

Supply Chain

The Forgotten Factor

Patrick Kager
and Mark Mozeson

**STREAMLINING
THE SUPPLY CHAIN
CAN MAKE COMPANIES MORE
FLEXIBLE AND PROFITABLE.**



PHOTODISC

To boost their bottom line, profit-squeezed companies in many industries have taken pruning shears to their supply chains. Until recently, and for valid reasons, pharmaceutical companies did not embrace the trend. But those reasons are now invalid, and the industry can no longer afford a *laissez faire* position on that important issue.

This article explains why companies have been complacent about the supply chain until now and analyzes the current market dynamics that force them to rethink their op-

erations. It also explains why pharmaceutical companies should reconfigure their supply chains, the steps that leading companies are taking to improve their operations, and the benefits they will gain by doing so.

Why Now?

In most ways, the process of producing and distributing pharmaceuticals is similar to that of other industries. Companies purchase raw materials for bulk synthesis of active and inactive ingredients. Dosages are formulated and packaged into various configurations. Products flow through company warehouses, wholesale distributors, retail pharmacies, medical institutions, and finally to consumers. (See “The Pharma Process.”)

One clear difference between the pharmaceutical supply chain and that of other

industries is in operating efficiency. Although margins remain high for pharmaceutical companies, inventory turnover—how long it takes for a product to sell—clearly lags. (See “Tardy Turnover.”)

Although, historically, supply chain costs have not been a major issue for pharmaceutical companies, changes in both the industry and the world economy now require a more streamlined approach.

Increased cost of R&D and marketing. Until recently, pharmaceutical companies used their resources to improve revenue rather than cut costs. Because of their products’ high profit margin, the strategy was to spend money on research, development, and marketing. The practice generated enough revenue to more than compensate for supply chain inefficiencies, which

Patrick Kager and Mark Mozeson

are partners in the Life Sciences practice of Deloitte Consulting and have extensive business-strategy consulting experience

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can be expensive to correct.

Today, conditions in most of the industry demand a different strategy. The cost of both R&D and marketing continues to escalate. Blockbuster products are more difficult to come by and occur less frequently. Consequently, companies must find alternative sources to fund R&D and marketing. The pharmaceutical supply chain—with its high capital costs, high overhead expenses due to heavy regulation, and low use of manufacturing facilities—is an immediate, logical, and potentially fruitful place to look for savings.

Changing regulatory and governmental constraints. In the past, if a pharmaceutical company wanted to sell its products in a foreign country, it would often have to make concessions. Among those was building a manufacturing plant in the country, staffing it with local workers, and entrusting it to a local manager, who, in most instances, acted autonomously, accountable only to top- and

Tardy Turnover

	Pfizer	SP	Merck	Coke	Intel	Cisco	IBM	Dell
Gross Margins	81.73	80.45	46.77	69.31	58.89	64.96	37.13	21.48
Inventory Turnover	1.46	2.03	6.51	6.58	7.17	8.48	10.64	59.76

Inventory turnover value is defined by the cost of goods sold for the trailing twelve months divided by average inventory. In general, the higher the number, the less inventory is being held in comparison to sales, thus lowering inventory carrying costs.

bottom-line performance. If the manager felt another plant should be built, it was. As a result of such regulatory and governmental constraints, pharmaceutical companies saw a proliferation of their plants and distribution centers around the world. Rather than centralizing operations, companies became a loose confederation with far more facilities and capabilities than they needed.

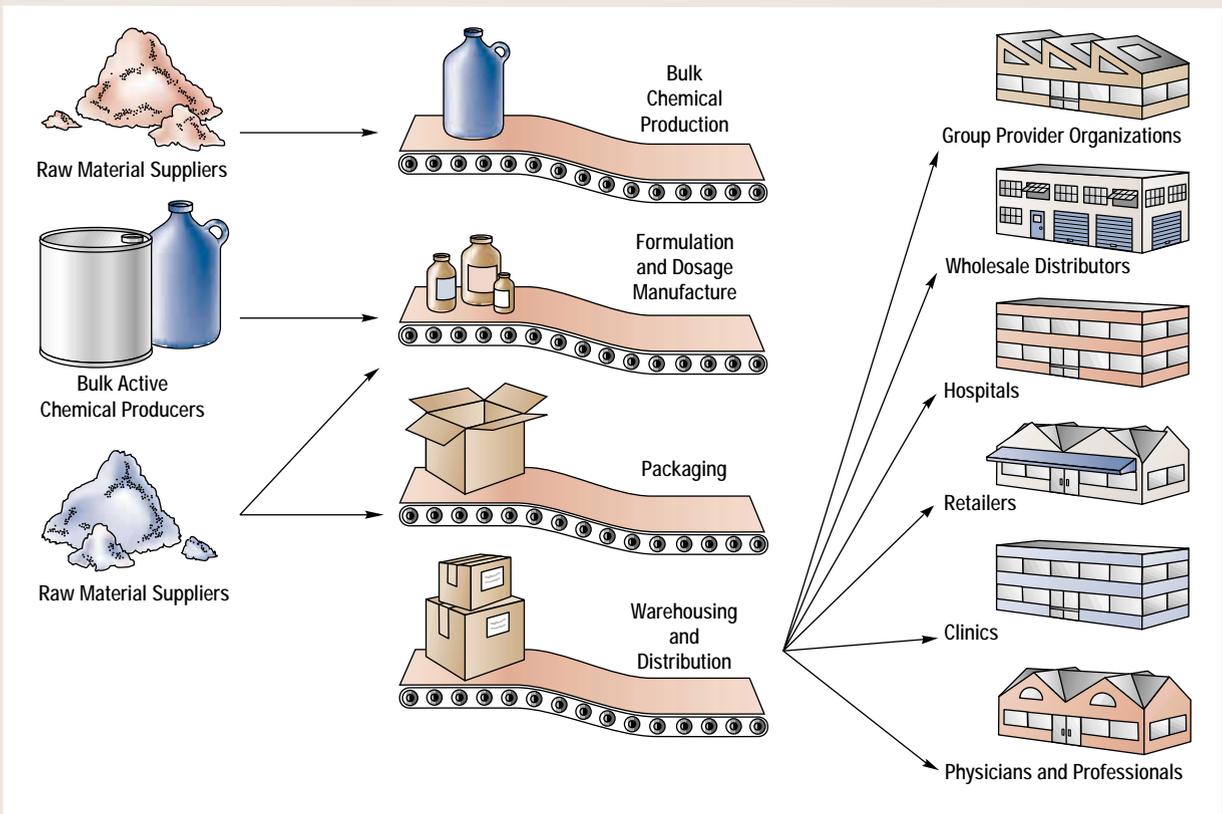
The global situation is changing, and many regional barriers have disappeared. Since the establishment of the European Union, companies can meet a single set of European standards rather than those of a

dozen individual countries. Companies have also found that being more aggressive with regulatory agencies has led to better pricing arrangements and fewer restrictions. And creating jobs for local workers as a condition for doing business is becoming a thing of the past. Companies are making primarily economic, rather than political, choices when they evaluate where to place a manufacturing or distribution facility.

Increased focus on asset productivity. An important industry axiom has always been: "Never stock out of a product." With the high gross margins attached to each product, com-

THE PHARMACEUTICAL PROCESS

Components of the pharma supply chain—raw materials, manufacturing, distribution—are similar to those in other industries.



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UNTIL RECENTLY, INDUSTRY'S AXIOM HAS ALWAYS BEEN: NEVER STOCK OUT OF A PRODUCT.

panies did not want to lose a single sale. Inventory control people even lost their jobs if they were deemed responsible for out-of-stock situations. The cost of being overstocked was lower than the cost of being understocked, so managers preferred to err on the side of extra space, capacity, and inventory.

Today, companies view capacity and inventory differently. They are much more willing to close underused plants and to keep stock at levels sufficient to meet customer service goals while still raising asset utilization. In the past year, many companies, including SmithKline Beecham, Bristol Myers-Squibb, Johnson & Johnson, American Home Products, and Glaxo Wellcome, announced restructuring efforts. In October 1999, Glaxo Wellcome announced a restructuring of its worldwide manufacturing operations intended to reduce employment by 3,400 jobs (15 percent) and phase out certain manufacturing operations.

In addition, companies scrutinize financial resources for new product development and launch efforts more closely. New measurements such as *economic value added* and *cash flow return on investment* have emerged as generally accepted financial metrics, highlighting asset productivity concerns. Until recently, asset utilization of less than 50 percent was acceptable. Now with utilization targets of 90 percent, some companies have added second and third shifts to their manufacturing operations.

Growing Complexities



In the past, companies had relatively simple supply chain operations because they had few products in their portfolios.

Glaxo, for example, thrived on the sales of Zantac (ranitidine) for many years. Facilities dedicated to a single product or a handful of products were often sufficient. Companies could easily predict demand, plan

supply, and optimize the supply chain.

Most companies now have a more complex product mix. Mergers and acquisitions have led to varied portfolios, manufacturing redundancy, and excess capacity. Many facilities run just one shift a day. Portfolios have grown to 5–7 products that generate 80 percent of sales. That growth has increased the complexity and inefficiency of pharmaceutical supply chains.

Dedicating plants to a single product when the company sells many products is no longer financially feasible or practical. Yet most plants lack the flexibility to produce different products or convert swiftly from one product to another to meet fluctuating demand. In some instances companies move workers from building A to building B when demand shifts occur, leaving building A totally idle. Such conditions are no longer tolerable.

Market dynamics. Many more companies competed in the pharmaceutical arena 10 years ago than do so today. In that fragmented environment, companies enjoyed niche markets that let relatively inefficient performers deliver growth returns of 10–15 percent per year. Reaching that level has become increasingly difficult as patents expire and new, larger, and more adept competitors enter markets. Agouron's highly successful 1997 launch of Viracept (nelfinavir) stalled the sales growth of competitors' products despite its late entry in the protease inhibitor category and the "David and Goliath" nature of the companies involved.

Being first to market with a significant new compound presents similar challenges to the supply chain. Celebrex (celecoxib)—jointly marketed by Pfizer and Searle and the first Cox-2 inhibitor introduced into the \$6 billion anti-inflammatory and arthritis market—reported a total of 2.87 million prescriptions dispensed during its first 14 weeks on the market. Ensuring adequate initial supply was crucial to establishing Celebrex as a leader in that market, particularly as Merck's Vioxx (rofecoxib) launched only four months later. A ready response to such competitive challenges requires a lean, flexible supply chain that can ramp up production quickly in the face of surging demand and cut back when demand unexpectedly declines.

New tools, better information. Twenty years ago, companies generated sales reports and production plans either manually or with relatively inflexible mainframe computers—a challenging job. Forecasts generally met with suspicion, and production managers responded conservatively. A large amount of emergency activity was required throughout the supply chain to respond to inevitable forecast errors. Each of those factors contributed to either bloated or inadequate inventories and poor use of production resources.

Today, the tools available to predict demand are much more sophisticated. Enterprise-wide, integrated transaction processing systems allow for more timely and accurate reporting of product shipments

Price Wars

Rank	Product	Indication	US	Canada	Great Britain	Australia	Mexico
							
1	PriLOSEC	Heartburn	\$3.31	\$1.47	\$1.67	\$1.29	\$.99
2	Prozac	Depression	2.27	1.07	1.08	.82	.79
3	Lipitor	High cholesterol	2.54	1.34	1.67	1.29	3.60
4	Prevacid	Ulcer	3.13	1.34	.82	.83	1.18
5	Epogen	Anemia	23.40	21.44	27.48	29.24	N.A.
6	Zocor	High cholesterol	3.16	1.47	1.73	1.75	3.66
7	Zoloft	Depression	1.98	1.07	.95	.84	1.96
8	Zyprexa	Mood disorder	5.27	3.39	2.86	2.63	N.A.
9	Claritin	Allergies	1.96	1.11	.41	.48	.92
10	Paxil	Depression	2.22	1.13	1.70	.82	1.83

* Ranked by sales during the first eight months of 1999, according to IMS Health.

Higher pharmaceutical prices in the United States contribute to current price-control pressures.

around the globe. Constraint-based planning tools allow for realistic scheduling of scarce manufacturing and distribution capacity to meet accurate forecasts.

Structural Changes

With product demands coming from multiple sources—finance, sales, and manufacturing groups—the accurate prediction of demand is more essential than ever to achieve a stable operation. To successfully reconfigure supply chains, companies must change both structure and processes.

One major structural change is the centralization of supply chain management. No longer will an individual manager make a unilateral decision about building a new plant. Thinking globally, the company will design its manufacturing operations to support overall needs.

Some companies have found that consolidating bulk chemical synthesis capabilities provides the flexibility needed to fulfill worldwide demand. Though such a move is expensive initially, the long-term savings are substantial. The company will gain the capacity needed to support a large portfolio without the redundancies that have characterized the industry. Companies such as Pfizer and Pharmacia have been moving toward such a global approach. Pfizer has reduced the number of its bulk synthesis plants to four.

But such a drastic restructuring is difficult, time-consuming, and requires “cultural adjustment” as well. From a public relations standpoint, it is seldom easy to close a plant in any country. Many companies are not yet ready to make those tough decisions and alienate consumers or governments. But changes in thinking are underway and there are few barriers to closing overseas plants.

In Pfizer’s case, management prescribed a directive, top-down approach for its European finance re-engineering effort. Given the organization’s history of decentralization in Europe, that was the only way to overcome cultural and geographic impediments to change.

Outsourcing

A second structural change involves outsourcing. Pharmaceutical companies now realize they don’t have to do everything themselves. Partnering with third parties for certain services is often more efficient

and provides needed flexibility. Additional factors that provide impetus for outsourcing include

- accelerated re-engineering benefits that aim for dramatic improvements in critical measures of performance such as cost, quality, service, and speed
- access to world-class capabilities and facilities
- resources allocated for other purposes, from noncore activities toward core activities
- reduced operating costs: an outside provider’s lower cost structure reduces a company’s operating costs and increases its competitive advantage
- reduced risk: outsourcing providers make investments for more than one client and the shared investment, spreading the risk and reducing the amount borne by a single company.

Many fully integrated drug development and manufacturing suppliers have demonstrated commercial experiences in process and drug development, formulation, manufacturing, and packaging.

Such partnering arrangements enable companies to handle surges in capacity needs without tying up assets during slower periods. In some instances, a pharmaceutical company will turn a plant over completely to a third party, eliminating the need to absorb the overhead of idle facilities and staff. Should the plant have to close, the third party, rather than the pharma company, carries the onus of a shutdown.

Nevertheless, outsourcing does have its pitfalls. For instance, it is important to find a good partner that is not already committed to as many companies as it can serve. It is equally important to be able to work with an outsourcing organization. Many companies still see third parties as vendors rather than partners. Those companies have trouble sharing information, planning, and forecasting—all required communication if outsourcing is to be effective. One pharmaceutical company that sees the value of outsourcing is Schering Plough. It makes careful choices, typically outsourcing only mature products and selected steps in the manufacturing process. The company never outsources strategic products because of secrecy concerns.

AstraZeneca, among others, frequently purchases bulk chemicals from an out-



TO SUCCESSFULLY RECONFIGURE SUPPLY CHAINS, COMPANIES MUST CHANGE BOTH STRUCTURE AND PROCESSES.

sourcing organization, yet generally does not relinquish responsibility for formulation and tableting. In all cases, the use of outsourcers requires an internal organization to provide rigorous oversight and ensure product quality.

Flexibility is Key

As the industry becomes more dynamic, predicting the volatility of product requirements is difficult. It is not unusual for a company to be off by 50 percent in forecasting its product requirements. As a result, designing internal supply and outsourcing requirements is often an exercise in futility.

Consequently, the industry is moving toward planning for a range of capability instead of for specific product requirements. Companies need to have in place the bulk capacity, the tableting capacity, the outsourcing partnerships—all the facilities and processes—that enable them to shift rapidly from one product to another as need dictates. Such flexibility can also mean responding to customer requests for special packaging or labeling, quickly adopting new production technologies, or getting new products on the market as soon as they receive approval. The time required to estab-

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lish new capacity is significant: 3–4 years for bulk production and 2–3 years for formulation. But flexibility does not always need to take the form of a fully equipped production facility—excess capacity may be an empty building waiting to be outfitted.

Although establishing a range of capability is a major undertaking, it may be even more difficult to shift the company mindset from forecasting product requirements to planning for capability flexibility. Many companies determine plant construction approbation based on specific products that are at or near NDA approval. Shifting to construction approbation based on projected pipeline requirements will require companies to revamp their capital and financial approval mechanisms and processes.

Regulatory changes. Another element in

reconfiguring the supply chain structure involves adapting to regulatory changes. Such changes often enable companies to do things they were previously unable to do. For example, changes in FDA regulations now allow companies to export products that have not been approved for consumption in the United States. That change allows a longer-term focus on where to locate production for a new product than might have been possible in the past.

Streamlining

In addition to making structural changes, companies need to rethink processes that can be performed globally and regionally rather than locally. Inventory planning and management is a key supply chain process that, if modified properly, can result in sig-

nificant cost savings. The components of most companies' supply chains are so numerous that it is difficult to plan and manage inventory. Local objectives often clash with corporate or global objectives. Reducing the number of production and distribution locations from 70 to 10 or 12, as some companies have done, would result in much tighter control of inventory and its cost.

AstraZeneca is one company that has seen the potential benefits in consolidation. Before the merger Astra was more consolidated, Zeneca more decentralized. The cost difference between the two organizations was immediately evident in the size of their respective planning organizations: Zeneca had a large staff to register products in multiple locations and plan production for multiple plants; Astra had a very small staff be-

Pricing Pressures

In response to periodic outcry from senior citizens and aging baby boomers, political leaders throughout the world are pushing for ways to make prescription drugs less expensive for individual consumers.

Pharmaceutical companies are indeed feeling that push, particularly in the United States. The pressure has been exacerbated by surveys showing the apparent price premium US consumers pay. (See "Price Wars.")

That pressure will be sustained as the elderly population increases. Companies need to be prepared for the time when their ability to increase product prices will be constrained as a result of public policy changes. The risk of relying on the status quo for pricing is immense. If—some say when—government policy regarding pricing does change, it will likely be dramatic rather than evolutionary. There will be little time for manufacturers to adjust to a new environment where prices are closely scrutinized and regulated.

The Internet. Price pressure will also arise from consumers' increasing use of the Internet. Because of DTC advertising, more and more consumers are being exposed to individual products by name well before visiting a doctor. And a small but growing number of consumers fills prescriptions directly from Internet suppliers. That momentum is likely to accelerate, says the *Wall Street Journal* in its October 18, 1999, issue. "The forces of globalization and digitization are having powerful deflationary effects. No longer can the corner druggists demand huge markups for their wares. Shoppers have two powerful new weapons—information about what competitors around the

country are charging for the same goods and easy access to those goods online if the nearby merchant won't deal."

According to the National Association of Boards of Pharmacy, the tally of Internet pharmaceutical sites exceeds 300 and is still climbing. Yet the field is so new that only three sites have applied for and earned the group's seal of approval. Although no one is predicting that community drugstores will go out of business, Internet sales are expected to skyrocket.

The plethora of information available on the Internet can also lead to price shopping as online pharmacies jostle for customers. That seems particularly true for lifestyle medications such as Viagra or Propecia. The debate about whether prices are better on the Internet is still open. According to the vice-president of operations at DrugEmporium.com, the overhead cost of filling a single prescription in a standard store can run as high as \$6 per order, while online costs are about half. The director of public and government relations for Drugstore.com, an e-commerce health site, states that on average, medications purchased through the Internet are about 20 percent cheaper. However, a survey published in December in the *Annals of Internal Medicine*, found otherwise. Cost information was collected from various Internet pharmacies and compared with medications from five Philadelphia pharmacies. The survey concludes that even without shipping costs, which varied from \$8–\$25 per order, prescriptions were more expensive online than in Philadelphia pharmacies.

Whatever the truth is today, more price competition among Internet retailers seems likely in the future. As the retailing proportion of costs decreases, manufacturers' costs will become more visible. It seems inevitable that downward pressure on manufacturer prices will result. Manufacturers will be forced to respond in a variety of ways: squeezing efficiencies out of the supply chain will be the obvious response.



cause it had to plan only for a few large, flexible production sites.

Planning and distributing on a global or regional basis are important steps toward the control required for optimizing the supply chain. To emphasize their commitment to a global focus, some companies have created the position of supply chain manager, in line with other more logistics-driven industries.

Peak production. Related to the global planning concept is the trend toward global product marketing. With more global launches companies must pay greater attention to ensuring an adequate launch supply. With an accelerated time to peak sales there is a greater need for peak level production and distribution capacity early in the product's life cycle. That trend also drives companies to simplify manufacturing processes and supply chains for their new offerings. For AstraZeneca, the round white 7-mm tablet is the default standard for new products because it is predictable and quickly scaled up from pilot to production.

Supplier partnering. Like many other industries, successful pharmaceutical manufacturing organizations are streamlining to only one or two suppliers for key raw materials. Selected vendors work closely with the manufacturer to ensure adequate supply and acceptable quality of materials. Such an arrangement provides a reliable source of materials to the company, and the vendor gains a more predictable level of business.

Regulatory requirements. It is always costly to alter production because of required regulatory approval for both process and material changes. And the resources for filing changes are often the same resources for working on development and scale-up of new products, and so are much in demand. Accordingly, companies now target a new

product to a select group of facilities to meet global demand, say 4 or 5 facilities for a high-volume product. They formulate the product to one standard to meet the most stringent regulatory requirements in all of its markets. That way companies can produce the products in multiple locations and respond to each market appropriately.

Systems Improvements

Companies have made major investments in technology. But, many of them have been knee-jerk reactions to Y2K problems. To date the verdict is still out on the benefits of those investments. Nonetheless, continued attention to information systems is necessary.

Pfizer has seen much more interdependence between facilities as a result of its restructuring of manufacturing facilities. That interdependence has highlighted the need for standard systems that enable companies to track global activity, better determine future needs, and plan accordingly. It is also driving a reduction in the number of different computer systems companies use globally, which will facilitate the flow of accurate information between organizations. The move to one standard European financial reporting system is a successful example of that trend.

Moving beyond Y2K issues and having installed enterprise resource planning transaction backbones, companies will shift their focus to those processes and supporting systems that can truly reduce the cost of the supply chain. Better reporting of demand data will enable companies to use improved forecasting tools and techniques to more accurately gauge what the future may hold. That, in turn, will allow them to plan for the right level of product for the right location at the right time. Constraint-based planning software will then allow manufacturing to develop and commit to achievable production schedules.

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Act Now

In the near future, external forces are likely to have a significant impact on supply chain operations. Government pressure to control prices grows steadily, and much of that pressure comes from consumers' increasing power through escalating use of the Internet. (See "Pricing Pressures.")

Some companies have not yet addressed supply chain issues, believing it unnecessary until they experience pressure to lower or cap product prices. But that pressure is inevitable and pharmaceutical management can no longer afford to neglect the efficiency of supply chain operations or think only in terms of avoiding stock-outs.

R&D investments and pricing pressures continue to escalate, and companies need to tap all available sources of cash; inefficient operations and under-utilized assets are obvious targets. As marketplace dynamics become more complex, companies that react quickly to demand changes will have the greatest chance of survival. ■

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Deloitte Consulting

For more information about our Life Sciences industry practice, please contact:

JOHN V. FLYNN
Global Leader, Life Sciences
Deloitte Consulting
1700 Market Street
Philadelphia, PA 19103
Phone: 215.246.2400

JOHN D. RHODES
National Practice Director, Life Sciences
Deloitte & Touche
Two Hilton Court
Parsippany, NJ 07054
Phone: 973.683.7296