the amount of spend with them (Olsen and Ellram, 1997), or the nature of the product purchased (Kraljic, 1983). Developing and maintaining relationships is expensive and risky, so close relationships should not be developed for every supplier in a portfolio. Risks include getting too close to suppliers and losing objectivity (Jap and Anderson, 2007), the potential for a firm to lose its core competence (Parry et al., 2006), opportunity costs (Swink and Zsidisin, 2006) not realising an acceptable return on the significant investment required to nurture relationships (Adler and Kwon, 2002), and diminishing returns associated with committing too much to an individual relationship (Swink and Zsidisin, 2006). Despite these risks, several studies indicate they are outweighed by the benefits generated through strategic supplier relationships, including operational improvements (Hojung Shin et al., 2000), enhanced business performance such as market share, ROI, and profit growth (Li et al., 2006), and overall competitive advantage (Chen et al., 2004).

Portfolio models suggest that the characteristics of the outsourced activity or item, the nature of the supply market, and attributes of particular suppliers and the buying firm inform decisions regarding supplier selection and governance structure (Olsen and Ellram, 1997). As sourcing decision environments vary in complexity, a range of suppliers and relationship types is best for buyers, rather than striving for close, collaborative relationships in all dyads (Bensaou, 1999; Cox, 2004; Myhr and Spekman, 2005). Governance structures range from the use of open markets to hierarchies and ownership, with relational governance models falling in the middle (Heide, 1994). Within this spectrum, supplier relationships span from adversarial/arms-length to collaborative/partnership approaches (Hallikas et al., 2005; Swink and Zsidisin, 2006; Duffy, 2008). Aligning the relationship and governance structure with the hazards and characteristics of the buy can reduce transaction costs (Williamson, 2005), maximize value appropriation (Cox, 2004), and improve the overall performance of the exchange (Poppo and Zenger, 2002; Lawson et al., 2008).

Taken together, make/buy, strategic supply, portfolio and relationship models clearly suggest that as buying firms source goods and services of increasing strategic

importance, the relationships with the suppliers of those strategic items should move to the collaboration end of the relationship continuum. The fields of marketing and strategy have identified this "relational view", noting that the strength and quality of a firm's relationships with trading partners can indeed be a source of value generation (Morgan and Hunt, 1994; Dyer and Singh, 1998; Madhok and Tallman, 1998; Lorenzoni and Lipparini, 1999) and are fundamental to the financial and performance success of alliances and cooperative networks (Anderson and Narus, 1984; Dwyer et al., 1987; Lavie, 2006). Due to the variety of transactions (and their inherent complexity) facing firms, (Williamson, 2002) observed that the "problem of economic organization" is, rather than the oft-used markets *or* hierarchies, is actually one of markets *and* hierarchies. At any point in time, an organization will have relationships across the continuum, and may even have multiple relationships and governance modes with the same supplier (Gulati and Kletter, 2005). Studying the effects of and ways in which firms manage their strategic suppliers, however, can shed light on the most important elements of relational architecture.

2.3 Linking relational maturity to relational capital and relationship quality

The experience generated through repeated interactions with trading partners leads to increased understanding of their partner's capabilities and weaknesses, supporting the development of trust (Gulati, 1995; Gulati and Singh, 1998). In social exchange theory (SET), the outcomes of trust and relational norms only accrue over time (Lambe et al., 2001), highlighting the importance of frequency and repeat exchange. Noting the temporal nature of experience, Lorenzoni and Lipparini (1999, p. 332) write, "Interfirm ties are enhanced over time by the creation of a sense of community and trust, daily activity in knowledge access, and co-design practices. Familiarity between organizations through prior alliances convinces firms to progressively use less hierarchical structures in organizing new alliances." Similarly, Leiblein and Miller (2003) suggest greater experience generates learning that allows firms to better gauge the hazards of cooperative behavior, enabling closer fit between relationships and governance modes.

Experience is fundamental to organizational learning (Grant, 1996b), and is a necessary element for capabilities formed and developed by continuously improving their underlying routines and processes (Collis, 1994; Zollo and Winter, 2002; Jacobides, 2006; Teece, 2007). Gavetti and Levinthal (2000, p. 113) suggest "routines reflect experiential wisdom in that they are the outcome of trial and error learning and the selection and retention of past behaviors." Leiblein and Miller (2003, p. 846) apply this thinking to routines in sourcing and the development of relational capabilities:

> "Greater sourcing experience is likely to aid in the development of organizational routines that allow firms to efficiently collaborate with a broad array of partners. These routine-based capabilities may include general capabilities such as standard contractual safeguards or mechanisms to enhance interfunctional coordination across partners as well as firm-specific relational capabilities. Experienced firms may select better suppliers, understand how to organize relationships more effectively, and better anticipate and respond to technological or market contingencies over time."

Viewing maturity as an outcome of experience, Sawhney and Zabin (2002) present a model of relational maturity, based on the five-level Capability Maturity Model of software development (Bemberger, 1997). Their four-dimensional model of relationships includes customers, channel partners, employees, and suppliers (Morgan and Hunt, 1994; Gulati and Kletter, 2005), and Sawhney and Zabin (2002) suggest that "relational equity" is the wealth-creating potential that resides in relationships with stakeholders, and conclude that relational equity is best managed by making decisions across five "pillars" that include strategy, process, technology, organization, and metrics. Similarly, Gulati and Kletter's (2005) relationship-centric model is built on "relationship ladders", connoting a maturity of relationships and a firm's ability to leverage its relational capital. Whilst Sawhney and Zabin (2002) do not test their five-level model of relational maturity, they do depict more relationally-mature firms as having support from top leadership, high satisfaction levels across relationships, an optimised infrastructure for relationship management, integrated and coordinated processes, and strong performance measurement programs.

When studying organizational phenomenon, it is necessary to keep the level of analysis at the appropriate level. As a firm maintains multiple inter-organizational relationships, the level of the firm would be too coarse for the analysis of relationships which are idiosyncratic in nature at the aggregated relational level. Within a dyad, a buyer and supplier may be simultaneously engaged in multiple exchanges, ranging from simple to complex (Gulati and Kletter, 2005), therefore judging the performance and operational benefits owing to relational changes across the entire range of goods and services provided by a supplier would be very difficult. To overcome these challenges, researchers have examined *relationship quality* (RQ) as an outcome variable, as it is broad enough to capture the social outcomes across the range of exchanges within a dyad. The breadth leads to the treatment of RQ as a multi-dimensional construct with several elements considered, including customer orientation and ethical profile (Dorsch et al., 1998), willingness to invest and expectations of continuity (Kumar et al., 1995; Jap et al., 1999), information sharing and communication (Lages et al., 2005), and understanding (Leonidou et al., 2006). Despite the variety of terms and lack of clarity (Naude and Buttle, 2000), the majority of recent work identifies trust, commitment, and satisfaction as the three primary contributors to RQ (Crosby et al., 1990; Dorsch et al., 1998; Hennig-Thurau et al., 2002; Walter and Ritter, 2003; Farrelly and Quester, 2005; Ulaga and Eggert, 2006; Skarmeas et al., 2008).

3. Model and Hypotheses

We have so far have noted that inter-organizational relationships provide access to knowledge and resources that lie outside of firm boundaries, which may be combined with a firm's own resources to create advantage and rents (Dyer and Singh, 1998; Lavie, 2006). Gaining access to the complementary resources embedded in a network is a function of a firm's relational capability (Lorenzoni and Lipparini, 1999; Gulati and Kletter, 2005; Collins and Hitt, 2006). Capabilities are comprised of routines (Collis, 1994; Zollo and Winter, 2002), which can be improved and refined with experience. In addition to direct economic benefits, positive inter-organizational exchange produces relational capital, a social benefit that enhances future access to network resources (Nahapiet and Ghoshal, 1998; Cousins et al.,

2006). A firm's relational architecture provides the foundation on which relational capabilities are developed, and includes formal structure, processes, people, division of labour, resource allocation mechanisms, metrics and rewards, and inter-departmental coordination (Sawhney and Zabin, 2002; Jacobides, 2006; Teece, 2007). These constructs and relationships are depicted in Figure 1.

<<Insert Figure 1 about here>>

Building on Gavetti and Levinthal's (2000) idea that experiential wisdom leads to the selection and retention of past behaviors and decisions, Leiblein and Miller's (2003) observations that sourcing experience leads to enhanced relational capabilities, and the maturity framework introduced by Sawhney and Zabin (2002), we posit that firms that are more experienced and mature in managing strategic suppliers (i.e., capable) will likely have created the relational architectures that lead to better outcomes. Through learning, they will have altered the elements of their architectures—structure, processes, people, technology, resource allocation, and metrics—to enhance their capability to manage relationships. That is to say, the experience allows them to become more mature in their relational abilities. Finally, the capability (i.e., maturity) manifests in enhanced relational capital (i.e., improved relationship quality).

Figure 2 portrays the theoretical model we are using to study the architecture/capability/capital sequence. We have identified internal and boundary spanning elements that comprise relational architecture and use maturity to account for capability. Relationship quality serves to capture relational capital, that "stock" that motivates partners to invest time, energy, and creativity in a relationship.

<<Insert Figure 2 about here>>

The elements of organizational architecture most frequently mentioned in the literature include structure, processes, culture, people, decision rules and resource allocation, tasks and division of labour, performance evaluation and rewards, information and communication, and strategy (Nadler et al., 1992; Brickley et al., 1995; Nadler and Tushman, 1997; Jacobides, 2006). Relational architecture decisions involve these same levers, combining the behavioral, informational, and cultural factors to form the inter-organizational space necessary for creating new knowledge (Madhok, 2002; Lavie, 2006). By leveraging the accumulated experience of interorganizational relationships, RA decisions and upgrades also affect the development of a firm's relational capability, or its ability to access and integrate network resources (Amit and Shoemaker, 1993; Lorenzoni and Lipparini, 1999; Teece, 2007).

Commitment to relationships has long been associated with improved performance and satisfaction (Dyer, 1997; Morgan and Hunt, 1994; Mohr and Spekman, 1994; Wu et al., 2006). One way in which organizations demonstrate commitment to partners is by allocating and dedicating assets to the relationship. Internally, dedicating human assets or adjusting the organizational structure by creating organizational units focused on relationships can signal management's commitment to the rest of the organization, providing legitimacy and reducing barriers (Dyer et

al., 1997; Fawcett et al., 2006). Due to the benefits associated with dedicated assets and commitment, we posit:

> H1: Organizations that allocate and arrange internal resources (e.g., structure, people) for relationships will better manage their strategic suppliers.

Maturity in relationship management may also be reflected in the tools and decision frameworks a firm develops and maintains. Financial-oriented frameworks have addresses the return on investment analysis regarding close ties with strategic suppliers (Emberson and Story, 2006; Swink and Zsidisin, 2006) and guidelines for sharing benefits with suppliers (Cousins, 2002). Tools directed at relationships include documenting relationship strategies (Olsen and Ellram, 1997; Wagner and Boutellier, 2002) and providing training for employees (Kale, Dyer, and Singh, 2002). Therefore:

> H2: Organizations that develop and use frameworks to guide resource allocation and governance will better manage their strategic suppliers.

Experience and learning associated with strategic suppliers may also manifest in increased information sharing and the overall structure that engenders information exchange (Carr and Pearson, 2002). Several studies have noted the importance and benefits of communication and sharing of information performance (Lawson, et al., 2008; Fawcett, et al., 2006; Lusch and Brown, 1996). Sharing evaluation criteria and results, and strategic information is associated with improved relationships and performance (Cousins and Lawson, 2007; Lorenzoni and Lipparini, 1999; Mohr and Spekman, 1994). Given the multitude of evidence that information sharing improves performance, we posit:

> H3: Organizations that openly exchange strategic and performance information will better manage their strategic suppliers.

Close ties and relations allow for firms to work together to improve processes and drive value. Several authors have noted that, at their most basic level, relationships between buyers and supplier or alliance partners creates an environment in which both parties are willing to contribute energy and creativity to improvement and joint problem solving (e.g., Gulati and Sytch, 2007; Saccani and Perona, 2007; Swink and Zsidisin, 2006; Mohr and Spekman, 1994). Close relationships provide the time and space necessary for learning how to work together. Therefore:

> H4: Organizations that engage in more joint work with suppliers that drives value for both firms will better manage their strategic suppliers.

Lorenzoni and Lipparini (1999) observed firms' willingness to learn and adapt their governance styles by investing in relational activities, writing, "When the 'learning by interacting' mechanisms started to show their usefulness, the lead firms abandoned the 'hierarchy' option of manufacturing, adding the relational dimension to the efficiency-based consideration traditionally driven by make-or-buy alternatives." An organization's overall commitment to collaboration, manifest in investments in relational architecture, leads to performance improvements and higher value relationships (Liedtka, 1996; Wu et al., 2006). Therefore:

H5: Organizations that are more mature regarding their management of strategic suppliers will have higher quality relationships.

4. Methodology

Moran's (2005, p. 1132) discussion of social capital touches on the structural and relational elements, and he asks the question, "That is, in comparison with the network structure, to what extent does the quality of one's relationships matter?" Nahapiet and Ghoshal (1998) provide insight, observing that while structural elements may provide access to other organizations and their resources, it is the relational and cognitive factors which provide the motivation for partners to exchange and share. Studies of relationship quality suggest it is driven by activities that increase trust, signify commitment, and result in customer satisfaction (Skarmeas et al., 2008). In Sawhney and Zabin's (2002) maturity model, the highest levels are associated with satisfaction. Johnsen, et al., (2008) recommend, in the case of strategic partnerships, that evaluation focus on the relationship, not solely on the standard set of performance metrics used to evaluate suppliers.

Our methodology is modeled after Cannon and Perreault's (1999) study of relationship types, in which they collected survey data, created supply market-related factors (antecedents), employed cluster analysis using factors describing buyer-supplier relationship linkages, and then used discriminant analysis to investigate the relationship between the antecedents and the clusters (relationship types). Finally, they used ANOVA to investigate the relationship between the clusters and selected outcome variables.

Our study is arranged similarly. We first developed an online questionnaire survey methodology sent to a randomly selected group of organizations across a broad range of service and manufacturing sectors. Data was collected in relation to the research questions and hypotheses described in the previous sections. The unit of analysis in this study is at the business-unit level in respect of the approach adopted to supply relationship management. The terms "company" or "organization" are used in a broad sense, and relate to the business unit level of the firm. The data set of 657 responses was used to conduct statistical analysis and test the hypothesised relationships in the model (see Figure 2).

4.1 Survey and data collection

The questionnaire survey was designed with respect to the guidelines and recommendations presented in (Dillman, 2007) for maximising the response rate to the survey and adhering to the conventions of sound questionnaire research design. Respondents were contacted by email on three separate occasions. The first email (including a link to the questionnaire) was followed up with two reminders (each sent two weeks apart representing a total data collection period of seven weeks in duration). Due to time constraints only three emails were sent.

The survey questionnaire used constructs from previous literature, with a modified scale. The type of scale employed was chosen depending on the ease with which

the respondents can answer and on the type of analysis performed, in accordance with (Forza, 2002). In questions concerning supply relationship strategy, perceptual Likert scales with verbal frequency measures and statements to which the respondents gave their approval rate were used instead of metric measurements. By using perceptual Likert scales, response rates can be improved since the respondents can more easily give estimations and do not need to verify the exact value.

A total of 5298 questionnaire completion requests were sent via email. 852 questionnaires were returned, of which 659 responses were usable. This represents a usable combined response rate of 12.4 percent which is reasonable, in comparison to other studies (Fawcett and Scully, 1995; Narasimhan and Das, 2001) and survey research analysis in operations management (Frohlich, 2002). Non-response bias is estimated by comparing the responses from the first round with those received after the final reminder as suggested by (Lambert and Harrington, 1990). Univariate *t*-tests were performed on randomly selected survey items. The univariate *t*-tests yielded no statistically significant difference among early and late respondents, with no significant differences (at the 0.05 level) between these groups of respondents.

4.2 Sample

The sample frame consisted of organizations included in the membership databases of the International Procurement Leadership Foundation (IPLF) and the Council of Supply Chain Management Professionals (CSCMP). These combined memberships made up of over 12,000 supply management professionals with over 6,000 at the Manager, Vice President and Director level. Both the CSCMP and IPLF are professional development organizations for supply management professionals. This approach to identifying a sample frame has been used previously, and has been found to be robust (Narasimhan and Das, 2001; Carr and Pearson, 2002). All respondents belonged to the membership of the IPLF or CSCMP and worked with supply management issues on a day-to-day basis. The study includes small, medium-sized as well as large companies. A wide range of industries participated in the survey participated in the study. We eliminated those respondents that indicated their job role as ‘consultant’, as this group of individuals could have been answering on behalf of a client rather than on their own organization’s supply relationship management practices. They constituted respondent to some of the 195 questionnaires, and were eliminated before the analysis commenced, as we considered their responses to be a potential source of bias. This was because they may be responding to questions about their own organization, or a client’s business and as such we considered their responses to be a potentially poor in terms of respondent-related reliability.

The sample for this study reflected the whole database of members from the IPLF and a randomly selected group of 2,000 members from the CSCMP. Each of the professionals served as a key informant. These respondents were chosen as they were informed about the subject matter having been involved in purchasing and had supplier management responsibilities which gave them the insight necessary about supplier relationships. The profile of respondent accorded with the need to investigate the relationships that organizations (through their staff) have with suppliers.

The main reason for the elimination of questionnaire responses was a failure to complete the survey in its entirety, due partly to its lengthy nature. However, extra questions were necessary as they formed a key part of a self-assessment benchmarking profile that was returned to each participant once the survey had been completed. This aided in increasing the response rate, but did have the negative effect of making the survey longer to complete, thus resulting in 195 surveys being discarded as they were incomplete. Table xx presents the characteristics of the respondents.

The respondents to the survey consisted primarily of executives at the Director and Vice President level. About 50% of the respondents are in procurement, supply chain, or logistics roles. The respondents worked for a variety of industries, ranging from fast moving consumer goods, oil & gas, and pharmaceuticals. Firm size was measured in terms of gross dollar/euro/UK pound sales (currency conversions were correct at the time of the survey). On average, firms in the sample had $1B in sales revenue.

5. Results & Discussion

The data analysis begins with the results of structured equation modelling to establish convergent and discriminant validity for the underlying variables and their respective factors in the model. Next, cluster analysis, discriminant analysis, and ANOVA were used to test the hypothesised relationships in the model.

Confirmatory factor analysis was used to develop the factors that measure relational architecture. From a list of about 20 items, the CFA process reduced those to 16 items. Table 1 lists the items (and Cronbach's alpha scores) that comprise the factors used to measure the sub-elements of relational architecture, as well as the items comprising the relationship quality (RQ) scale. Table 2 contains the latent variable correlation matrix, demonstrating discriminant validity for the factors.

The items in Table 1 broadly represent the elements of organizational architecture—particularly in terms of shaping the behavioral, informational and cultural space (Nadler at al., 1992). As discussed previously, we are applying the concept to the space occupied by boundary spanning employees and systems, as well as the processes and policies in support. The internal resources, internal frameworks, joint information exchange and joint improvement factors in Table 1 represent the levers available to affect the architecture of a relationship.

The model in Figure 2 suggests that maturity in managing relationships with strategic suppliers serves as a surrogate to relational capability. We leverage the ideas of learning and experiential wisdom to the investment and management decisions made to enhance relationships with strategic suppliers. Over time, the learning generated through multiple relationships, as well as the iterative and dynamic nature of a single relationship, develops into relational capability. To differentiate the respondents by strategic supplier relationship maturity (SSRM), cluster analysis was applied, with the results being forced into three clusters. Table 3 lists the items used to measure the maturity of a firm's approach to supplier relationship management, as

well as the cluster centers for each of the three clusters. The three clusters appear to break into low, medium, and high levels of maturity or relational capability.

Tables 4 – 6 show the results of the discriminant analysis, with two functions emerging. Only function 1 (Table 4) has an eigenvalue greater than 1.0 and it accounts for nearly all of the variance (99.2%). The discriminant function coefficients in Table 5 indicate that the first three factors (Internal Resources, Internal Frameworks, and Joint Information Exchange) are different in the two functions, indicating these three factors are contributing to differences in the cluster groups. Interpretation means these factors are central to differentiating strategic supplier management maturity; over time, firms have learned where to position the relational architecture levers to develop their relational capability. This result demonstrates support for Hypotheses 2-4.

The final link in Figure 2—between maturity (SSRM) and relationship quality (RQ)—is the surrogate for the theoretical model's relationship between relational capability and the creation of relational capital. Recall that relational capital is necessary to gain access to the resources that reside in suppliers or external organizations. It is relational capital that underpins the creation of relational rents (Dyer and Singh, 1998).

Tables 7 – 8 display the ANOVA results of the clusters on relationship quality (RQ). Table 7 lists the means the RQ means for each cluster and Table 8 shows the clusters differ significantly regarding the perceived relationship quality. In several studies, researchers have identified a collection of benefits associated with enhanced RQ, such as greater trust (Arino et al., 2001), improved supply chain performance (Fynes, et al., 2005), service quality (Woo and Ennew, 2004) and increased loyalty (Caceras and Paparoidamis, 2007).

Extensions to the RBV suggest that firms able to access resources and capabilities outside of their boundaries will be able to generate capture superior rents (Lavie, 2006). Our study investigated the linkages between structural decisions made in the firm and with partners (relational architecture), skill and maturity of managing relationships (relational capability) and the satisfaction and quality associated with those relationships (relational capital). We demonstrated a significant relationship between three elements of relational architecture (internal resources, internal frameworks, and joint information exchange) and maturity/capability in managing relationships with strategic suppliers. Finally, we demonstrated a positive and significant relationship between maturity (capability) and relationship quality (capital).

While many authors suggest close ties with suppliers is the right strategy in many cases, success of firms actually leveraging those relationships is spotty and inconsistent. We think that the decisions and structures built within the firm will help to develop the firm's capability in managing relationships, thereby allowing access the resources present—and available—in its network. Capabilities are exemplified by an organization that adapts its operating processes through a relatively stable activity dedicated to process improvements, and are the organization equivalent to the technological determinants of production efficiency (Collis, 1994). Capabilities clearly can be developed in regards to enhancing relationships and companies that

are realizing the most value from their relationships have learned how work with other firms to create that value.

6. Limitations and future research

Below is a list of topics and issues that future research in this area might address:

- Role of individuals' relational competency in supporting firm-level relational competency (Blyler and Coff, SMJ 2003)

- How do governance and relational skills evolve over time and what is their relationship to production skills? (Madhok, 2002)

- Relationship between division of labor in the firm and firm capabilities, and how the capabilities change and evolve (Jacobides, 2006)

- Corporate Cultural effects on relational competency (Lado, et al., 1992)

- Applying concept of social capital simultaneously to intra-(Tsai, SMJ, 200) and inter-organizational factors.

- More study in general on the contribution of intra-org processes to relational capability. (Liedtka, 1996)

- Adler et al. (1999) and Tushman (1996) and Smith and Tushman's (2005) work on ambidextrous organizations—and the inherent conflicts between exploring and exploiting strategies—suggest a requirement for different architectures. First, how are architectures different in exploitive vs. explorative relations?

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Table 1: Relational Architecture Factors
(Scale: 1 – 5; with extremes presented on survey as listed in table)

FACTOR		Cronbach's Alpha
Internal Resources		[α = .865]
There is no overall sponsor who 'owns' initiatives with strategic suppliers.		We have a main board/top executive sponsor for strategic supplier initiatives.
There are no dedicated relationship leaders for strategic suppliers.		Full-time, dedicated relationship leaders are in place for strategic suppliers.
We have not allocated a specific budget or resources to strategic supplier initiatives.		Our organization has allocated a budget and resources to strategic supplier initiatives.
We have not identified the business case and benefits of strategic supplier initiatives.		The business case and benefits of strategic supplier initiatives are identified.
We do not have cross-functional teams with clear responsibilities for strategic suppliers.		We have cross-functional teams w/ clear responsibilities for strategic suppliers.
Internal Frameworks		[α = .859]
We do not have guidelines or frameworks to share benefits with strategic suppliers.		We have guidelines and frameworks for sharing benefits with strategic suppliers.
We do not have a defined and structured process for managing strategic suppliers.		A defined process exists for managing strategic suppliers and is widely adopted.
We do not have documented relationship strategies for our strategic suppliers.		We have full documented relationship strategies for all our strategic suppliers.
We do not provide training in strategic supplier relationship leadership.		Strategic supplier relationship leaders have been in our adopted process.
Joint Information Exchange		[α = .861]
We do not formally review key data and information about strategic suppliers.		We have regular, open dialog with strategic suppliers about performance.
Performance metrics for strategic suppliers are undeveloped or non-existent.		We have forums and reviews to examine internal data About strategic suppliers.
There are gaps in our understanding of strategic suppliers' strategies and plans.		We have a full set of performance metrics for measuring strategic suppliers.
We do not have regular, open dialogue with our strategic suppliers about performance.		There is real understanding of strategic suppliers' business strategies.
Joint Improvement		[α = .829]
We do not work regularly with strategic suppliers on new ways of reducing costs.		We regularly work with strategic supplies to find new ways of reducing costs.
We do not focus with strategic suppliers on radically restructuring ways of working.		We regularly focus with strategic suppliers on radically restructuring ways of working.
We do not have jointly planned, detailed work streams with strategic suppliers.		We have jointly planned and detailed work streams with our strategic suppliers.
Relationship Quality (1 = Strongly Disagree, 5 = Strongly Agree): "Provide an assessment of how strategic suppliers currently view your organization" [α = .771]		
Tough but fair. The right balance between competition and collaboration.		
An improving organization. Strategic suppliers want to work with us.		
A great organization to do business with. A "preferred customer."		
Relationships are excellent, open and co-operative on both sides.		
Committed to maximising value jointly, and sharing the benefits with them.		

Table 2: Relational Architecture Factors – Discriminant Validity (latent variable correlation matrix)

	Internal resources	Internal frameworks	Joint Info exchange	Joint improvement
Internal resources	**.780**			
Internal frameworks	.767	**.801**		
Joint Info exchange	.675	.713	**.832**	
Joint improvement	.583	.634	.661	**.857**

Square root of AVE is on the diagonal. Discriminant validity is determined by looking down the columns and across the rows. Should the diagonal elements be larger than off-diagonal elements, discriminant validity is deemed satisfactory.

Table 3: Cluster results (Forced into three clusters)

Final Cluster Centers	Cluster		
Items	1	2	3
Cases in each cluster	189	261	209
The way we manage our suppliers is world class	1.70	2.52	3.35
We have a defined approach to governance, planning, and decision-making	2.69	3.26	3.95
A senior executive owns and leads strategic supplier relationships	2.30	3.37	4.04
Contracting has been restructured with new metrics, incentives and frameworks	1.61	2.72	3.39
We use corrective action teams, lean, 6-sigma, and kaizen-type tools to improve performance	1.70	2.63	3.59
We have joint cost down projects focused on cost drivers across the supply chain	1.56	2.79	3.53
We have integrated external supplier innovation into design and development	1.80	2.79	3.53
We have little or no organizational focus on strategic supplier management (reverse coded)	2.48	3.35	4.55
It is unclear who owns and controls strategic supplier relationships (reverse coded)	2.37	3.22	4.21
Procurement's involvement in strategic supplier management is low (reverse coded)	2.55	3.37	4.39
There is considerable scope for improvement in this area (reverse coded)	1.48	1.73	2.82

Table 4: Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1.244[a]	99.2	99.2	.745
2	.010[a]	.8	100.0	.102

a. First 2 canonical discriminant functions were used in the analysis.

b. Wilks" Lambda = .441; Chi Sq = 460.502; Sign. = .000

Table 5: Standardized Canonical Discriminant Function Coefficients

Factor Scores	Function	
	1	2
Internal Resources	.787	-.657
Internal Frameworks	.702	.279
Joint Information Exchange	.675	.078
Joint Improvement	.573	.601

Table 6: Classification results (Cases Predicted by Discriminant Functions)[a]

		Cluster Number of Case	Predicted Group Membership			
			1	2	3	Total
Original	Count	1	122	44	2	168
		2	46	130	45	221
		3	2	54	122	178
	%	1	72.6	26.2	1.2	100.0
		2	20.8	58.8	20.4	100.0
		3	1.1	30.3	68.5	100.0

a. 66.0% of original grouped cases correctly classified.

Table 7: Cluster Means for Relationship Quality

	N	Mean
1	171	-.5926433
2	249	-.0644774
3	198	.5596688
Total	618	-.0106512

Table 8: ANOVA Results of Clusters and Relationship Quality

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	123.044	2	61.522	77.110	.000
Within Groups	490.675	615	.798		
Total	613.719	617			

Figure 1: Relationship Constructs

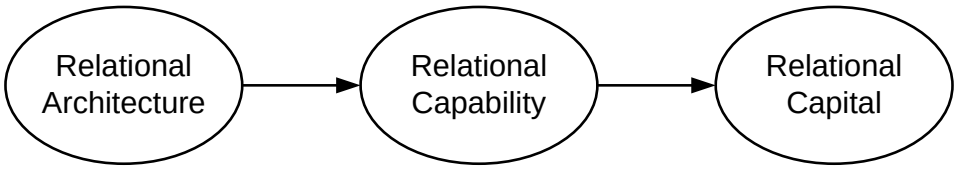

Figure 2: Theoretical Model of Relational Architecture