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The Brave New World of Supply Chain Management

By David Bovet and Yossi Sheffi

Supply chains. Why should senior management care about them? Recent developments at three major U.S. corporations provide the answer, boldly underscoring the impact of supply chain management on modern business:

- Dell Computer, founded on a vision of customer-responsive order fulfillment, has seen its stock price mushroom nearly 200-fold since 1990. "We already have a quick-ship plan for large customers where we can deliver a machine within 48 hours of an order," Michael Dell explains. (Fortune, Sept. 8, 1997)
- Boeing Aircraft, one of America's leading capital-goods producers and top exporters, was forced to announce write-downs of $2.6 billion in October. The reason? "It is blaming 'raw-material shortages, internal and supplier parts shortages, and productivity inefficiencies..."" (Wall Street Journal, Oct. 23, 1997)
- Procter & Gamble, long revered for its marketing acumen, also drives its supply chain hard. The company estimates it saved retail customers $65 million through logistics gains over the past 18 months. "According to P&G, the essence of its approach 'lies in manufacturers and suppliers working closely together...jointly creating business plans to eliminate the source of wasteful practices across the entire supply chain.'" (Journal of Business Strategy, November/December 1997)

Clearly, supply chain management—good or bad—directly affects corporate performance. But considerable disagreement exists over the future of supply chain design and deployment. Senior supply chain professionals express a broad range of views on their future role, despite current widespread recognition of the field's growing importance. In a recent roundtable discussion following a research effort by Mercer Management Consulting, the MIT Center for Transportation Studies, and Logistics Management & Distribution Report magazine (see sidebar on Page 22), leading corporate supply chain executives agreed on only a few key points when asked to predict supply chain management's role in the 21st century:

First, emphasis will shift to the broader supply chain from the narrower logistics discipline, to

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derive the greatest value.

- **Second**, supply chain management will provide true competitive advantage only when new concepts, practices, and performance are combined to sharply impact companies’ and customers’ bottom lines.

- **Third**, supply chain managers must harness the leading external drivers of change, including rising consumer demands, globalization, and information/communication.

- **Fourth**, the future responsibilities of the supply chain manager will change, although his or her organizational level may be similar to today's.

Building on the lively debates at the session, we offer a vision of supply chain management in the next millennium and actions that can be taken today to advance that vision. We are bullish on the future role of supply chain management in providing a competitive edge—but believe achieving this edge poses a major challenge for most companies. This means that a critical examination of supply chain design is essential to a firm’s future prosperity and even survival. Our vision of the future is presented in three sections: (1) major business forces that will drive supply chain development, (2) new supply chain strategies to ensure business success, and (3) today's top priorities as companies prepare for future challenges. We hope these views will stimulate further exploration of future-oriented supply chains among all members of the supply chain community.

**Forces Shaping Supply Chain Management**

From the many factors potentially involved, we believe that six business and economic forces will most impact future supply chain management. (See Exhibit 1.) These include the three external factors identified by our roundtable participants: consumer demands, globalization, and information/communications. The
authors believe that three additional topics will be critical to future supply chain design: competition, regulation, and environmental concerns. Though other factors (for example, organized labor and transportation technology) may play a role, they will be secondary in defining supply chain management's future.

1. Consumer Demands

The answer to "What do customers want?" is "All of the above." And they will get it. "There has been a secular shift in power from the supplier to the customer," note Adrian Slywotzky and David Morrison of Mercer Management Consulting in their new book, The Profit Zone. Corporations today work to balance low cost with high level of service, and customization with availability. The new paradigm for many products and in many segments of the marketplace will be that customers demand "all of the above." This means instant availability of customized products—inexpensively and wrapped in a high service bundle. The bar will continue to rise inexorably on expectations of choice, service, speed, and cost. These expectations are fostered by consumers' experience in a few influential areas: home computers (thanks to companies like Dell Computer and Gateway 2000), clothing (from L.L. Bean, Lands' End, or J. Crew), books (from Amazon.com and Barnes & Noble), and overnight package delivery (UPS and FedEx). In these areas, products are becoming better, cheaper, and available faster and faster.

Customers now expect such performance from other segments of the economy as well. In fact, the 1998 Toyota Camry and Ford Taurus are better equipped and less expensive than the 1997 models they replace. These and other automakers are moving toward delivering vehicles within a very short timeframe (VW, for example, aims to deliver a made-to-order vehicle within two weeks of customer order). Cadillac already offers near-custom vehicles within 24 hours of customer order in the Florida market. The trend clearly is to offer consumers what they want, when they want it, and at a price lower than today's, in real terms.

2. Globalization

Most observers expect dramatic shifts, in the medium term, in global demographics and economic power. (See Exhibit 2.) Corporations based in the United States and Europe discovered long ago the attractiveness of parts and product sourcing from China, Mexico, and other emerging economies. They also have been investing in these emerging nations' markets. This trend will accelerate as these economies pick up steam. More American-style hands-off economic management will accompany the move toward Western-style democracies throughout the world. In fact, some vestiges of economic central planning are in the process of being discredited as South Korea, Thailand, Malaysia, Indonesia, and many other economies undergo gut-wrenching structural transformation, dictated by the terms of an IMF bailout. Even Japan is mired in a stubborn recession that will require structural changes similar to those forced on its neighbors. These transformations will only accelerate the long-term development of East Asia and South America.

Demographics, combined with compelling economic forces, are moving to close the inter-nation income gap, virtually assuring that the world marketplace will be far different in the 21st century. By the year 2015, Asia-Pacific's GDP, despite current setbacks, will exceed that of North America or
Europe, while Latin America will enjoy the fastest growth over the 1990-2015 period. The entire locus of business—the consumers, the production, the corporate headquarters, and the indirect economic, social and environmental impacts—will shift dramatically, challenging the traditional western/northern business mindset.

Not only will businesses need to serve far-flung markets around the globe, but companies also will have to provide comparable levels of service worldwide. The communications revolution and globalization of consumer culture will not tolerate hand-me-down automobile designs or excessive delivery times even in markets like China, India, or Indonesia.

3. **Competition**

Tougher competition will continue to spur supply chain innovation. This competition stems from several sources: advances in industrial technology, increased globalization, tremendous improvements in information availability, plentiful venture capital, and creative business design. These forces have placed traditional market leaders under attack. What good is top market share in proprietary computer mainframes and minicomputer systems when customer needs shift to PCs and workstations? During the decade from the mid-‘80s to the mid-‘90s, IBM and Digital lost $80 billion in market value while new, specialized business designs (by Intel, Microsoft, and others) gained $80 billion, according to Slywotzky’s book *Value Migration*. Part of this dramatic re-drawing of the economic map has been wrought by companies totally focused on supply chain responsiveness, such as Dell Computer. And now others, like CompUSA with its American and AmPro PC lines, are invading Dell’s space and setting the stage for future business redesigns.

As the simple pursuit of market share becomes no longer sufficient to ensure profitability, companies will focus on redefining their competitive space, or profit zone. Competitive shocks to established companies will become more violent as well as more frequent. Small startups in far-away countries can become global phenomena almost overnight, thanks to the “global village.” This dynamic will raise competition to a whole new level, redefining the game constantly in most industries.

4. **Information and Communications**

The information explosion is of major future significance to supply chain leaders. Developments to date seem incredible by any reasonable historical standard. Consider the following: computers installed in one out of every three American homes by 1995, modems in one of every four U.S. households, and computers networked seamlessly around the globe within reach of any business or individual. But the future surely holds even more dramatic information breakthroughs. These will arise in at least two ways:

1. The Internet (or its successor) will dramatically affect the way products are bought and distributed. The Internet provides consumers with the ability to shop around, examine every facet of each product, and buy most products from on-line catalogs. In the future, we expect consumers to be able to request and evaluate proposals for any purchase, and sellers to conduct auctions. As comfort levels grow, large numbers of consumers will opt for direct buying. “We expect 50 percent of our business will be done over the Internet 10 years from now,” predicts John Faldetta, Gillette’s director of distribution and logistics. And because direct retailing over the Internet knows no national boundaries, this impact also will be felt in Third World countries.

2. Powerful modeling tools and techniques will emerge to harness the wealth of consumer and business data that will be generated. The rapid rise of supply chain decision-support providers, such as i2 Technologies and Manugistics, is a tribute to both the value of supply chain optimization and the emergence of data feeds and computing capacity that make such efforts possible. Such tools are certain to evolve to much higher levels in the next decade.

The challenge posed to businesses by the soon-to-be obscene amount of information is staggering. Yet the promise is fabulous as well, fueling hopes that knowledge management will finally come of age. As IBM’s Director of Logistics Barbara Martin noted at our roundtable, “information technology is not the issue. Management of information will be the key.”

5. **Government Regulation**

Governments will continue to influence the shape of supply chain evolution. Consider the changes in manufacturing and distribution networks that have taken place in Europe since the Single Market in 1992 and the forces now at play in South America as the Mercosur trade zone matures. Indeed, much of the global sourcing and lengthy product pipelines that exist today were enabled by GATT-induced tariff reductions. Whether liberal trade conditions will prevail into the next century is clearly a concern for some, given the defeat of President Clinton’s request for Fast Track authority extension. As Stormy Hicks, Ford’s director of logistics planning, procurement, and operations, said
Brave New World

At our roundtable, “trade and customs barriers could come back to haunt our global operations.”

6. Environment

Pressures linked to the environment—recycling, sustainable eco-efficiency, and waste minimization—will undoubtedly affect future supply chain design. We already see inklings of this in the HP toner cartridges, which come complete with an envelope to return the used cartridge. Europe has taken the lead in this area. Yet U.S. corporations as a whole seem unclear about the development’s business implications, which are sure to reach North America soon. Again, the automakers present at our roundtable were the most attuned to these issues. Moving beyond the EU packaging requirements that already require cardboard boxes to be removed from consumption sites and recycled, and the rapid switch from disposable to returnable containers for auto production parts, companies are looking at potential requirements to recycle the entire product itself at the end of its lifecycle. Volkswagen’s Luc Billet spelled out the challenge for participants when he said, “we will be required to take responsibility for automobile recycling.” Billet is the company’s head of group material logistics.

As the simple pursuit of market share becomes no longer sufficient to ensure profitability, companies will focus on redefining their competitive space, or profit zone.

Over time, governments will push to price externalities such as environmental impacts. Supply chains will thus have to be designed with much more attention to the back ends of the product-use cycle than is the case today. The trend seems clear. And leading organizations will consider today how to make money in the recycling, eco-friendly era of tomorrow.

The Supply Chain Vision

If companies are to survive and prosper, 10 and 20 years from now, their supply chains will have to be managed far more effectively than at present. The major forces described above will place huge burdens (and a major role) on supply chain managers:

- Customers will keep demanding better service, wider choices, and lower costs.
- Parts and finished goods will have to be shipped from and to any point in the world.
- Competition will intensify.
- Information technology will keep changing what is available to and what is required of managers.

Pressures will only be exacerbated as products become more commoditized—service differentiation will be required to provide essential competitive advantage. Many of today’s largest corporations will fail to make it in this brave new world. And failure to gain supply chain leverage will be one of their downsides.

To meet these increasingly demanding business requirements, future supply chain management will have to deliver remarkably higher levels of performance. Product innovation and choice, speed and precision of delivery, global access to the latest models, and environmental imperatives can only be met through far more effective supply chains. Product design or marketing brilliance alone cannot meet this challenge. Rather, companies will depend on much better designed and managed supply chains to deliver what customers want, in the face of heightened global competition, while providing superior returns to shareholders.

Fortunately, there are several specific approaches available to meeting these combined demands. The authors suggest three major paths that will allow future supply chains to deliver against the new requirements: flexible, integrated design; household replenishment; and virtual organization.

Flexible, Integrated Design

A holistic, fully integrated approach to supply chain design and management will have to replace conventional, functional, silo-limited thinking. In the past, the logistics function, for example, added value through traditional operations activities: moving products to destination within a fixed timeframe, storing them until they were needed, and rearranging them as desired by consumers. Performance metrics such as cost per unit, transit time, and order fill rates were used to fine-tune well-entrenched distribution systems. Methods were essentially drawn from industrial engineering.

Other elements of the value chain, such as procurement and manufacturing, were designed in similar fashion—as virtually stand-alone functions primarily focused on day-to-day fire-fighting within the confines of their own strait-jacketed objectives. In our work with large manufacturers, we still find organizations operating essentially in this fashion. Several of these functions, particularly logistics and procurement, have been perceived as corporate backwaters for years. Even among companies considered well managed, responsibility for inventory management
may fall through the cracks; materials managers are measured on avoidance of line shutdowns, but not on inbound transportation cost or inventory carrying cost; and once the finished product reaches the loading dock, the plant no longer takes responsibility. Analysis of overall cycle times, or of opportunities to reduce inventory involving coordination across departments, does not occur since responsibility is unclear, decision-support tools are lacking, and appropriate performance metrics are not in place.

Future supply chain designs will be characterized by agility, flexibility, and integration—in support of equally agile overall business designs. These designs will incorporate dynamic flow management of products, information, cash, and even ideas. The focus will be on coordination across the entire supply chain, both within a corporation and—critically—linking backwards to suppliers and forward to customers and end-consumers.

The ability to respond rapidly to constant changes in customer demand, network design, and sourcing will emerge as a major new performance metric. (See Exhibit 3.) Organizational nimbleness will be key. And measuring this capability will be more challenging than gauging cycle time or costs in a static environment. Constant re-optimization of supply chain flow levels will replace one-time calculations. Partnering skills will become major differentiators of supply chain management performance. Volkswagen calls this flexible design the "breathing organization," referring to an ability to adjust volumes throughout the supply chain as demand goes up and down.

These agile supply chains must be focused around customer needs. A critical missing link that progressive enterprises will forge in coming years is the integration of supply chain design considerations into corporate business design, marketing, and product design. How can key supply chain variables drive down order-to-delivery cycle times, make customer delivery more convenient, enhance the ordering process, or reduce inventories? These questions will be asked as part of setting new corporate or product-line decisions, rather than as mere "operational" afterthoughts. The supply chain no longer will be viewed as a given that must be applied no matter what value proposition changes are made. New techniques, including those developed by Mercer and Stanford's Seenu Srinivasan, are emerging to enable practical and rapid integration of supply chain considerations into the product design process. The upstream involvement of supply chain variables in business decision-making represents a major avenue to help meet increasing consumer demands cost-effectively.

All of this implies that supply chain thinking will permeate the entire organization rather than exist only in one or two corporate staff silos. As Gareth James, head of manufacturing and logistics for Unilever, said at our roundtable, logistics will evolve from being "the gearbox to becoming the lubricant" of the corporation. Supply chain management skills must become diffused throughout the company—everyone must have an understanding of integrated demand/supply management just as all business people today are attuned to the culture of marketing. This may also be one path to the demise of the supply chain manager as we know him or her. When each executive in the organization thinks about the supply chain—just as everyone is a marketer who thinks about customers—why will we need a large supply chain function?

**Household Replenishment**

Household replenishment, via Internet orders, with freeze-point delay represents a second major means by which supply chain management can fulfill rising consumer expectations of choice, service, and cost. By "household replenishment" we mean the automated fulfillment of consumer demand at point of use—the home. And "freeze-point delay" simply refers to customizing product as late in the process as possible, when final demand can be most accurately determined. This technique also is known as postpone-ment. It requires that products be "designed for logistics" so that feature finalization can be moved as close as possible to final consumption. Thus logistics and supply chain professionals must be involved early in the product design cycle, working directly with marketing and product design, or at least be able to con-
vey to the designers the benefits of freeze-point delays and other logistics variables.

The Internet will drive a major revolution in consumer spending, with fully half of all orders being placed electronically within the next decade. (The other half of spending will probably occur in sophisticated “boutique” settings providing an entertainment-oriented shopping experience.) We see this trend under way today: Consumers can buy tents from L.L. Bean via the Internet, groceries from Stop & Shop via Peapod, or books from Amazon.com. The extension is obvious—all items of stable or relatively standard consumption can be ordered via the Internet, with past patterns of use driving automated replenishment and home delivery. This combination suits the hectic lifestyle of many modern consumers who look to fulfill their everyday needs as conveniently as possible.

To meet increasingly demanding business requirements, future supply chain management will have to deliver remarkably higher levels of performance.

The replenishment concept also will allow companies to take major costs out of the supply chain. Numerous tiers in the distribution chain can be removed. Product proliferation—much of it related to packaging—can be vastly reduced. For example, John Faldetta of Gillette points out that the same razor blade gives rise today to dozens of SKUs packaged in different numbers of blades, with different promotional aspects, tailored to specific retailers. Through automated household replenishment, razor blades can be delivered to the consumer with minimal packaging and advertising. Inventories can be reduced with fewer SKUs, and savings will flow from a reduction in packaging and in customized physical displays. Of course, advertising will take place on the Internet, but this “virtual” activity will not trigger the physical distribution efforts we now see. Product choice will be greatly expanded and delivery can be timely—even anticipating needs, based on analysis of a household’s past consumption patterns.

Freeze-point delay is another critical element of the process. The goal here, too, is to maximize consumer choice while minimizing the demand-forecasting challenges driven by product proliferation. Unilever’s Gareth James draws a compelling picture of product shipped in bulk, unlabeled, to a point much closer to the consumer—with workers possibly adding the final ingredients, then handling the packaging and labeling at a point in the pipeline very close to actual consumption. Incredible efficiencies in inventory management will result, even as the consumer enjoys a much greater range of product customization.

All of this suggests the emergence of a new class of third-party service provider: the replenishment service specialist. This comprehensive provider will receive truckload quantities of consumer goods at a large number of convenient locations nationwide (possibly cross-docked from manufacturers); perform final product blending, packaging, and labeling; receive electronic orders from consumers or create them automatically; and deliver a mix of products, say, weekly, to individual households. Such a service extends beyond what UPS (parcel delivery) or Streamline (household replenishment) offers today. Yet it is clearly feasible and will likely happen in the coming years. A step in this direction may be emerging in Germany where the Guterverkehrszentren (GVZ), cooperative urban freight-consolidation/deconsolidation points, are planned for 30 cities. The GVZ program aims to concentrate logistics activities and reduce traffic congestion.

Just how automatic household replenishment will work, who will provide the service, and how quickly consumers will adapt to the new approach are fascinating questions that will likely be answered within the next 10 years. Nimble logistics providers will surely benefit if they can seize this opportunity. Less-than-truckload (LTL) and small-package carriers, who already saw their market capitalization nearly triple in the first nine months of 1997, will be ideally placed to benefit from the coming household replenishment revolution. Complex strategic and operational challenges will have to be overcome, but the payoff can be huge for the successful innovators. Whether the prize goes to an existing player—a UPS, Yellow Freight, Airborne—or to a new entrant with a fresh business design tailored to this new need is a fascinating story that will unfold in the early years of the 21st century.

**Virtual Organization**

The third major way we see supply chain management meeting future needs is through virtual organizations. These will be based on intellectual capital—brands, technology, new product development, new channel strategies—with operations activities largely outsourced. (See Exhibit 4.) The counterpart will be the emergence of powerful supply chain specialists.

We see the rise of such concepts already. Nike, selling $9 billion worth of athletic shoes annually, does so without owning any factories itself. Gateway 2000 assembles product to customer-direct orders, but without building any of the equipment itself. Sara Lee
recently signaled a move in the same direction with its announcement that it would divest itself of 13 U.S. spinning and weaving mills. “Future cost savings from shedding manufacturing units are expected to be substantial.... All of the firm’s manufacturing facilities are being reviewed....” (The Charleston Gazette, September 23, 1997). And in Europe, finished-goods logistics have long been outsourced to freight forwarders. Jacobs Suchard chocolate, for example, is handled by Danzas without the benefit of any internal logistics department.

Monorail Inc. is an exciting example of a virtual organization. Founded in 1995 to sell PCs via the established reseller/retailer channel, Monorail has no factories, warehouses, call centers, or logistics of its own—it doesn’t even invoice its customers or collect payment. Everything is outsourced to a set of strategic partners. Principal among these are FedEx—which helped design the PC so it could fit into a standard FedEx box—and SunTrust Bank, which handles all billing and credit approvals. As Fast Times noted in its December/January 1998 issue, Monorail succeeds “by concentrating on a few core skills—product design, marketing, logistics—and outsourcing everything else. Everything.”

Monorail is a harbinger of the scope of outsourcing to come. Where today individual functions are outsourced (or even several functions but to different providers), the future will see integrated operational capabilities passed “en bloc” to a third party. Contract manufacturing—SCI in the electronics field, for example—may be married to the logistics capability of, say, Menlo Logistics and the telephone order-fulfillment capabilities of MCI, to provide an integrated solution.

Where will this leave the supply chain management role in a customer-focused company? Akin to that of the conductor. The design of supply chain strategy, assurance of consistent policies, and oversight of third-party providers is likely to be viewed as a core function, residing in a senior level within the corporation. Traditional operations may be gone. As John Faldetta of Gillette says, “we may find that the VP of supply chain has left the company and she is now president of the new replenishment provider!” Staffing levels will be substantially lower.

These consumer-facing firms—focused on demand trends, marketing, and new product/service design—will require supporting enterprises that specialize in operations and execute flawlessly. This raises a major new business opportunity for manufacturers who believe they actually can provide competitively differentiated supply chain capabilities. They would do so on behalf of a broader set of clients (not just Hewlett-Packard, for example, but also IBM, Compaq, and Sun Microsystems) and they would provide a complete range of supply chain services. Such companies would offer packages incorporating all elements of sourcing, production, logistics, order processing, and after-sales service for which they could achieve economies of scale or other compelling operating advantages. These non-glamorous entities may grow their market valuation rapidly as they pursue paths of efficiency not open to vertically integrated companies.

Will future companies combine both—superb customer focus with outstanding operations, the “sizzle” and the “steak”? We believe this is unlikely because both dimensions will become so demanding. Properly addressing consumer requirements will become an all-consuming task. Those who perform it extremely well will see their market value driven by their strengths and will seek to minimize ownership of the heavier operating assets and distraction from supply chain issues. This does not mean that operations and distribution will be unimportant—quite the contrary. But the focus will be separate and distinct. Coca-Cola is a case in point, where distribution was viewed as critical to success. Once bottlers were brought into line, however, the asset-intensive “steak” was divested from the marketing organization “sizzle.”

Building and operating supply chains that can feed just-in-time factories from global sources and deliver finished goods fast and reliably also is a major challenge. Perhaps automakers and a few other types of companies can successfully combine the two, but we believe there are solid management, stock-market valuation, and psychological reasons
why most companies will choose to be either consumer or supply chain driven. Either model will likely beat the combined version.

Getting There From Here

What can companies do now to prepare for this brave new world? Six steps are crucial in turning tomorrow’s promise into today’s reality. This checklist should guide the near-term actions of senior supply chain managers as they strive to lead in the 21st century.

1. Diagnostic. A readiness diagnostic is the logical first step. Are we ready for the consumer demands, globalization, and information of the coming age? What are we doing to promote supply chain coordination within the firm and with external partners? Are our performance metrics up to date? How do we compare with others inside and outside our own industry? Such an assessment can provide a company-specific roadmap for supply chain development.

2. Strategy. Companies must examine their supply chain strategy as an essential element of overall business design. To what extent can the firm’s integrated sourcing, production, and distribution capabilities be tuned to drive superior economic value and customer satisfaction? If the potential is there, a company may choose to become an operations-intensive manufacturer. If the real value lies elsewhere, the brand management/out-sourced supply chain model may be appropriate.

A Joint Initiative

This article was stimulated by a joint initiative of Mercer Management Consulting, the MIT Center for Transportation Studies, and Logistics Management & Distribution Report magazine. The objective was to discuss the future of supply chain management with senior industry practitioners. Sixteen companies were interviewed by Mercer to set the stage: Becton-Dickinson, Ford, Gillette, Hewlett-Packard, Home Depot, IBM, Nabisco, PPG, Procter & Gamble, Staples, Thomson Electronics, 3Com, Unilever, Volkswagen, Whirlpool, and Xerox. Twelve of these companies were represented in a day-long roundtable discussion held at MIT on September 12, 1997. The roundtable meeting was reported in Logistics Management & Distribution Report’s January 1998 issue. The authors wish to thank all the participants—but the opinions expressed here are our own.

3. Business Case. The CEO and board of most companies remain unconvinced that an integrated supply chain approach will pay hard-dollar dividends. Making the business case for supply chain integration thus becomes a high priority for supply chain managers or those who seek this role. The case must be made on both the strategic and practical levels—combining a clear sense of direction with detailed examples of the gains in service and cost to be derived from closer horizontal integration.

4. Brains not Brawn. Establish a hard-hitting but thinly staffed supply chain management activity in your company. The objectives will be to provide corporate leadership in the analysis, design, and implementation of solutions that drive service/cost effectiveness to new levels across the organization and with external partners. Functioning almost as internal consultants with top management support, this team will work to take cost out and raise customer satisfaction. The people involved must be trained in all aspects of the supply chain, from procurement through manufacturing to customer service; in the latest decision-support tools; in the best ways to establish win-win relationships with partners; and in the facilitation techniques essential to a collaborative teamwork orientation.

5. E-Commerce. Plan now for Internet-driven supply chains. Your industry isn’t ready yet? Either you’re missing key initiatives by your competition, or you’re sitting on a great opportunity to be first in your field. Get your marketing folks talking to your supply chain people to see how Internet orders can help drive distribution efficiencies through freeze-point delay or even automated household replenishment.

6. Global Providers. Truly global supply chain partners—non-existent today—are needed to support the new “virtual” organization. These outfits must develop more of the higher-level skills involved in coordinating entire supply chains. They need to offer a complete range of services, across all industries, with new patterns of relationships and incentives. Work with your chosen providers to help them transform into 21st century supply chain providers.

The next century is just around the corner. Major changes in the business environment already are under way. And bold supply chain management will be key to corporate survival and prosperity in this new age. Progressive managers must act now to ensure they are driving winning supply chains into the brave new world of the 21st century.