

Improve your supply chain; A study of global chemical industry best practices provides insights on how

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FOR MANY BUSINESSES TODAY, THE SUPPLY CHAIN

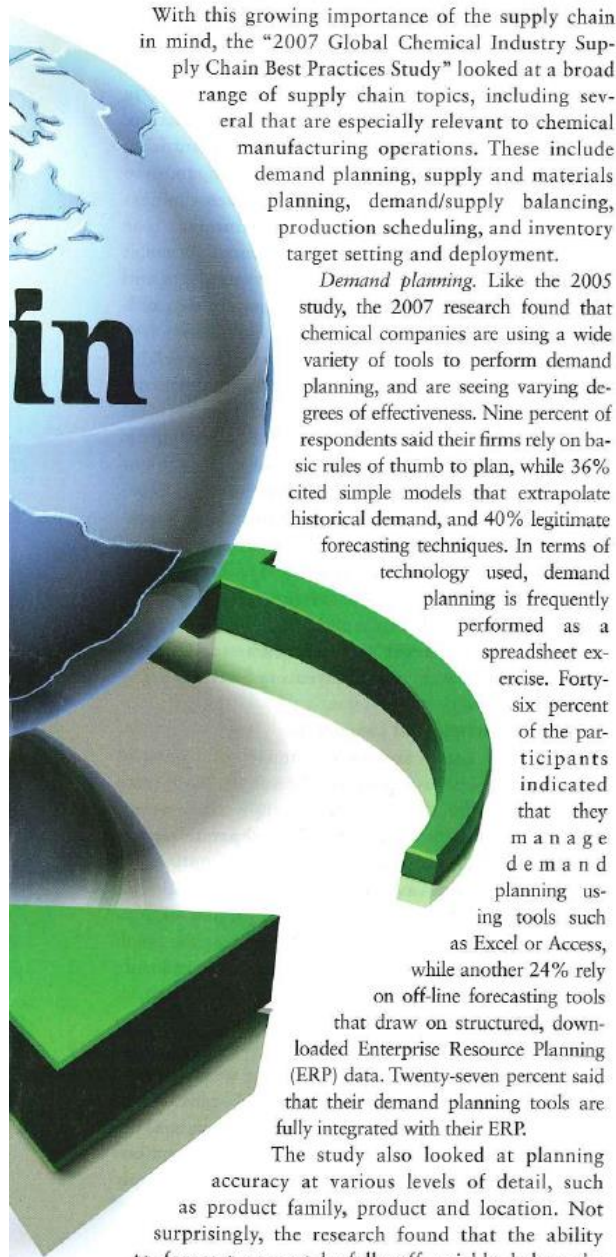
is an increasingly important factor in driving both efficiency and competitiveness — and the chemical industry is no exception. Indeed, executives at chemical companies see the supply chain as critical and their companies have devoted significant effort to improving their supply chains in recent years. However, those efforts aren't always producing lasting improvements and sustainable results. They often are hampered by fragmented approaches and a lack of sophisticated tools, which can lead to inaccuracy, inefficiency and missed opportunities to achieve better levels of business performance.

Those observations are based on findings from Accenture's "2007 Global Chemical Industry Supply Chain Best Practices Study." The second in a series — the first study was done in 2005 — this research was conducted under the guidance of a steering committee of representatives from major chemical manufacturers.

The results of this research clearly underscore the growing importance of the supply chain in the industry. Faced with challenges such as global competition and global customers, increasingly complex operations and rising logistics costs, a growing number of chemical companies are focusing on the supply chain. In the 2007 study, more than three-quarters of respondents said that the supply chain is a driver of operational excellence or a significant source of competitive advantage. That view is supported by other Accenture research,

which shows that solid supply-chain-management capabilities can be key to enhanced business performance. In addition, a team of researchers from Accenture, Stanford University and the French business school INSEAD found that the average market capitalization of companies that utilize supply-chain best practices outpaced the industry average by 7% to 26% over a three-year period.

By Christopher F. Lange, Accenture



With this growing importance of the supply chain in mind, the “2007 Global Chemical Industry Supply Chain Best Practices Study” looked at a broad range of supply chain topics, including several that are especially relevant to chemical manufacturing operations. These include demand planning, supply and materials planning, demand/supply balancing, production scheduling, and inventory target setting and deployment.

Demand planning. Like the 2005 study, the 2007 research found that chemical companies are using a wide variety of tools to perform demand planning, and are seeing varying degrees of effectiveness. Nine percent of respondents said their firms rely on basic rules of thumb to plan, while 36% cited simple models that extrapolate historical demand, and 40% legitimate forecasting techniques. In terms of technology used, demand planning is frequently performed as a spreadsheet exercise. Forty-six percent of the participants indicated that they manage demand planning using tools such as Excel or Access, while another 24% rely on off-line forecasting tools that draw on structured, downloaded Enterprise Resource Planning (ERP) data. Twenty-seven percent said that their demand planning tools are fully integrated with their ERP.

The study also looked at planning accuracy at various levels of detail, such as product family, product and location. Not surprisingly, the research found that the ability to forecast accurately falls off quickly below the product level, with error levels of 25% to 35% at the product/customer, product/package and product/package/supply-point levels. Nevertheless, more than 85% of respondents said that they are attempting to forecast at the product/customer level. A better approach would be to use the more-accurate aggregate forecast and then

apply business rules to that forecast to develop lower-level demand plans.

Collaboration gets a lot of attention in the supply chain arena but 16% of respondents indicated that they don't collaboratively plan with their customers at all. More than three-quarters of those who said they do plan collaboratively with customers also said that they don't have any means of measuring the benefit of such collaboration.

The variety of tools and approaches used for demand planning points to a range of sophistication and effectiveness — and indicates that there's often an opportunity for improvements that could have significant benefits. As many in the chemical industry know, weak demand planning ripples throughout manufacturing and the supply chain and ultimately makes the achievement of superior performance a challenge.

Supply and materials planning. Chemical companies continue to make progress in the effort to bring increased flexibility to manufacturing through two fundamental practices: the standardization of formulations across facilities, and the retention of decision-making about what facilities to use to produce particular customer orders (as opposed to having the customer make that determination), the research shows.

In the 2007 study, 60% of respondents said formulations are consistent across all plants, and 22% said sourcing decisions are handled by the producer. Thirty-seven percent noted that formulations are consistent across some but not all locations, and 67% indicated that they control some but not all sourcing decisions. And on the low end of the flexibility spectrum, 3% of respondents said that their formulations aren't consistent across facilities, and 11% indicated that their customers determine production locations.

Overall, this picture shows progress since the 2005 study, in which only 45% of participants reported consistent formulations were used across all plants only and 20% indicated that sourcing decisions were at their discretion.

Demand/supply balancing. In this area, often known as supply and operations planning (S&OP), chemical companies have seen some improvements in the last two years. For example, in terms of collaboration, 53% of respondents in 2007 said that related business units routinely share demand/supply data, up from 41% in 2005. Thirty-seven percent indicated that they share such data periodically, and only 10% said that there's no such communication between business units.

The breadth of participation in the S&OP process also has increased since 2005, with more than 70% of all respondents indicating broad functional representation on the S&OP team. Team members are coming from areas such as customer service, com-



mercial, finance and supply-chain management.

At the same time, however, there's clearly room for improvement. In looking at the "frozen period" used for S&OP, 45% of respondents cited one month and 24% said they use a shorter period — but 28% indicated that they had no frozen period in effect. Not surprisingly, given these varying approaches, the volume variance experienced by respondents covered the full range from 0% to 100%.

Meanwhile, the execution of the S&OP process is not uniformly strong among respondents. More than three-quarters reported having reliable accurate data feeding frequent responsive S&OP processes, but 17% said they were working with unreliable inconsistent data. In addition, less than half the respondents reported having optimization capabilities or frequent audits to improve their processes.

Production scheduling. Production scheduling appears to be an area where there's relatively little opportunity for major improvements. Many respondents said that their companies have integrated scheduling technology, that they have been using those tools for five or more years, and that they are at least moderately satisfied with those tools. Many noted that they are able to re-plan on a weekly basis and the process takes less than a day.

For both unplanned transitions and schedule variance, companies appear to be hitting their targets. Across the study population, unplanned transitions — that is, changes to products or campaigns that were not in the plan one month earlier — were targeted and realized at about 20%. For schedule variations — that is, times when operations deviate from the production plan — targets averaged 20% for make-to-stock and

24% for make-to-order. Actual results were 25% and 28%, respectively.

For many companies, production data or triggers are available during the production run and there're near-real-time links to the order-promising function. Here again, the 2007 findings show improvement from 2005, when it was more common for companies to have to wait until the end of a shift or even the next day to see what was going on in manufacturing.

Inventory target setting and deployment. When it comes to managing inventory, 50% of respondents said that their supply chains are predominately demand-driven, while 46% said their supply chains are a balance of production- and demand-driven. Only 4% of the participants' supply chains are predominately driven by production constraints.

It's encouraging to see that 57% of respondents used statistical techniques to determine inventory levels while another 36% target a predetermined number of days. Meanwhile, 36% of participants have a process for regularly monitoring and correcting inventory levels. Forty-six percent indicated that, although they regularly monitor inventory levels, resolving imbalances is a challenge because of demand or supply variability. Eighteen percent said that they only conduct periodic initiatives to correct inventory levels.

The critical commercial connection

A number of issues around the impact of front-end commercial decision-making on the supply chain were uncovered by the 2005 Accenture supply chain study. As a result, this year's study included a separate section that explored the commercial end of the supply chain and practices such as customer segmentation, SKU (Stock Keeping Unit) management and pricing.

The activities of the commercial functions — such as sales and marketing — may seem somewhat beside the point for those involved in manufacturing but, in fact, they are highly relevant. The decisions made in sales and marketing affect the entire supply chain — and they are, unfortunately, often made without input from manufacturing. Indeed, in the 2005 study, it was clear that at many chemical companies commercial decisions are made by the sales and marketing functions and largely "inflicted" on manufacturing and supply chain operations.

The 2007 study looked at a number of commercial-function activities that have an impact on manufacturing operations, including:

Policies. The research showed that policies that directly affect chemical companies' manufacturing operations often aren't clearly documented or enforced (see Table 1). This makes it difficult to optimize manufacturing.

Customer segmentation. Many respondents reported



Figure 1. Almost two-thirds of companies admit to not having any formal process for identifying and sharing best practices.



that their companies don't have a solid grasp of the profitability of sales to individual customers. That lack of understanding typically leads to problems such as providing too high a level of service to too many customers, which in turn translates into schedule variations, excessive changeovers and special services being provided without an appropriate premium being charged.

SKU management. Only about half the respondents said that their companies balance the production efficiency objectives of manufacturing with commercial needs to determine the SKU portfolio. Fifteen percent said that commercial needs drive the portfolio, while 30% noted that efficiency goals do so. Participants who said that they used a balanced approach to SKU management reported that, on average, 96% of their portfolio was profitable, compared to the 91% average profitability among respondents who said they didn't balance manufacturing efficiency with commercial needs.

The numbers are similar for the degree of customization that companies will tolerate, as one might expect. That is, 15% of respondents indicated significant levels of customization — essentially the same 15% who said that commercial needs drive SKU decisions. On the other end of the spectrum, 19% said they had little or no customization. Although some level of customization occurs among more than 80% of respondents, less than half charged a premium to recover the associated costs.

Ample opportunities remain

The results of the Accenture's "2007 Global Chemical Industry Supply Chain Best Practices Study" highlight several strengths of chemical companies in terms of the supply chain. More importantly, they also highlight several areas where significant progress still can be made. In particular, key opportunities lie in addressing the commercial functions and the way they relate to the rest of the supply chain. For example, chemical companies can take steps to more thoroughly document commercial policies and can establish mechanisms for enforcing and monitoring those policies. Doing so is likely to have positive ramifications far up the supply chain.

Companies also can focus on giving manufacturing and supply chain operations a seat at the table in commercial decision-making. That way, those operations will have a clearer view of the commercial requirements that they'll need to support. At the same time, they'll be in position to inform the commercial processes so that sales and marketing can factor manufacturing and supply chain realities into commercial decisions — and everyone can work together to address potential issues early on.

The chemical industry's efforts to improve the supply chain are ongoing and so too is the 2007 study.

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OUT OF ORDER

Issue	Policy not documented, % of respondents	Policy not enforced, % of respondents
Order lead time	30	37
Order minimum	30	44
Order changes	52	67

Table 1. Too many chemical companies lack documented and enforced policies for order handling.

Rather than a one-time snapshot, it's designed to be a continuing exploration; companies interesting in participating should contact Accenture. The goal, ultimately, is to draw on the broad experience of numerous chemical companies to develop knowledge and insights that can help the industry strengthen its ability to use the supply chain as key driver of high levels of business performance. **CP**

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