

**MAKING AN END RUN:
WHEN DO FIRMS BUILD RELATIONSHIPS WITH
DISTANT SUPPLY CHAIN PARTNERS?**

Anne Parmigiani

Lundquist College of Business
University of Oregon
Eugene, OR 97403
Tel: (541) 346-3497
Fax: (541) 346-3341
e-mail: annepa@uoregon.edu

Jennifer Irwin

Lundquist College of Business
University of Oregon
Eugene, OR 97403
Tel: (541) 346-3378
Fax: (541) 346-3341
e-mail: jirwin3@uoregon.edu

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MAKING AN END RUN: WHEN DO FIRMS BUILD RELATIONSHIPS WITH DISTANT SUPPLY CHAIN PARTNERS?

Abstract: Firms are vertically interconnected through supply chains to obtain materials, exchange information, and provide products to customers. Members in a supply chain include raw material producers, component suppliers, manufacturers, distributors, and end users. Although acknowledging several firms are involved, received literature focuses on dyadic relationships between buyers and suppliers. But, firms sometimes go around their closest supply chain partner and deal directly with a more distant firm, such as a component supplier working directly with a distributor. Motivations include leveraging market power, reducing information asymmetry, and mitigating environmental uncertainty. This paper explores when and why firms go around proximate partners to work with more distant firms, discusses implications of this behavior, and provides illustrations from the motorhome industry.

Firms do not conduct business in isolation, but rather work with other firms to procure materials and provide products to customers. Groups of firms which provide raw materials, produce intermediate components, distribute products, and provide service activities are collectively termed supply chains (Cohen and Lee, 1988). Goods and information are exchanged within the supply chain, typically between the proximate members such as between component suppliers and manufacturers. In this way, volume requirements, product specifications, and pricing data are conveyed upstream while physical products and services flow downstream. Proximate members are the direct customers and suppliers for a focal firm; maintaining robust relationships with them are critical for firm performance (Dyer and Singh, 1998; Porter, 1980). However, in some cases, firms may also choose to build relationships with more distant upstream or downstream members within their supply chain, bypassing a direct and proximate partner. These indirect relationships must benefit up and downstream parties who are both going around a proximate middle partner in the chain. We term these “end runs” and suggest firms do this to leverage market power, reduce information asymmetries, and mitigate environmental uncertainty.

Received theories in industrial organizational economics describe the dyadic relationship between buyers and suppliers by focusing on market power. Firms that are larger or in more concentrated industry sectors will have more market power over their proximate supply chain partners, being able to dictate price and other terms to their advantage (Bain, 1962). Firms that can credibly threaten to vertically integrate will also be more powerful and able to demand concessions from partners (Blois, 1972; Scherer and Ross, 1990). Powerful firms may be more likely to skip over close partners and build distant relationships because they are less dependent upon them and do not fear retaliation (Pfeffer and Salancik, 1978).

Arguments grounded in other organizational theories, particularly those based in sociology, propose that power is based upon social capital and exchange, which originates from the firm’s position among other firms. Therefore, firms will strive to create links to more distant partners to improve information flows (Burt, 1992; Uzzi, 1997). This may be particularly relevant for firms that produce technically complex goods, since they will need to educate customers and obtain feedback on how their products interrelate with others. Firms will be cognizant of their relationships with close partners (Dyer and Singh, 1998). If these relationships are adversarial, firms may not want to increase conflict further by contacting distant firms. If these relationships are very strong and robust, firms may have little need to contact distant firms as they can obtain required information through their close partners. Therefore, firms with moderate

relationships with close partners may be more likely to work with distant firms.

Both economic and sociological branches of organization theory consider the impact of environmental uncertainty upon vertical relationships. This includes both the need to be responsive to changes in volume and design as well as the need to adapt to broader changes in technology or the economic landscape. Volatile demand will exacerbate the bullwhip effect as order variance increases upstream, making forecasting more difficult and less accurate (Forrester, 1961; Lee and Padmanabhan, 1997). Obtaining demand information directly from customers mitigates this effect, which could motivate firms to build relationships with more distant supply chain members. Likewise, having direct relationships with end users improves responsiveness to design requirements (Von Hippel, 1988). Changes in the broader environment require firms to gather more information from a variety of sources to understand how their business will be affected (Arrow, 1974). Supply chains can behave like complex adaptive systems, organically changing with the environment (Choi, Dooley, and Rungtusanatham, 2001; Holweg and Pil, 2008); but for this to occur, firms may need relationships with distant supply chain members.

To illustrate cases in which firms go around their proximate partners and build relationships with more distant supply chain members, we turn to the motorhome industry. Motorhomes are self-contained units with their own engines and drive trains, incorporating kitchens, bathrooms, sleeping quarters, and general living space. These highly complex products contain over 3,000 sub-components, miles of wiring, and sophisticated electrical, plumbing, and other systems. We focus on Type A motorhomes, the most common category, which are typically 40 feet long with an average retail price of \$179,000. This is a sizable sector of the recreational vehicle (RV) industry; in 2007, 32,900 units were shipped with a total value of \$5.84 billion, representing 9% of unit shipments 40% of dollar sales (RVIA, 2008).

The supply chain in this context, shown in Figure 1, consists of five entities. Raw materials producers provide the basic materials, such as metals, wood, and fiberglass. Engine producers are included in this group since their product is a sub-component for chassis producers. Component suppliers provide chassis (the steel sub-structure, which also includes the engine, transmission, and axles), electronics, exterior parts (wall panels, roofs, windows, etc.), and interior goods such as appliances, furniture, and cabinetry. Manufacturers assemble the motorhomes and often also produce some components. Dealers provide distribution and service, typically for multiple manufacturers and brands. End users are consumers.

We next connect theoretical perspectives with our motorhome context, proposing that firms within this supply chain will go around proximate partners to leverage market power, reduce information asymmetry, and mitigate environmental uncertainty. See Table 1 and Figure 2 for previews of our propositions.

Leveraging Market Power. Firms may bypass their proximate supply chain partners and build relationships with distant members to leverage their market power provided by size and potential for vertical integration. Larger firms need not fear retaliation by close partners as their size typically means that they control large portion of the industry demand or supply with multiple close partners, such that these partners are dependent upon them (Pfeffer and Salancik, 1978; Porter, 1980). By going around their closest partners, they can learn more about the industry cost structure and appropriate more of the overall margin (Pindyck and Rubinfeld, 1995). Distant members may desire to form a relationship with this larger member of the chain to take advantage of branding or reputational opportunities (Dyer and Nobeoka, 2000). Thus, we propose:

P1: The larger the relative size of the focal firm, the more likely it will build a relationship with a distant member of the supply chain.

Firms may also bypass close supply chain partners if their partners can credibly threaten to vertically integrate. This threat is more likely if close partners have excess capacity, if the focal firm's business is less technologically sophisticated, or if it does not require considerable scale or scope economies (Perry,

1989). If partners integrate into the focal firm's business, they become competitors and therefore the focal firm will need new customers or suppliers. This threat is more credible if partners already internally produce or distribute some of their requirements (Dutta, Bergen, Heide, and John, 1995; Harrigan, 1986; Parmigiani, 2007). It may also be more likely if the focal firm's product represents a significant expense, such that the partner is motivated to integrate due to perceived cost savings. This logic leads to:

P2: The greater the potential for vertical integration by a proximate partner, the more likely a firm will build a relationship with a distant member of the supply chain.

Reducing Information Asymmetry. Another motivation for firms to connect with distant supply chain partners is to reduce information asymmetry. Gaps in information can arise from the technical nature of the products or from the nature of the firm's relationships with proximate partners. Firms whose products are technically complex, meaning that they involve multiple, interrelated components with different underlying technologies, will want to build more ties because it gives them greater information about how their goods are used and how they might be improved (Ahuja, 2000; Franke, Keinz, and Schreier, 2008). Having both strong, direct ties with close partners in addition to weaker ties with more distant supply chain members will improve the amount and diversity of information gathered by the firm (Granovetter, 1973; Uzzi, 1997). These firms will also want to educate downstream users about how best to use their products. Because of the task uncertainty created in using highly technical goods, distal members of the supply chain will be willing to develop relationships with these firms (Casciaro, 2003). Thus, we propose:

P3: The greater the technical complexity of the good provided by the focal firm, the more likely a firm will build a relationship with a distant member of the supply chain.

Firms with strong and intimate relationships with their closest supply chain partners may not benefit from contacting more distant members. Their collaborative partnerships may provide them with sufficient information about their products and markets (Dyer and Singh, 1998). In contrast, firms with adversarial relationships with close partners may be unlikely to build ties with more distant members as they risk retaliation of these proximate members, upon whom they depend for supply or distribution (Pfeffer and Salancik, 1978). Therefore, we may observe an inverted-U relationship such that firms with neither very strong nor very adversarial ties to close partners will be more likely to build relationships with more distant members. We term these types of relationships "cordial" and propose the following:

P4: Firms with a cordial relationship with the proximate supply chain member will be more likely to build a relationship with a distant member of the supply chain.

Mitigating Environmental Uncertainty. Environmental uncertainty may also motivate firms to build relationships with distant supply chain members. We focus on two types of environmental uncertainty: short term, which dictates the degree of responsiveness required; and long term, the degree of dynamism in the broader environment. Firms whose environments involve uncertain and volatile volumes benefit by gaining direct demand data from farther down the supply chain (Forrester, 1961; Lee and Padmanabhan, 1997). Likewise, firms with products that are influenced by design will benefit from contact with downstream users to customize offerings and improve time to market (Cousins and Menguc, 2006; Lee, 2002; Wathne and Heide, 2004). Thus:

P5: The greater the need for responsiveness, the more likely a firm will build a relationship with a distant member of the supply chain.

Finally, firms that operate in dynamic environments will benefit by having relationships that are more distant. They will gain a broader understanding of technological changes that may impact their product which will enable them to proactively make changes (Brusoni, Prencipe, and Pavitt, 2001; Helfat and Raubitschek, 2000). In industries beset by economic and political uncertainty, firms may strive to form distant relationships to form coalitions to gain political strength and promote the overall industry (Savage, Nix, Whitehead, and Blair, 1991). This type of uncertainty may also promote imitation among supply

chain members in how they treat partners, all using the same simple rules to promote adaptation (Choi et al., 2001; Holweg, Disney, Hines, and Naim, 2005; McFarland, Bloodgood, and Payan, 2008). This may make it more likely and easier for indirect contact between members since they will understand each other's approach. This leads to our final proposition:

P6: The greater the environmental dynamism, the more likely a firm will build a relationship with a distant member of the supply chain.

End Runs in the Motorhome Supply Chain. Within the motorhome supply chain, we observe three sets of distant relationships: between engine producers and manufacturers, between chassis suppliers and dealers, and between manufacturers and end users. Engine producers, such as Ford or Cummins, are some of the largest firms in the supply chain, giving them the power to contact motorhome firms directly. Many motorhome firms, such as Monaco and Tiffin, have vertically integrated backward to produce their own chassis such that they require closer contact with engine firms. Engines are technically complex, thus direct communication with manufacturers improves their use and integration with other components. Both engine and motorhome firms have cordial relationships with chassis suppliers, with few, if any, exclusive or unfriendly ties. Environmental dynamism in the form of changes in technology, such as hybrid fuels, and political uncertainty regarding emissions and CAFÉ standards, also motivate formation of these ties.

Likewise, chassis suppliers and motorhome dealers tend to build relationships, bypassing manufacturers. Chassis suppliers, such as Freightliner or Spartan, are typically Fortune 500 firms or divisions thereof with motorhomes being a sideline product. Chassis represent about 40% of the total cost of a motorhome and are the highest value component, giving suppliers considerable market power. This has motivated motorhome firms to internally produce some chassis, but they generally still purchase a majority of their required volumes. Chassis are the most technically complex component, involving the steel structure upon which the motorhome is built, the drive train, and the rolling gear (axles and wheels). As such, chassis suppliers need to educate dealers on features as well as obtain feedback for improvements. Since both chassis suppliers and motorhome dealers maintain relationships with multiple manufacturers, these exchanges are cordial. Responsiveness arises from aftermarket parts sales and service requirements for the chassis that are generally provided by dealers. According to one chassis maker, dealers are less guarded, provide more candid feedback about the industry, and know more about what customers really want as compared to manufacturers.

Manufacturers maintain direct relationships with end users primarily to improve information flows and mitigate uncertainty. Manufacturers are larger than dealers, so have the market power to promote direct customer relationships. Technical complexity also motivates them to educate consumers and differentiate their offerings. Most manufacturers have user groups to connect them directly with consumers, promote brand loyalty, provide a means of obtaining direct customer feedback about new features, and allow publicizing of new models. Techniques include customer rallies, dedicated publications, and company-owned campgrounds and real estate. Relationships with dealers are cordial, but not intimate, since dealers sell multiple manufacturers' brands. Responsiveness is vital in this industry, as manufacturers produce one or more new models each year, including new features and design elements to maintain their competitive position. Demand is seasonal, with greater volumes in the spring and summer months. Customers tend to trade up from older motorhomes or towable units, typically every three years, but because this purchase can be postponed, demand can be difficult to predict. Thus, dynamism in the broader environment is also evident as demand is highly cyclical. Shipments in 2008 were only 14,900 units, less than half the 2007 volume, due to higher fuel prices, tightening consumer credit, and declines in the stock market and home equity values. Manufacturers are thus motivated to maintain direct contact with consumers since it is unclear when their next purchase will occur. Demographic and cultural changes, such as greater environmental awareness, also promote these end-run relationships.

Conclusion. This paper explores when firms will build relationships with more distant supply chain partners, providing illustrations from the motorhome industry. We suggest that market power, information asymmetry, and environmental uncertainty all promote these auxiliary relationships. Understanding these relationships provides a more holistic view of supply chains, which some now view as the appropriate unit of analysis to study competition (Ketchen and Hult, 2007). These relationships provide insight into how firms coordinate activities and manage uncertainty, and raise interesting issues regarding governance between proximate members. They also suggest that our current theories of firm boundaries may need to be expanded beyond how firms deal with proximate partners since they can gain knowledge and power through these more distant contacts (Santos and Eisenhardt, 2005).

This research provokes several additional questions. To what degree are these distant relationships reciprocal? How do firms simultaneously manage both proximate and distant relationships? Are some types of supply chains or products more likely to encourage formation of distant relationships? While there has been some nascent work on supply chain triads (Choi and Zhaohui, 2009; McFarland et al., 2008), much remains to be investigated. As Choi and Liker (2002: 202) suggest, “It is certainly easier to get data on dyadic relationships, but the more challenging and perhaps more interesting questions involve longer supply chains.” We hope our insights promote further work toward answering these questions.

Figure 1: Type A Motorhome Supply Chain

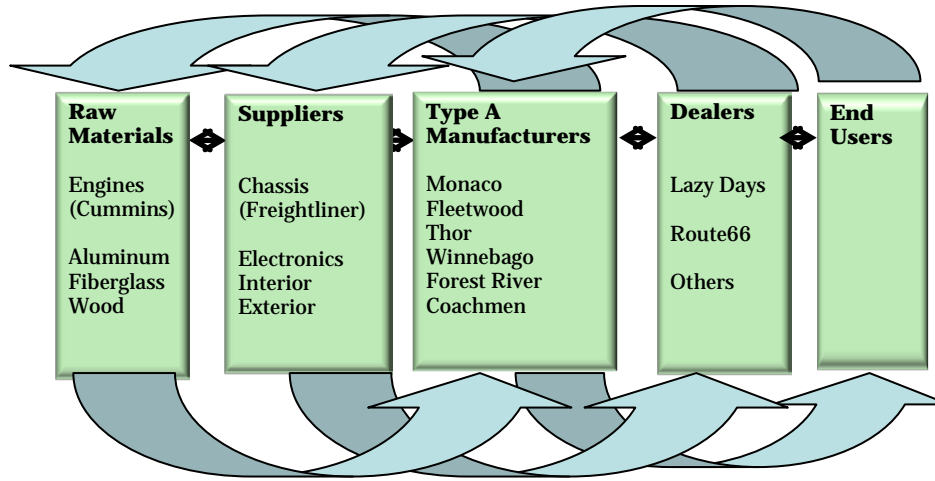


Figure 2: A Model for Building Distant Supply Chain Relationships

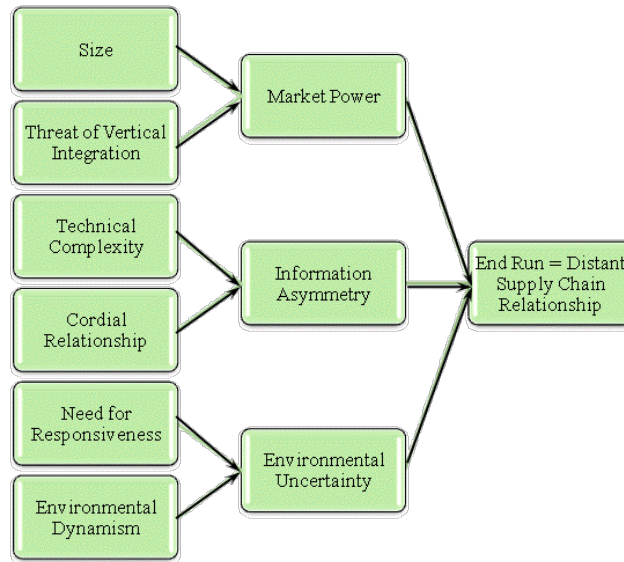


Table 1: Motivations for Building Distant Supply Chain Relationships in Motorhomes

Proposition = Motivation	Raw Material Producers & Manufacturers	Component Suppliers & Dealers	Manufacturers & End Users
P1: Relative Size	X	X	X
P2: Vertical Integration	X	X	
P3: Technical Complexity	X	X	X
P4: Cordial Proximate Relationships		X	
P5: Responsiveness		X	X
P6: Dynamism	X		X

References

- Ahuja, G. 2000. The duality of collaboration: Inducements and opportunities in the formation of interfirm linkages. *Strategic Management Journal*, 21(3), 317.
- Arrow, K. J. 1974. *The limits of organization*. New York: W. W. Norton & Company.
- Bain, J. S. 1962. *Barriers to new competition*. Cambridge, MA: Harvard University Press.
- Blois, K. J. 1972. Vertical quasi-integration. *Journal of Industrial Economics*, 20(3), 253.
- Brusoni, S., Prencipe, A., & Pavitt, K. 2001. Knowledge specialization, organizational coupling, and the boundaries of the firm: Why do firms know more than they make? *Administrative Science Quarterly*, 46(4), 597-621.
- Burt, R. S. 1992. *Structural holes*. Cambridge, MA: Harvard University Press.
- Casciaro, T. 2003. Determinants of governance structure in alliances: The role of strategic, task and partner uncertainties. *Industrial and Corporate Change*, 12(6), 1223-1251.
- Choi, T. Y., Dooley, K. J., & Rungtusanatham, M. 2001. Supply networks and complex adaptive systems: Control versus emergence. *Journal of Operations Management*, 19(3), 351-366.
- Choi, T. Y., & Liker, J. K. 2002. Guest editorial: Supply chain management as an emerging focus of technology management. *IEEE Transactions on Engineering Management*, p. 198.
- Choi, T. Y., & Zhaohui, W. 2009. Triads in supply networks: Theorizing buyer-supplier-supplier relationships. *Journal of Supply Chain Management: A Global Review of Purchasing & Supply*, 45(1), 8-25.
- Cohen, M. A., & Lee, H. L. 1988. Strategic analysis of integrated production-distribution systems: Models and methods. *Operations Research*, 36(2), 216.
- Cousins, P. D., & Menguc, B. 2006. The implications of socialization and integration in supply chain management. *Journal of Operations Management*, 24(5), 604-620.
- Dutta, S., Bergen, M., Hieide, J., & John, G. 1995. Understanding dual distribution: The case of reps and house accounts. *Journal of Law, Economics, and Organization*, 11, 189-204.
- Dyer, J. H., & Nobeoka, K. 2000. Creating and managing a high-performance knowledge-sharing network: The toyota case. *Strategic Management Journal*, 21(3), 345.
- 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.
- Forrester, J. 1961. *Industrial dynamics*. New York: MIT Press and John Wiley & Sons, Inc.
- Franke, N., Keinz, P., & Schreier, M. 2008. Complementing mass customization toolkits with user communities: How peer input improves customer self-design. *Journal of Product Innovation Management*, 25(6), 546-559.
- Granovetter, M. S. 1973. The strength of weak ties. *The American Journal of Sociology*, 78(6), 1360-1380.
- Harrigan, K. R. 1986. Matching vertical integration strategies to competitive conditions. *Strategic Management Journal*, 7(6), 535-555.
- Helfat, C. E., & Raubitschek, R. S. 2000. Product sequencing: Co-evolution of knowledge, capabilities and products. *Strategic Management Journal*, 21(10/11), 961.
- Holweg, M., Disney, S. M., Hines, P., & Naim, M. M. 2005. Towards responsive vehicle supply: A simulation-based investigation into automotive scheduling systems. *Journal of Operations Management*, 23(5), 507-530.

- Holweg, M., & Pil, F. K. 2008. Theoretical perspectives on the coordination of supply chains. *Journal of Operations Management*, 26(3), 389-406.
- 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.
- Lee, H. L. 2002. Aligning supply chain strategies with product uncertainties. *California Management Review*, 44(3), 105-119.
- Lee, H. L., & Padmanabhan, V. 1997. Information distortion in a supply chain: The bullwhip effect. *Management Science*, 43(4), 546.
- McFarland, R. G., Bloodgood, J. M., & Payan, J. M. 2008. Supply chain contagion. *Journal of Marketing*, 72(2), 63-79.
- Parmigiani, A. 2007. Why do firms both make and buy? An investigation of concurrent sourcing. *Strategic Management Journal*, 28(3), 285-311.
- Perry, M. K. 1989. Vertical integration: Determinants and effects. In R. Schmalensee & R. D. Willig (Eds.), *Handbook of industrial organization*. Morristown, NJ: Elsevier Science Publishers
- Pfeffer, J., & Salancik, G. R. 1978. *The external control of organizations*. New York: Harper & Row.
- Pindyck, R. S., & Rubinfeld, D. L. 1995. *Microeconomics*. Englewood Cliffs, NJ: Prentice Hall.
- Porter, M. E. 1980. *Competitive strategy*. New York: The Free Press.
- RVIA. 2008. *Industry profile 2007*. Reston, VA: Recreational Vehicle Association.
- Santos, F. M., & Eisenhardt, K. M. 2005. Organizational boundaries and theories of organization. *Organization Science*, 16(5), 491-508.
- Savage, G. T., Nix, T. W., Whitehead, C. J., & Blair, J. D. 1991. Strategies for assessing and managing organizational stakeholders. *Academy of Management Executive*, 5(2), 61-75.
- Scherer, F. M., & Ross, D. 1990. *Industrial market structure and economic performance*. Boston, MA: Houghton Mifflin Company.
- Uzzi, B. 1997. Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, 42(1), 37-69.
- Von Hippel, E. 1988. *The sources of innovation*. New York: Oxford University Press.
- Wathne, K. H., & Heide, J. B. 2004. Relationship governance in a supply chain network. *Journal of Marketing*, 68(1), 73-89.