



Aberdeen *Group*

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Supply Chain Cost-Cutting Strategies

*How Top Process Industry Performers Take
Radically Different Actions*

March 2007

— Underwritten, in Part, by —





Executive Summary

Companies in the Process Industries (including chemicals, pharmaceuticals, food & beverage, oil & gas, pulp & paper, and health & beauty aides) have had to cope with rising manufacturing and logistics costs over the past few years. To avoid a 7.96% increase in logistics costs (what the average company has experienced in the past two years), companies should follow the roadmap of Best in Class companies, which have been able to reduce costs or keep them flat via supply chain transformation.

In the face of the steady run up in manufacturing and logistics costs, the old strategies for cost containment no longer have the same punch. Companies in the process industries now widely realize that they must restructure their supply chains to take out costs and maintain their customer service edge. *Aberdeen's survey found that 75% of all respondents have either recently redesigned or are in the process of redesigning their supply chains.*

Best in Class's Enormous Performance Advantage

The study found a tremendous gap between Best in Class organizations and their peers. **Best in Class companies have a 2.5X to 9X advantage** in improving their key performance metrics since 2005, including improving perfect order percentages and lowering supply chain costs. In addition, the Best in Class have better absolute performance. They are *twice as likely* as their peers to have:

- Forecast accuracy at the product family level of 71% or better
- Perfect order percentage of 91% or better
- Logistics costs as a % of sales of 6% or less

To achieve these enormous advantages over their peers, they have taken radically different actions in organization structure and supply chain technology investment. As a result, Best in Class companies are much further ahead in closed-loop integration of supply chain planning and execution, in addition to data and process visibility across their end-to-end supply chain and from plant floor to top floor.

Recommendations for Action

Companies should evaluate their operations and supporting technology to ensure they effectively accomplish the following:

- Centralize key elements of the supply chain management organization.
- Work toward end-to-end data and process visibility throughout the supply chain to improve utilization of manufacturing capacity and distribution efficiencies.
- Move to more frequent inventory policy review (multiple times a year) and improve ability to sense changes in customer demand (aim for five days or less).
- Upgrade supply chain applications and move to a closed-loop planning and execution technology framework.

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Chapter One: Issue at Hand

Key Takeaways

- 75% of the process industry companies Aberdeen surveyed have either restructured or are planning to restructure their supply chains this year.
- 66% of respondents say supply chain restructuring is being driven by a need to contain supply chain costs in order to remain competitive in the marketplace.
- Supply chain redesigns are required to address and contain manufacturing and logistics costs.

Process industries, which include chemicals, pharmaceuticals, food & beverage, oil & gas, pulp & paper, and health & beauty aides, have confronted an inexorable escalation in supply chain costs the past few years. Yet companies still expect their supply chains to restrain those costs and perform at stellar levels.

Aberdeen's survey of executives in the process industries found just how tough those cost pressures have become in their supply chains. "We're maintaining an expected 99% service level while reducing overall costs," says one food and beverage executive.

Study results show markedly different approaches by those companies able to control supply chain costs effectively and those that continue to struggle. These differences are most extreme in how these companies use technology and organize their supply chain operations. Appendix A shows the demographics of survey respondents, which were broken out evenly across the major process industry categories.

Cost Challenges Coming from All Sides

Supply chains face sundry cost pressures today. Fifty percent of survey respondents say that manufacturing costs have been paramount in driving up supply chain costs. Fully 44% cite transportation cost pressures, and an equal number also point at escalating customer service requirements. Rising energy prices, which impact manufacturing and transportation costs, are an especially large culprit for many process industries, cited by 38%. Other factors include the cost of supporting more specialty products to fight commoditization, labor and insurance costs, and regulatory and security compliance costs (especially hazmat, FDA, REACH, HIPAA, etc.).

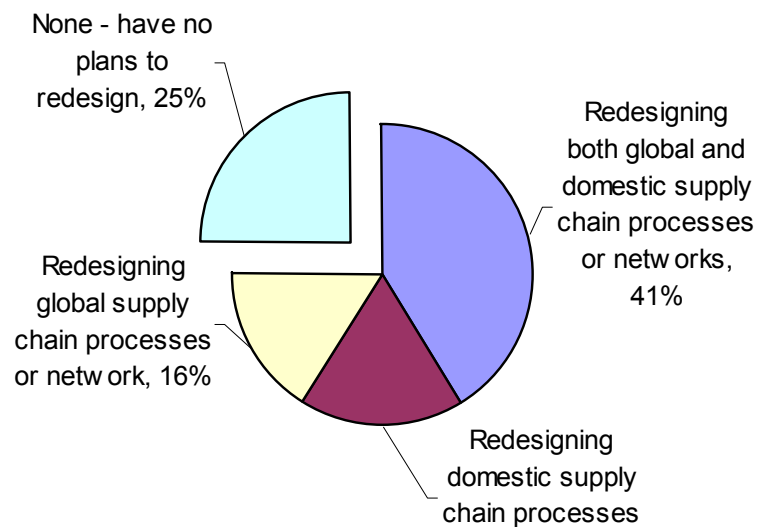
Companies in the process industries have struggled to hold the line on logistics costs. *The survey found that 82% of respondents have seen logistics cost increases since 2005, with the weighted average increase being a 7.96% cost hike.* (Logistics costs are measured as warehouse, transportation, and inventory costs as a percentage of sales.)



Supply Chain Reinvention Is Happening Now

The top reason that process industry companies are focusing on supply chain transformation are these cost pressures, followed by escalating customer service demands and the restructuring requirements brought on by the increase in process industry acquisition and divesture activity. In response to these pressures, companies have either redesigned or begun to redesign their supply chains. Three-quarters of study participants have begun work on that challenge (Figure 1).

Figure 1: Process Industries Are Actively Reinventing Their Supply Chains



Source: AberdeenGroup, March 2007

The old strategies for cost containment lack the same punch they once had, and in particular, companies are finding that traditional functional-based improvement approaches are no longer adequate. Moreover, increasing reliance on external supply chain partners also requires companies to rethink traditional approaches.

Global business demands are also causing many process industry companies to transform their supply chains. “A new inclusion of lower-cost suppliers around the world is our biggest hurdle,” reports a midsize pharmaceutical manufacturer.

Barriers to Transformation Success

Although a majority of survey respondents have embarked on the challenge of supply chain re-engineering, a number of survey participants say they face both internal and external obstacles in transforming their supply chain. They cite such factors as labor and materials supply constraints, the sheer size of their enterprise, the inability to focus on change rather than “fire fighting,” and finally, even resistance of management. Supply chain redesigns clearly require effort and vision from top management to overcome these challenges. “Our siloed organization approach is our biggest barrier,” says an executive in the chemical and oil & gas industries.



Top Supply Chain Transformation Goals for 2007

As process industry companies struggle to control their supply chain costs, many are focusing their efforts on improving data and process visibility. Companies have realized that they need to be able to see demand, inventory, production, and distribution across the supply chain and throughout their global organization to make adjustments to changing conditions and best control costs. The top supply chain enhancement plans for 2007 are shown in Table 1, led by the drive to improve plant floor to top floor visibility.

Table 1: Top Supply Chain Enhancement Plans for 2007

Top Business Process Enhancement Plans for 2007	% Selecting
Data and process visibility, from plant floor to top floor	76%
Cross-functional metrics	71%
Data and process visibility, across our end-to-end supply chain	69%
Closed-loop integration of supply chain planning & execution	68%
Centralized supply chain management organization	64%

Source: AberdeenGroup, March 2007

Besides cost control, the top improvements companies expect to see from their supply chain transformations are: Improved new product introduction success (72%), reduced lead times to customers (68%), improved perfect order metrics (66%), and lower inventory requirements (64%). As will be seen in Chapter 2, the Best in Class are far ahead in realizing these goals.



Chapter Two: Key Business Value Findings

Key Takeaways

- Although most companies are attempting supply chain transformation, the Best in Class are much more successful in lowering manufacturing costs, improving perfect order metrics, and reducing lead times to customers.
- Supply chain redesigns lower logistics costs in conjunction with manufacturing costs.
- Best in Class companies are way ahead of the pack with their use of end-to-end process management and investment in supply chain technology.

Supply chain restructuring allows process industry companies to lower transportation costs, increase inventory turns, improve perfect order metrics, and enhance manufacturing capacity utilization.

All classes of process companies – from industry leaders to laggards – are engaged in supply chain restructuring to some extent as noted earlier. However, Best in Class companies are much more successful in their improvement efforts. In fact, *top performers hold a 2.5X to 9X advantage in key performance improvements* over average or laggard companies.

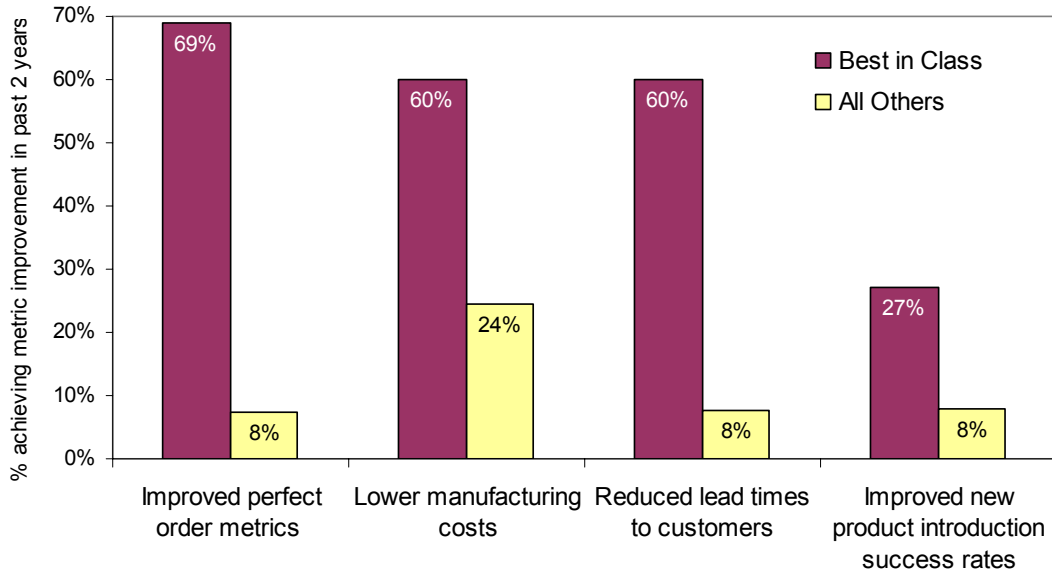
- **Best in Class:** For the purposes of this report, Best in Class companies are defined as those companies that have best addressed the top pressures being felt by the process industry: costs and customer service expectations. The Best in Class have lowered logistic costs or kept them flat since 2005 and/or improved perfect order metrics to their customers. Thirty percent of survey respondents fall into this category. Interestingly, a majority of these companies are mid-size firms, indicating that giant firms with billions in revenue do not have a built-in advantage because of their size.
- **Industry Average:** The Industry Average category is defined as those companies whose logistic costs increased by less than 10%. Fifty percent of survey respondents belong to this middle category.
- **Laggards:** Finally, Laggards are those enterprises whose logistic costs increased by 11% or more. About 15% of companies surveyed fall into the category of Laggards. Again, there is no correlation between company size and maturity category. Slightly more than half of Laggards are large, billion-dollar companies.

The Best in Class Advantage

Although most process industry companies are attempting to redesign their supply chains, Best in Class companies are gaining staggeringly better results from their efforts. Figure 2 shows the percentage of companies that have been able to improve key supply chain metrics since 2005. Best in Class show extensive improvements while their Industry Average and Laggard peers struggle.



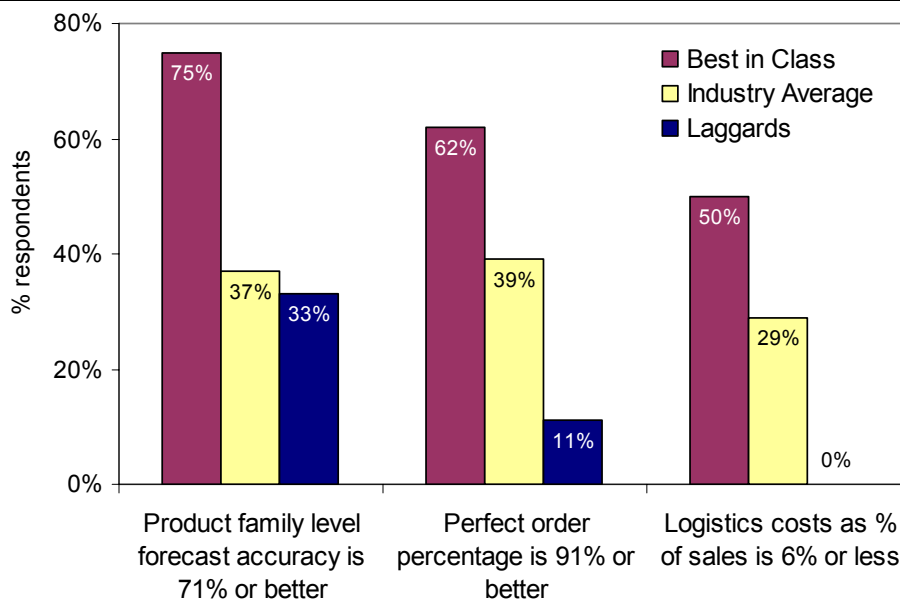
Figure 2: Best in Class Have 2.5X-9X Advantage in Performance Improvements



Source: AberdeenGroup, March 2007

The Best in Class also have overall better performance in running their supply chains (Figure 4). Key metrics in which they are far ahead include forecast accuracy, perfect order percentage, and logistics costs as a percentage of sales.

Figure 3: Best in Class Have Much Better Absolute Supply Chain Performance



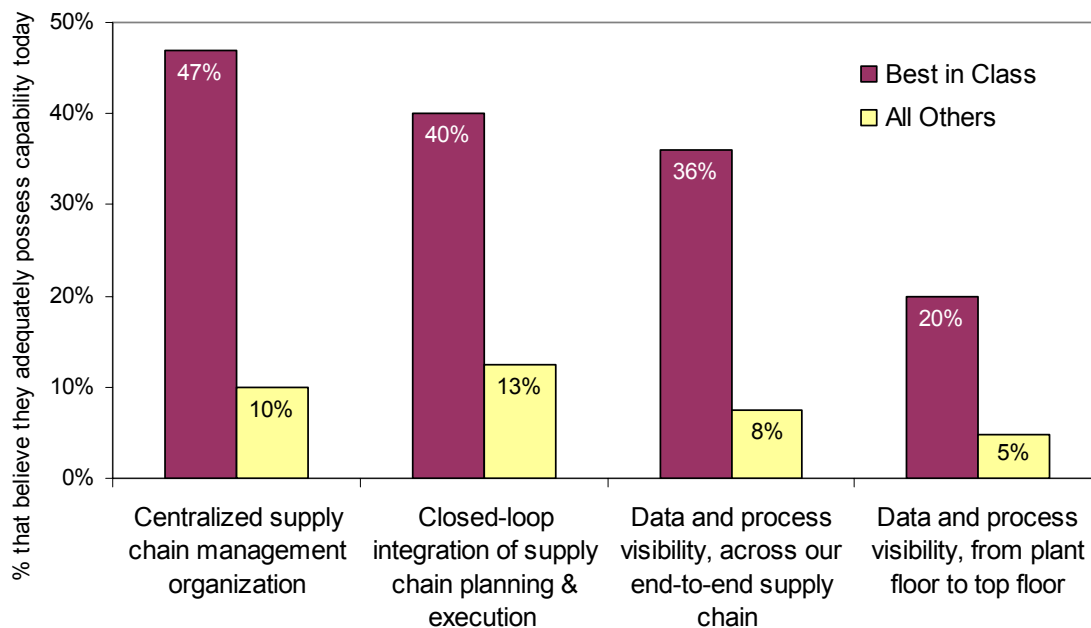
Source: AberdeenGroup, March 2007



What the Best in Class Do Differently

The Best in Class are strikingly ahead of their peers in achieving their transformation goals. Figure 4 shows that 40% of Best in Class companies have achieved closed-loop integration of supply chain planning and execution compared to only 13% of others. Moreover, 36% of industry leaders have achieved data and process visibility across the supply chain compared to only 8% of others. The Best in Class are also ahead in creating visibility from the plant floor to the top floor (e.g., to the executive suite), though most believe they still need to enhance their capabilities in this area. As Chapter 3 will show, much of this improvement is enabled by the Best in Class's more aggressive adoption of supply chain technology.

Figure 4: Best in Class Are 3X-5X More Likely to Have Achieved Closed-Loop Integration, Visibility, and Centralization



Source: AberdeenGroup, March 2007

Case Study: Basic American Foods Drives Performance with Visibility

Basic American Foods is a major U.S. manufacturer of dehydrated potato products and similar products with seven manufacturing plants and over a dozen warehouses. It replaced an internally developed application with Infor's performance management application to enable views to demand planning/forecast information, ERP data, and advanced planning and scheduling information. This is driving easier integration of new business and better integrated and more accurate information to support improved decision-making.

The company has also deployed Infor's advanced planning and scheduling applications to help it evaluate different production cost scenarios and tradeoffs across multiple



plants. This includes taking into account a wide variety of constraints such as labor, energy, transportation, and tank storage availability, in each of the company's plants and warehouses.

Benefits include *avoiding spending several millions of dollars* by ensuring that a less appropriate scenario was not pursued, *reducing inventory levels* due to better long-term planning visibility, and *minimizing manufacturing changeover time*.

Best in Class Centralize Their Supply Chain Organization

Best in Class companies have made organizational strides as well, and are far ahead of their lower-performing peers in creating a centralized supply chain management organization, as shown in Figure 4. Creating a command center to orchestrate the complexities of running an end-to-end supply chain is clearly a best practice. Best in Class companies are also three times as likely to have appointed a single executive with overall supply chain responsibility. Indeed, when asked about which action led to the greatest improvement in supply chain performance, one pharmaceutical executive replied that it was creating a new corporate-wide position of global supply chain director.

Best in Class Are Ahead in Inventory and Demand Review

Survey results show a strong relationship between Best in Class performance and inventory review practices. Almost all Best in Class companies review their inventory policies and targets multiple times a year. In fact, just 14% of Best in Class companies review inventory policies once a year or less frequently, compared with 49% of all others.

Besides monitoring inventory and targets more frequently, the Best in Class stay on top of demand as well. This study found that the overall median time for sensing changes in customer demand was about 2 weeks. But the Best in Class keep the closest eye on change, with 38% sensing demand changes in five days or fewer. In contrast, 26% of Industry Average and 11% of Laggards sense demand changes in a five-day period or less.

External forecast collaboration is the top demand management objective for all respondents (cited by 63%), with implementing an internal consensus forecasting process next at 49%. In addition, fully 46% of companies are prioritizing the better use of actual POS or customer consumption data. Aberdeen research also shows increased attention to improved customer and product profitability analysis and a move to more frequent and dynamic S&OP processes.

Case Study: Inventory Optimization Pays Off for Chemical Producer

Concerned about rising costs, a large chemical producer wanted to make its production and distribution operations more efficient. To achieve that objective, it selected a multi-echelon inventory optimization application from SmartOps to set adequate safety stock. "We wanted to have the optimal inventory on hand to respond to demand," says the executive in charge of the project.



The chemical maker produces both volume commodities and small specialty products. As the company went live with an SAP system to improve its enterprise control, the company also wanted to implement a solution to calculate the required amount of safety stock automatically. “The biggest benefit was in the small specialty product,” said the executive. “It’s hard for planners to set inventory targets on small volume products.”

The SmartOps application takes data for supply and demand directly from SAP, and calculates the optimum stock levels taking into account supply and demand variability. It produces a plan that advises the company where to store stock at specified levels to meet customer service levels. The result has been a significant inventory reduction of roughly 10% on the small-volume products, while maintaining and, in some cases, improving service levels for customers. The planners have more time to focus on value-added work like tighter planning of high-volume products. The company is also using the SmartOps tool to generate “what-if” scenarios to determine the inventory impacts of potential changes in its business model.

A separate initiative for network optimization using a strategic network design tool from LogicTools resulted in a plan that allowed the chemical producer to cut back on remote shipping locations for serving customers, make more shipments direct from plants to reduce transportation costs, and still meet customer shipping requirements.

Manufacturing Transformation Priorities for 2007

Half of companies are expecting their supply chain redesigns to result in lower manufacturing costs. The survey finds that 33% of respondents plan to outsource more manufacturing, another 21% will open new factories in low-cost countries, while 15% will use supply chain restructuring to shut down some plants.

Case Study: Sunsweet Growers Improves Production Efficiency and Redesigns Its Distribution Network

Two years ago, the world’s largest producer of dried fruits, Sunsweet Growers, embarked on a redesign of its supply chain to lower manufacturing costs. “We were managing distribution reasonably well but doing it at huge production costs,” says Harold Upton, vice president of strategic business processes at the agricultural cooperative. “We realized that there was a bigger picture.”

If Sunsweet Growers could improve its production scheduling, it could curtail overtime and rush orders. The cooperative decided to deploy a software tool, Zementer, from Supply Chain Consultants, to improve its forecasting and create a better production schedule. The software tool helped the cooperative smooth out its production schedule. “The tool was really good at maximizing efficiencies in production and telling us where to store product and how to ship it,” says Upton.

The improved production scheduling ***dropped plant overtime from 25% to 8%***. More efficient production runs meant that the company didn’t need excess inventory and therefore could ***trim its U.S. distribution network from 28 to 8 warehouses***. A redesigned network also meant that Sunsweet Growers could hold transportation costs flat despite ever-increasing fuel charges.



Logistics Transformation Priorities for 2007

As part of their transformation efforts, half of process industry respondents (and 89% of Laggards) report that they plan to use more third-party logistics services, and 35% plan to expand their warehousing operations to get closer to their customers. Additionally, 39% will use supply chain restructuring to consolidate the number of transportation carriers they use.

Supply chain restructuring also causes process industry companies to shift their mix of transportation for inbound and outbound shipments; many are moving to lower-cost modes so they can stretch out dollars in the corporate transportation budget. In fact, 37% of respondents say their supply chain improvement plans will let them use more ocean transportation, and another 39% believe they will be able to ship more by full truckload.

Case Study: BASF Discovers the Value of Improved Logistics Visibility

BASF has implemented SAP's Event Management to cover all of its shipments worldwide from Germany. Just three weeks after initial system go-live, BASF saw its first value from the enhanced visibility when Hurricane Katrina struck. Houston and New Orleans are two of BASF's main ports of entry into the United States. The newly installed solution ensured ongoing business to customers and prevented damage to shipments worth millions of dollars. The company was able to continue providing excellent customer service despite the scale of those natural catastrophes. "We knew which consignments were still in port, which ones were in transit, and which ones had already reached their destination port in Houston or New Orleans," says Peter Nikolaus, European Project Team Member. "We could therefore take the necessary steps to ensure that our customers suffered as little as possible."



Chapter Three: Implications & Analysis

Key Takeaways

- Best in Class companies are much more aggressive in adopting supply chain technology as part of their improvement initiatives.
- Transportation management is the number one application deployed by the Best in Class.
- The marriage of technology with process has allowed the Best in Class to achieve a plethora of results, such as lower manufacturing costs, improved order metrics, and inventory reduction.

A majority of study respondents plan to upgrade their technology as part of a supply chain restructuring. In fact, the study found that overall 82% of companies have spending plans for new supply chain technology projects in 2007. The average spending plan totals \$638,000 (includes software, hardware, implementation and other fees), with fully 29% of respondents having multi-million dollar investment plans.

Although all companies have begun to understand and accept the important role that technology plays in supply chain restructuring, it is the Best in Class companies that have really embraced technology as a critical change agent. Industry leaders implement a host of applications to drive operational and cost improvements.

Best in Class Overwhelmingly More Likely to Use Technology

First and foremost, Best in Class companies look to restrain or cut transportation costs as part of their overall supply chain improvement strategy. Some 60% have installed a transportation management system (TMS) to exert more control over freight movements. By way of comparison, 41% of average performers and just 25% of Laggards have deployed a TMS as part of their improvement initiative. Certain process industries have specialized transportation requirements such as bulk ocean and barge shipments, rail car scheduling and tracking requirements, etc. These organizations should look to vendors with specialized capabilities in these areas as many all-purpose solutions do not support these requirements effectively.

Table 2 shows the other areas in which the Best in Class are radically more likely to have invested in new applications as part of their improvement strategy.


Table 2: Best in Class Adopt More Technology to Drive Supply Chain Improvement

New Applications Implemented as Part of Improvement Strategy	Best in Class	Industry Average	Laggards
Transportation management	60%	41%	25%
Product/batch traceability	57%	52%	13%
Inventory optimization	44%	29%	38%
Warehouse/dock/yard mgmt	43%	17%	25%
Strategic network design	40%	17%	25%
Demand management	40%	30%	25%
Manufacturing applications	36%	39%	13%
Channel management (channel sales data visibility, prevent speculation/diversions, etc.)	29%	17%	13%

Source: AberdeenGroup, March 2007

Case Study: Degussa Cuts Inventory and Improves Customer Service

The New Jersey-based chemical manufacturer Degussa Engineered Carbons (DEC) makes and produces furnace grade carbon blacks for the rubber and pigment markets. The company is co-owned by German chemical giant, Degussa AG and Engineered Carbons Inc. DEC realized that it needed to optimize its process for supply chain planning and order management. To realize that goal, the company understood that it needed visibility over the order types and sizes spanning its supply chain.

Degussa chose some best-of-breed applications from WAM Systems to give it the suite of tools to transform its supply chain. After establishing a new set of work processes, the company rolled out an application from WAM to enable supply chain visibility. To improve the accuracy of demand signals into the supply chain, DEC also installed statistical and collaborative forecasting applications. DEC implemented other solutions from WAM as well. It improved inventory management through use of distribution planning and inventory targeting modules, eased the complexities of scheduling five plants with new manufacturing technology, and improved sales and operations planning effectiveness with another application. In addition, the company has rolled out real-time analytics to its customer service representatives to support order-taking.

The suite of supply chain applications allows DEC to view its supply chain from the demand to the supply side. Each demand signal change is now instantly seen throughout the system and by every one of a dozen users. Each planner can now respond, proactively adjusting supply plans to optimally meet customer requirements. Inventory targets are set to meet service targets while production is optimized for the best trade off between production efficiency and inventory holding costs.

The solution implementations have paid off with a 25% drop in inventory while increasing customer service levels. Using WAM's Picasso application as the hub for central planning, DEC has increased sales forecasting accuracy by 20 points, leading to a 15% increase in on-time shipments.



Best in Class: Technology and Process Convergence

Although all three maturity groups have begun supply chain redesigns, the Best in Class have obtained overwhelmingly better results to date from those efforts. The study results provide strong evidence that this is because these top performers use supply chain software as a backbone to enable and institutionalize process changes and improve demand-supply synchronicity, which drives down costs and increases service.

Case Study: Manufacturer Dynamically Reconfigures Supply Chain

A large fertilizer manufacturer was faced with multiple facilities running at full capacity as well as high shipping costs. Two years ago, the manufacturer decided to implement an S&OP solution from Adexa that combines demand planning with network optimization on a tactical level. The goal was to improve productivity and lower costs. The software looked at the various components of demand and the lead times required for shipping the product by truck and rail.

The network design software helped the company to determine the optimal production location and the quantity that the plants should make to fill customer orders. The application also calculated the lead times to ship and whether rail or truck was the optimal mode. The application now dynamically reconfigures the chemical maker's supply chain on a weekly basis to make adjustments in production and distribution.

Since using the software, the fertilizer maker has seen such benefits as an *increase in forecast accuracy, improved customer service, and inventory savings.*

Traceability Technology: An Emerging Imperative

Food and beverage, chemical, and pharmaceuticals manufacturers and distributors face intensifying regulatory demands for product and ingredient traceability. Avian flu, drug recalls, food contamination, and E-coli scares are turning lot-level end-to-end supply chain traceability from a futuristic dream into a business necessity.

Traceability is becoming increasingly important to protect brand equity and reduce the costs of recalls, root out gray market and counterfeit product, decrease product spoilage, and improve consumer safety. Many companies have internal traceability capabilities (albeit often highly manual processes) and one-up/one-down visibility to product flow. In fact, traceability is the second-most implemented technology reported by participants, with 48% of companies report making product/batch traceability technology investments. However, true end-to-end supply chain traceability remains problematic and time consuming. Emerging technology is enabling a more automated way to achieve this traceability using a networked approach that spans multiple tiers in the supply chain.



Chapter Four: Recommendations for Action

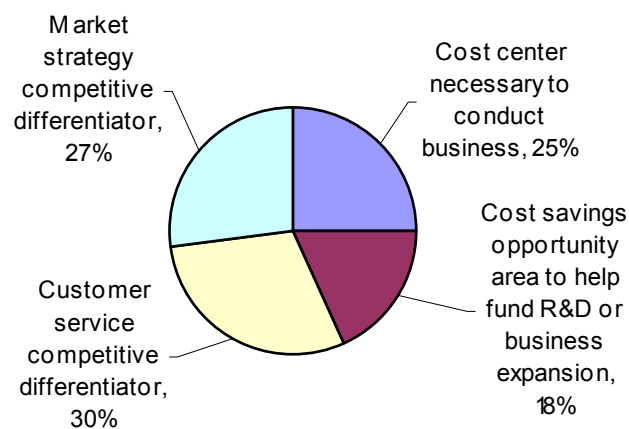
Key Takeaways

- The majority of process industry companies now view supply chain management as a competitive differentiator.
- To avoid a 7.96% increase in logistics costs, companies should follow the practices of Best in Class companies.
- Transformed supply chains that are supported by centralized oversight and supply chain technology are lowering manufacturing and distribution costs and creating a competitive advantage.

Cost, revenue, profitability, and customer satisfaction benefits await all process industry companies that are committed to redesigning their supply chains. But the aggressiveness of recommended improvement activities depends in large part upon the stage of evolution.

Although cost savings in logistics and manufacturing are often the key objectives of supply chain redesign, the industry leaders realize there is another benefit – the ability to differentiate their customer service or business strategy from marketplace competitors. Process industry companies have historically viewed supply chains as a cost center and have trailed other industries in investing in organizational and technology enhancements. Today, just 25% of respondents report that their companies still view supply chain management as a cost center. The majority of companies now view it as a competitive differentiator (Figure 5). Lower-performing companies are three times more likely to view their supply chains as a cost center.

Figure 5: Supply Chain Management Emerges as a Competitive Differentiator



Source: AberdeenGroup, March 2007



To avoid a 7.96% increase in logistics costs (what the average company has experienced in the past two years), companies should follow the roadmap of Best in Class companies, which have been able to reduce costs or keep them flat. Companies can use Table 3 to gauge their maturity across four dimensions.

Table 3: Competitive Framework for Process Industries

	Laggards	Industry Average	Best in Class
Organization	Silo-based supply chain operations with little synchronization and collaboration across departments; moving toward more business unit or regional oversight	Moving toward a more centralized supply chain management organization but most activity is still decentralized into business units and regions	Central supply chain management organization established with executive who has end-to-end supply chain responsibility; strong cross-functional metrics in place
Knowledge	No budgeted projects for visibility improvement	Actively working to improve end-to-end and plant floor to top floor visibility	End-to-end supply chain visibility in place with strong strides being made toward plant floor to top floor visibility
Technology	Spreadsheets and home-grown Access database solutions are common for supply chain planning; legacy or heavily customized supply chain execution applications	Advanced supply chain technology solutions deployed for a handful of key supply chain management functions; lack closed-loop integration between planning and execution	Extensive use of advanced supply chain technology with closed-loop integration between planning and execution
Performance Metrics	Forecast accuracy at the product family level is below 61% Perfect order percentage is 85% or less Logistics costs as a % of sales is greater than 10%	Forecast accuracy at the product family level is 61%-71% Perfect order percentage is 86%-90% Logistics costs as a % of sales is 7%-10%	Forecast accuracy at the product family level is 71% or better Perfect order percentage is 91% or better Logistics costs as a % of sales is 6% or less

Source: *AberdeenGroup*, March 2007

Whether a company is trying to gradually move up in the process industry from “Laggard” to “Industry Average,” “Industry Average” to “Best in Class,” or protect its “Best in Class” status, the following actions will help spur the necessary performance improvements.



Laggard Steps to Success

1. *Improve forecasting and sales and operations planning (S&OP) processes*

This Aberdeen study found that just 33% of Laggards had a forecast accuracy of 71% or better, compared with three-quarters of the Best in Class. Improved demand management technology, combined with better S&OP analytics and what-if capabilities can drive significant customer service and inventory improvements. S&OP tops the list of areas in which companies have been implementing new technology as part of their improvement strategies; 54% of companies report implementing enhanced technology. Demand management technology is in first place in *new* implementation plans, with 50% of respondents indicating they will make investments in this area in the next 18 months.

2. *Speed up inventory and demand management processes*

Move to more frequent inventory policy review (multiple times a year) and improve ability to sense changes in customer demand (aim for five days or less).

3. *Develop internal logistics capabilities*

Laggards in our research depend on third-party logistics too often to meet distribution requirements. They need to “step up” to the challenge and develop more internal expertise to get a better handle on their distribution activities to compete in the marketplace. Look to WMS and TMS technology to support these initiatives. Some 45% of process industry respondents report that they have invested in upgraded transportation technology to drive supply chain improvement, and 39% are currently looking at improving their warehouse/dock/yard functionality.

4. *Install a supply chain executive to coordinate this critical function*

The appointment of an executive with end-to-end responsibility for the supply chain is proving critical to success. If the company has one person to lead these efforts, he or she can lead the charge to restructure the supply chain and implement cross-functional metrics that will drive overall corporate performance; not just silo-based improvements that can have unintended impacts on another link in the chain.

Industry Average Steps to Success

1. *Centralize the supply chain and transportation management organizations*

Centralized control and master planning gives the company a nerve center to oversee the supply chain network and coordinate manufacturing and logistics requirements to keep costs down and excel at customer service.

2. *Achieve data and process visibility*

Plant floor to top floor visibility and supply chain-wide visibility are necessities to move to a more efficient and agile supply chain. Look to leverage the data in your company's and your supply chain partners' existing applications by overlaying them with visibility technology, portal and dashboard technology, supplier relationship management, or performance management applications. Supply



chain visibility technology ranks in the top 5 for both current investments and future technology plans for respondents.

3. *Increase trading partner collaboration*

Suppliers and customers must be consulted and engaged in any supply chain redesign to ensure the supply chain remains a customer service competitive differentiator. Supplier and channel management applications can be especially beneficial. Supplier and customer collaboration both are ranked in the top 5 for new areas of supply chain technology investment by respondents.

4. *Deploy supply chain optimization software*

Because there are so many variables involved with process industry supply chains, only specialized software applications can furnish the intelligence to weigh the tradeoffs between manufacturing and distribution (including accounting for unique process industry constraints and opportunities such as co-product and by-product management, tank farm management, product wheel optimization, etc.) to fashion an optimal supply chain.

Best in Class Next Steps

1. *Establish closed-loop integration of planning and execution*

Synchronizing planning and execution allows companies to extract the most capacity from production and match inventory with short-term customer demand while keeping a lid on transportation costs. In order to achieve this, companies may need to update warehouse management and transportation technology and invest in applications that support dynamic re-planning. Composite applications, event management/business process management, and service-oriented architectures are important enablers. In addition, Best in Class companies should be looking at customer and product profitability innovations to ensure they are making the most profitable business decisions.

2. *Explore new supply chain technology advancements*

New technology advances are supporting multi-echelon inventory optimization, short-term forecasting accuracy, attribute-based planning, end-to-end traceability, and other supply chain improvements. Best in Class companies have formalized processes for testing new technologies to gauge their usefulness in maintaining a competitive supply chain advantage.

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supplychain CONSULTANTS

Supply Chain Consultants (SCC), designs and sells the Zemeter suite of supply chain management software. Combining this advanced SCM tool with process improvement and education SCC is assisting process manufacturers in Asia, Europe, South and North America in managing and optimizing their supply chains. SCC shows companies how to turn their supply chain into a strategic and competitive advantage. The company also offers Zemeter S&OP, which is an out-of-the-box, prepackaged software solution for small to midsize manufacturing organizations. Zemeter S&OP follows a proven step-by-step methodology that allows users to realize a return on investment at each step.

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Microsoft Dynamics is a line of integrated, adaptable business management solutions that automate and streamline financial, customer relationship, and supply chain processes in a way that helps you drive business success. Microsoft Dynamics solutions for process industries provide integrated functionality for planning and managing production and distribution, handling procurement and accounting, and complying with regulatory requirements. The solutions manage and maintain key production information the same way you run your business—and specifically to support the unique requirements of process manufacturing. More information can be found at <http://www.microsoft.com/dynamics>.

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Appendix A: Research Methodology

Between February and March 2007, Aberdeen Group examined the practices and plans of 74 process industry companies to learn about their efforts towards supply chain redesign.

Responding supply chain, logistics, and operations executives in the process industries completed an online survey that included questions designed to determine the following:

- The degree to which supply chain has been redesigned.
- The structure and effectiveness of supply chain restructuring.
- Current and planned use of technology to aid these activities.
- The benefits that have been derived from supply chain restructuring.

Aberdeen supplemented this online survey effort by conducting telephone interviews with select survey respondents to gather additional information on supply chain redesigns, experiences, and results.

The study aimed to identify the benefits and best practices for companies in the process industry that re-engineered their supply chain.

Responding enterprises included the following:

- **Job title/function:** The research sample included respondents with the following job titles: senior management or vice president (18%), director (14%), manager (40%), staff (10%), and internal consultant (18%)
- **Industry:** The research sample respondents came from the process industries. Food & beverage companies represented 34% of the sample, followed closely by pharmaceuticals manufacturers at 32% and chemical companies at 31%. Oil & gas companies made up 19%. The remainder came from pulp & paper (12%) and health & beauty aides (10%). Some respondents participate in multiple process industry categories.
- **Geography:** A majority of respondents – 63% – are from North America. Remaining respondents are located in Asia/Pacific, EMEA, and South/Central America/Caribbean.
- **Company size:** About 24% of respondents were from large enterprises (annual revenues above US\$1 billion); 52% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 24% of respondents were from small businesses (annual revenues of \$50 million or less).



Appendix B: Related Aberdeen Research & Tools

Related Aberdeen research that forms a companion or reference to this report includes:

- [Demand Management in Consumer Industries \(December 2006\)](#)
- [The Extended Warehouse Benchmark \(December 2006\)](#)
- [The Supply Chain Visibility Roadmap \(November 2006\)](#)
- [The Transportation Management Benchmark Report \(September 2006\)](#)
- [Technology Strategies for Inventory Management \(September 2006\)](#)
- [Technology Strategies for Integrated Business Planning \(July 2006\)](#)
- [Global Supply Chain Benchmark Report \(June 2006\)](#)

Information on these and any other Aberdeen publications can be found at www.Aberdeen.com.

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