



Book Collaborative Advantage

Winning Through Extended Enterprise Supplier Networks

Jeffrey H. Dyer
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Recommendation

Jeffrey Dyer, an accomplished scholar and management teacher, has developed a cogent and sophisticated theory of extended enterprise management based on a wealth of empirical data from the history of Toyota in Japan and from his six-year study of Chrysler Corp. before its merger with Daimler-Benz. Beyond being a detailed and rigorous case study of the automobile manufacturing industry, Dyer's book presents an extremely valuable model for vertical integration. His model can be applied to other complex product industries, though he is honest about the limits of its applicability. This book provides a clear, effective blueprint for achieving value-chain collaboration. *BooksInShort* recommends it to consultants, executives in complex product industries and leaders in firms that supply components or materials. If you always suspected you were part of a greater whole, now you can be sure.

Take-Aways

- Production networks, or value chains, will become important units of competition.
- Companies traditionally manage the value chain through vertical integration and arm's-length relationships.
- The costs of distant relationships sometimes outweigh the pricing benefits.
- Partnerships are more feasible due to information technology advances, and more desirable because of increasing product complexity and demand customization.
- The value chain of collaborating partners achieves the coordination advantages of vertical integration and the specialization advantages of outsourcing.
- Extended enterprises can achieve this collaborative advantage.
- Toyota's keiretsu model is a good model of collaborative advantage.
- Implementing a keiretsu-type system requires supplier segmentation, learning time and an identity for the extended enterprise.
- Chrysler's keiretsu system achieved time-to-market, cost and quality advantages.
- Future keiretsu systems will probably extend vertically and become modular, with major suppliers becoming, in effect, subcontractors.

Summary

Competition and Collaboration

How companies achieve competitive advantage is a fundamental question in strategic management. The two traditional answers are either the "industry structure" approach, which views the industry itself as the most important factor, or the "resource-based" view, which says that competitive advantage resides in a firm's differentiated, value-added resources and capabilities. Both answers omit the competitive value of the production network, or value chain. **Traditionally, a company manages its value chain in one of three ways:**

1. Vertical integration: Bring production in-house - Transaction cost theory generally suggests customization and dedicated asset utilization as the criteria for vertical integration (that is, bringing functions in-house). General Motors, for example, produces 65% to 70% of its own components. Over time, though, problems become apparent. Vertical integration entails little competition (because the buyer wouldn't go elsewhere), limited access to customers (such as competing manufacturers), increased labor costs (because large automakers tend to be unionized), and created a larger, less flexible organizational structure.
2. Arm's-length relationship: Buy what you need - Arm's-length supplier management, which tended to be the practice for outside purchases, had several disadvantages. Suppliers resisted making dedicated investments and sharing knowledge with buyers. Administrative and inventory costs often exceeded the discounts achieved through bargaining. Making smaller purchases from many suppliers reduced both the suppliers' ability to achieve economies of scale and the buyer's volume buying power. As it turned out, most of the pricing and quality advantages of a multi-supplier market could be replicated using two prominent suppliers and then adjusting volume according to performance.
3. Partnerships: Buy from a few suppliers and have long relationships with them - Over time, three trends made partnerships more beneficial. First, new information technologies made inter-firm coordination more efficient. Second, increasing product complexity raised the value of specialization. Finally, customized demand calls for greater supplier involvement.

"Recent studies suggest that extraordinary productivity gains in the production network, or value chain, are possible when companies are willing to collaborate in unique ways, often achieving competitive advantages by sharing resources, knowledge and assets."

The challenge is finding a balance between outsourcing for specialized needs or bringing manufacturing in-house. Because "productivity grows with the division of labor," firms buy supplies from outside specialists. Yet, specialization also increases the costs of communication and coordination, creating an incentive to bring activities in-house.

"I am convinced that General Motors, due to its emphasis on negotiation skills and bargaining power, extracts a greater percentage of the pie that it jointly creates with suppliers relative to Chrysler. However, Chrysler wins by keeping a smaller piece of a bigger pie."

Specialization and coordination reside in the "value chain" of the extended enterprise's set of collaboration processes. In complex industries, more suppliers will become strategic partners, particularly during long-term economic expansion when the goal is creating long-term value. In simple product industries with standardized components, arm's-length sources prevail, particularly when suppliers have excess capacity or buyers need to cut short-term costs.

Toyota and the Keiretsu Model

Toyota's success with "lean production" processes was explained in 1990 in *The Machine That Changed the World*. But lean production alone does not explain Toyota's competitive edge, even over Ford, which is America's best lean producer. The missing piece is the keiretsu model. In Japanese, keiretsu refers to an alliance of companies that collaborate with one another. The keiretsu model has three components: trust development, knowledge exchange and dedicated asset investment.

1. Trust - This magic combination of perceived reliability and fairness, as well as goodwill, is the foundation for all keiretsu

activities, knowledge exchange and investment. To build trust, Toyota selected suppliers based on their performance record and history, resulting in a 90% re-win rate across model changes. Toyota's tradition of long-term employment helped individual employees build relationships and improve communication over time. Inter-firm career paths created further ties between Toyota and its suppliers. Toyota built goodwill with many mechanisms of free assistance. Finally, Toyota took a minority ownership position in a number of its major suppliers, which helped align the parties' interests.

2. Knowledge exchange - Toyota began the process of knowledge exchange in 1943 with a supplier association. In the 1960s, it offered on-site consulting teams from its Operations Management Consulting Division (OMCD), which established voluntary study groups of key suppliers in 1977. The groups could "systematically diffuse knowledge" among members of Toyota's network. Toyota also formed problem-solving teams from among its ranks. These teams applied Quality Assurance or Design Engineering Department expertise to emergent problems within the network. Both permanent and temporary inter-firm employee transfers created additional links. Toyota also monitored implementation of new processes and technology.
3. Dedicated assets - Toyota specialized its sites by concentrating its Japanese plants in Toyota City and locating nearly every assembly plant within 34 miles of its headquarters. This made it easier for affiliated suppliers to locate an average of 30 miles from the assembly plants they served. This facilitated just-in-time (JIT) deliveries and lowered buyers' and suppliers' costs for inventory, transportation and coordination. Suppliers dedicated 22% of their capital investments to their business with Toyota, enabling faster "through-put" and greater product customization. To help people specialize individually, Toyota hosted full-time "guest engineers" at its technical center in Toyota City, while sending its own engineers and managers to work either temporarily or permanently at suppliers' sites. This helped increase quality and decrease development time.

Importing Keiretsu

In the early 1990s, many U.S. automakers slashed their supplier bases in imitation of Japanese keiretsu. This gave manufacturers the power to extract volume discounts, insist on JIT delivery programs and make suppliers responsible for quality. While it helped improve efficiency and reduce inventory and defects, it failed to capture the full power of the extended enterprise model. Chrysler cut 60% of its supply base, but unlike its other competitors in the U.S., Chrysler went further. It followed Toyota's keiretsu model by developing trust, knowledge sharing and dedicated asset investments. Here's how:

1. Trust - Chrysler built trust by placing its own and its supplier engineers in cross-functional teams at the Chrysler Technology Center. Pre-sourcing - that is, "choosing suppliers early in the vehicle's concept-development stage and giving them significant, if not total, responsibility for designing a given component or system" - became the norm.
2. Knowledge exchange - Chrysler introduced the Supplier Cost Reduction Effort, or SCORE, an incentive program for supplier suggestions. By 1992, SCORE was a formal part of the supplier rating system. Chrysler built supplier support by focusing first on what Chrysler was doing wrong, then addressing changes to lower-tier-supplied parts and materials, and only later asking suppliers to change their own operations. In addition, Chrysler facilitated knowledge exchange with a common e-mail system, an advisory board of executives from its top 14 suppliers and an annual supplier meeting for its 150 strategic suppliers.
3. Dedicated assets - Chrysler invested in people, in physical assets and in site specialization. Chrysler housed suppliers' engineers at Chrysler sites. They negotiated volume discounts and encouraged suppliers to use a common CAD/CAM software package. Finally, Chrysler invested in dedicated facilities to improve suppliers' ability to do just-in-time deliveries. Unlike Toyota, Chrysler did not take equity stakes in suppliers, export its executives, create a supplier association or develop study groups. This compromise made it easier for Chrysler to drop under-performing suppliers but more difficult for it to minimize its supply base.

Chrysler's Results

As a result of these changes, Chrysler was able to cut new vehicle development time by more than 30%, cut cost per vehicle by 20% to 40% and increase profit per vehicle more than eightfold. Chrysler's success could be traced to quicker development, improved quality and lower costs for product development, production and transactions.

1. Quicker development: time-to-market economies - The partnership model minimized supplier searches, contract negotiations and bargaining time. Because it no longer needed to conduct competitive bidding on pre-designed parts, Chrysler could engage in simultaneous, rather than sequential, development. Because suppliers were involved early in the product-development process, they had extra time to develop solutions to design and production problems. Finally, investments in dedicated assets increased the efficiency of communication and information exchange, and therefore improved coordination.

2. Lower product development costs - Savings came from spending fewer engineering hours in the shortened product-development cycle, thus lowering engineering, research and development (ER&D) costs. Hard tools could be purchased closer to production, reducing the hard-tool investment period. Facilities costs were reduced by the shorter timeline and re-tooling expenses were reduced, since they were often caused by poor prototype-tool match. Finally, earlier attention to design cut pre-product and launch (PP&L) costs.
3. Better production cost economies - Because suppliers worked with Chrysler for the life of a model and beyond, they progressed along the experience curve. Suppliers could plan long-term production and investment, which improved the efficient use of capacity. They could also use existing assets more effectively, by employing carry-over designs. Finally, suggestions from the SCORE program reduced production costs by increasing efficiency.
4. Lower transaction and procurement costs - The two-supplier-per-category rule lowered search costs; the lack of competitive bidding lowered negotiation and contract costs.
5. Improved quality - Quality went up because suppliers had less incentive to scrimp.

Lessons for American Keiretsu

Chrysler's experience suggests several lessons for those who wish to try similar programs:

- Segment your suppliers - Conduct an extended enterprise-building program with your strategic segment - that is, suppliers who provide high-value components and systems that help competitively differentiate your final product. Pursue a "quasi-arm's-length" approach with non-strategic suppliers. Use three or four long-term suppliers, assure them of future business and invest in some coordination mechanisms, such as order entry and electronic data interchange systems.
- Create an enterprise identity - The Toyota Group identity was developed around the concept of "kyoson kyoei," or "co-existence and co-prosperity."
- Realize that collaborative advantage takes time - Begin by establishing relationships and creating an enterprise identity. In the second phase, strengthen ties between the suppliers and the manufacturer in a spoke-and-hub fashion. Finally, develop inter-supplier relationships, connecting the spokes.

Directions for the Future

Two directions are likely as extended enterprises evolve. The first is the "modular extended enterprise," in which major suppliers take responsibility for important subsystems. Volkswagen's Brazil plant has had an early success with this program. Second, the extended enterprise is likely to extend vertically, with first-tier suppliers creating extended enterprises with second-tier suppliers, and second-tier industries develop links with third-tier suppliers. Both Toyota and Chrysler have seen this process begin.

About the Author

Jeffrey H. Dyer is an associate professor and holds the Donald Staheli Term/Chair in international strategy, organizational leadership & strategy at Brigham Young University. He has worked as a consultant and manager for Bain & Co.
