Getting **supply chain** software right

A study of early adopters of supply-chain-management software shows that it works best where it is needed most—but is no use as a bandage over flawed processes.

KISHORE KANAKAMEDALA, GLENN RAMSDELL, AND VATS SRIVATSAN
The McKinsey Quarterly, 2003 Number 1

Over the past decade, companies have invested heavily in wiring their supply chains with software designed to manage information flows among their internal operations, suppliers, and customers. From 1999 to 2002, vendors sold more than $15 billion in supply-chain-management software licenses—the first step in a process. And that figure doesn't include the cost of the expensive installation and maintenance contracts to come.

The software and its developers—companies, such as SAP and Oracle, that sell applications for resource planning, as well as supply chain specialists such as Ariba, i2 Technologies, and Manugistics—have attracted attention because the software promises to track and predict customer demand and, as a consequence, to adjust the flow of goods more precisely. When supply-chain-management software works, it can help cut inventory levels, improve delivery schedules, and ensure that supply meets demand—all of which should make customers more satisfied. One supply chain executive calls the software oxygen for his business.

But the results have been mixed. Some companies (including Dell Computer and Wal-Mart) have harnessed the power of this technology to improve their supply chains or, in certain cases, to transform their business models. Others have run into trouble, some publicly acknowledging that they have spent hundreds of millions of dollars with no impact.

GOOD SUPPLY CHAIN MANAGEMENT IS FUNDAMENTAL

A supply chain, simply stated, comprises the flow of a company's products, information about them, and the money that changes hands between the company and its suppliers and customers. When a company manages the processes that support these flows well, it can fill orders from customers quickly yet keep its inventory to a bare minimum. When it doesn't, the supply chain breaks down. Customers place orders but hear that the products are out of stock, even when they might be available somewhere in the company. Raw materials fail to show up on loading docks, and shipments to customers arrive late. Factories run below capacity because customers cancel their orders. The result can be a quick drop in sales, lost margins, and inventory write-offs.

Software on its own can't fix basic shortcomings in supply chain management; in fact, it can make things worse. The real benefit comes from repairing broken business processes, and companies that tackle them before installing the software can reduce inventory levels and predict demand more accurately. This effort alone can increase revenues. Add the software, and the improvements are accelerated and sustained.

But in reality, many companies that have installed supply-chain-management tools are unhappy with the outcome, so here we focus on helping managers turn around sloppy installations. Companies that figure out how to make the software and improved processes work together to create a more efficient supply chain will see a better return on their investment.

RESULTS DIFFER WIDELY

To find out what makes supply-chain-management-software installations succeed, we studied the records of 63 high-tech companies in the Fortune 1000 from 1995 to 2001, a six-year period that coincided with the first big wave of investment. Our sample included companies that make hardware, networking equipment, semiconductors, and electronics, but not software. Although we concentrated on this group because companies in it were early adopters of such applications, we believe that the results of the study apply equally outside the high-tech sector. Additional examples have been drawn from other industries.

As a metric, we used inventory turns—a reliable indicator of the health of a supply chain, since they directly affect returns on invested capital, working capital, and the cost of goods sold (through obsolescence and inventory-carrying costs). Supply chain executives face constant pressure to speed up inventory turns. As one told us, "I live or die based on inventory levels. The product portfolio is what it is, and my job is to drive quicker
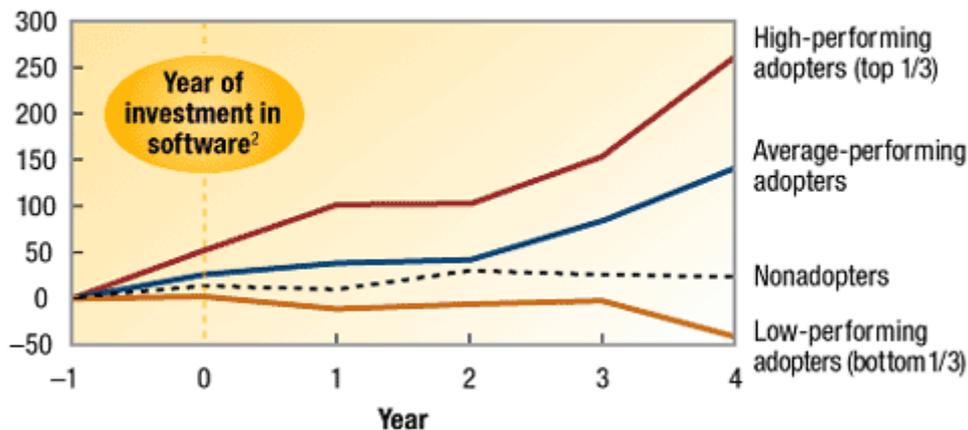
turns."

We found that, on average, inventory turned faster for companies that invested in supply chain software than for those that didn't. The top third of companies that did install it performed, on average, 100 percent better than the lagging third. More surprising, though, was another finding: companies that hadn't invested in the software also outperformed the lagging third, and some even improved their turn rate (exhibit).

EXHIBIT

Supply chain software is not a silver bullet

Change in inventory turns,[1] percent

[1]For 62 high-tech companies in Fortune 1000 (exhibit excludes 1 outlier) over the period 1995–2001; 22 invested in supply-chain-management (SCM) software at various times during period; inventory-turns analysis begins in 1995 for nonadopters.
[2]For those who adopted SCM software.

One electronics manufacturer with severe inventory problems—too much stock on some items, not enough on others—had the foresight to begin by redesigning its manufacturing process, in order to get the most out of its planned investment in supply chain software. Products with stable demand patterns were produced at steady levels that evenly replenished the inventory; others were produced at levels determined by managers who had proved their ability to predict demand. Still others, for which demand had proved difficult to forecast, were made to order. The three production systems were put in place before a cent was spent on new software.

In fact, we found that the greatest improvements in supply chain management occurred when companies both improved their processes and correctly installed and used the software.

MAKING IT WORK

The difference between a successful installation and an unsuccessful one, as we have stated, is a supply chain that is already in good shape or, at the very least, upgraded as the software is installed. In addition, companies must be ready: if management, the IT department, and users don't recognize an urgent need to improve the supply chain, they are unlikely ever to get the most out of the software.

Such an urgent need to improve supply chain management can arise when product margins shrink, demand drops, customers ask vendors to manage inventory for them, or new products are introduced. Consider the PC assembly business, which expanded by about 10 percent a year during the 1990s but lost margins because of price wars and increased commoditization. The market dynamics created a burning platform for these companies, forcing them to pursue new operating efficiencies. Other companies face the challenge of re-creating that sense of urgency, which seems essential to ensure that everyone accepts the need for change.

A 100 to 150 percent improvement in inventory turnover within two years of implementation was common among companies in our sample that not only installed supply chain software but also looked hard at the way they gathered and used demand forecasts and set inventory levels and at what customers regarded as important—such as on-time delivery or the availability of products. If this analysis wasn't carried out before the software was

installed, weaknesses in the process tended to be magnified, because when bad information is flowing, software only helps it flow faster. Fortunately for companies that don't carry out such an analysis, enterprise software is often customized as it is installed. Companies looking to turn around underperforming installations can thus move cautiously to adjust individual parameters as particular processes are fixed.

The performance of software, however, depends not just on its features and quality but also on the way people use it. With this in mind, we have identified the common mistakes that companies make and suggested strategies for tackling them. The result is four guiding principles: fix only important broken processes, promise only what you can deliver, improve training, and make people accountable. Since these are the areas that companies got wrong, fixing them improves the software's performance and delivers a better return on investment.

FIX ONLY THE MOST CRITICAL BROKEN PROCESSES

Some companies undertake massive process redesign programs when their supply chains fail to deliver. On the face of it, this must be better than not fixing processes at all, but we found that these programs are rarely worth the effort. Instead, companies should fix the processes that have the most immediate economic impact: forecasting demand, setting inventory levels, avoiding stock-outs (that is, running out of inventory), and ensuring that delivery schedules are met. They can then use the software to implement those improved processes.

A PC assembler regarded as its most important broken process the interaction between the sales force—which made unrealistic forecasts based on quotas rather than realistic ones based on demand—and the forecast analysts. The company decided to force the two groups to produce a joint forecast. Meetings, tense by design, between the salespeople and the analysts revealed the basis for the estimates of the sales force. Once the numbers had been agreed upon, they were fed to the supply-chain-management system for direct input into factory systems regulating the number of PCs that would be produced. This approach made it possible for the company to cut down drastically on the manufacture of products that were no longer popular and to reduce stock-outs.

By contrast, a computer-networking company implemented supply-chain-management forecasting software while largely ignoring the most important broken process: a sales incentive program that encouraged overproduction. The software accurately read the overproduction, but its warnings were overlooked because sales were hot—a customer could always be found for the excess quantities—and profit margins were high. So while the software gave signals that demand was falling, managers and salespeople, blinded by earnings pressure and sales incentives out of step with the company's best interests, failed to heed the alert. Raw-materials inventory began to pile up and a large write-off ensued. Had the incentive system been fixed first, this result might have been avoided.

In another case, a consumer packaged-goods company faced daunting challenges: 30 percent of its shipments arrived late; customers were leaving in droves because it took three days merely to confirm an order; and inventory that piled up in one factory was out of stock in another one nearby. The answer to these problems seemed to be a multimillion-dollar investment in supply-chain-management software. The size of the investment, though, made the company rethink its supply chain processes first so that it could take full advantage of the software. The company centralized inventory management, began to balance production and inventory among plants, and had suppliers manage their inventory.

Only after the company had sorted out these processes did it begin installing software to handle inventory management, production scheduling, order management, and the planning of manufacturing and distribution. Mindful of the scale of the change, the company installed the software in sequence so it could capture the benefits of each incremental investment it made. As a result, it improved its on-time delivery rate to 98 percent, increased inventory turns threefold, and reduced lead times by a third.

PROMISE ONLY WHAT YOU CAN DELIVER

Too many installations win support only after more has been promised to users than the system can deliver: giving everyone everything they want usually proves too expensive and difficult while slowing down improvements in high-priority areas. The remedy is to go back and simplify the effort.

One health care company, which built strong support for its supply-chain-management installation through a series of seminars, promised to meet, in full, the wishes of all groups of users. However, the advocates of the software explained neither how long this would take nor the cost. Six months later, those advocates had to admit to the user groups that they would not only get no more than a small fraction of what they wanted but would also have to wait much longer than expected for what they would get. Support for the effort was lost and the company had to return to the drawing board. The result was a shift in strategy. The focus moved to managing the launch of

The greatest value of supply chain software comes from harnessing its power to improve decisions

new products and to automating the process of setting prices for products—the supply chain problems that were causing the greatest number of headaches and costing most in lost sales and profits. By reducing the scope of the effort, the company managed to spend less and deliver more.

IMPROVE TRAINING

Managers often focus on automating transactions, something that might be important but typically fails to extract the greatest value from supply-chain-management software. The greatest value tends to come from harnessing its ability to improve decisions—how much of what product should be shipped to which warehouse, for example—by making forecasts more precise. Since decision support affects inventory turns and customer-service levels (avoiding stock-outs, for example), improving it has more impact than, say, migrating an order process from telephones or fax machines to computer systems, a change that at best reduces head counts.

To tap this potential, more training is needed than companies usually anticipate. Users, even confirmed "nontechies," must be intimate with the system; they should be taught, for example, how to analyze its results and to perform reality checks on its recommendations. One leading semiconductor company that uses supply-chain-management software for global planning requires users to attend a training program covering basics such as the user interface and the production of reports. The program also covers more advanced topics—for instance, why the software suggests that the company purchase a certain quantity of raw materials or ship finished goods to this or that location, as well as how to work out the daily demand for chips.

Compare this experience with that of an apparel manufacturer that installed software to improve its forecasting and to reduce inventory levels, without effect. Senior managers discovered that the company's demand and production planners were feeding "gut feel" forecast numbers and inventory levels into the system, ignoring the fact that the software itself could estimate inventory levels. It became clear that many of the planners didn't know that the software could predict demand or use different assumptions to recommend the production of seasonal items as opposed to everyday ones. Here was a simple case of a manufacturer that hadn't invested in building the right skills among planners and thus failed to get the most out of the software.

MAKE EVERYONE ACCOUNTABLE

When large supply-chain-management installations go awry, fingers point in all directions. To avoid such recriminations, top-performing companies make their vendors, IT departments, and users jointly accountable while linking improved supply chain processes closely to their budget cycles and compensation packages. Vendors are rewarded or penalized according to how well the software does its job, not just how quickly it is installed. IT managers are responsible for delivering the software on time and supply chain executives for performance improvements such as meeting inventory or service-level goals. All participants are judged on whether they bring in the project on time and within budget.

One server company preparing to install supply-chain-management software established shared metrics, including reduced inventory levels and shorter planning cycles, for the IT department and the users (business owners, for example). It also tied the software vendor's compensation to the achievement of certain business goals, not merely to a delivery deadline. As a result, users and the IT department collaborated closely throughout the process, and the vendor rolled out the program to all of the server company's suppliers in six months—half of the usual time—and thus the company more quickly reached the performance goals that determined the vendor's compensation.

Competitive pressure increasingly compels organizations to make large IT investments in supply chain management. But the challenges of creating and capturing value from these investments are immense. Taking a rigorous approach to getting it right can make the difference between slashing inventory levels and taking a multibillion-dollar write-off.