



# OPERATIONS EXCELLENCE

*The Transition from  
Tactical to Adaptive  
Supply Chains*

*Year 2003 Report on Trends and Issues in  
Logistics and Transportation*



## Year 2003 Report on Trends and Issues in Logistics and Transportation

Cap Gemini Ernst & Young, Georgia Southern University, and the University of Tennessee are pleased to present this report, based on the results of our 2003 research on trends and issues in supply chain, logistics, and transportation. The report marks our 12th annual examination of the ongoing challenges that managers face in the conduct of their business.

The changes in the economic climate since our 2001 report, *Transforming Logistics: A Roadmap to Fulfillment Excellence*, could not have been more profound. No one could have predicted the terrorist attacks, or the extent to which the economy would soften, or the corporate governance issues that continue to impact our business environment. All of these factors have created a climate in which many CEOs are realizing that visibility in the supply chain is a critical element in managing uncertainty. Furthermore, they understand that this capability is a critical driver in achieving world-class excellence.

As early as 2000, we advocated transforming organizations into more adaptive, flexible entities. The findings of our 2003 study indicate that much work remains to be done. In last year's report, we stated that the fundamental starting point was visibility. In this year's report, we are building on this foundation by examining the role and significance of operations excellence in adaptive supply chains.

Briefly, we distinguish between functional excellence and operations excellence. Optimizing a particular supply chain process or key business driver achieves functional excellence. This is necessary but not sufficient; managers must be able to leverage such tactical efficiencies to support strategic objectives, such as customer satisfaction and profitability. Operations excellence integrates top performance across multiple functional areas of the supply chain, in order to meet or exceed customer requirements at minimal cost. Operations excellence is about effectively and efficiently keeping the promise made to the customer. Functional excellence is still important; it is a prerequisite for operations excellence. In turn, operations excellence is a key enabler and prerequisite of adaptive supply chains, which allow companies to meet customer expectations and adapt to unforeseen circumstances.

One of the key learnings from this year's study is that supply chain managers need to more fully understand the impact their day-to-day initiatives have on the firm. In the past, such efforts were "point solutions" that were not integrated with the rest of the firm's infrastructure. The results of this year's study show that some progress has been made toward integration. While this is good news, especially given the current economic environment, there is much left to be done.

This report is written for top management as a call to operations excellence by developing supply chains that are both tactically efficient and customer service effective. Supply chains—not just individual companies—must do the right things, and do them right. How companies are performing is at the heart of this report.

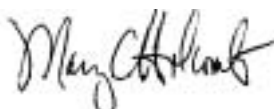
This research and the resulting report would not be possible without the continued support of the study's participants. We would like to thank these professionals for taking time out of their busy schedules to share their expertise and insights.

We hope you find this report helpful as you continue the process of devising, reviewing, and improving your own supply chain management initiatives. All such initiatives should be evaluated against the end-goal of an adaptive, cross-enterprise supply chain—one whose efficiency is only matched by its effectiveness.

Sincerely,



Tony Ross  
Senior Manager  
Cap Gemini Ernst & Young U.S., LLC



Mary C. Holcomb, Ph.D.  
Associate Professor  
University of Tennessee



Karl B. Manrodt, Ph.D.  
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## Executive Summary:

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*How does my supply chain measure up to the competition? Am I investing too much in “point solutions” to specific problems when I should be integrating solutions to get end-to-end efficiency? How can I manage my firm’s resources in a manner that meets stringent and changing customer service requirements?*

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The changes in the economy and business environment over the last year have been profound. Economic uncertainty has combined with rising customer expectations to put enormous pressures on every business. The result is an extraordinary focus on meeting customer expectations while minimizing cost, in order to compete in a global market. The key is an efficient and effective supply chain.

The report assesses the degree to which firms have improved their supply chain processes, and how well resources are being utilized to achieve that goal. It can help you answer critical questions about your business.

It gives you information about key characteristics that drive the transformation to greater efficiency. It presents the case for understanding operations excellence, a concept that leverages tactical efficiencies to achieve strategic business objectives. It offers expert perspectives, and makes suggestions for achieving future success.

SCM managers at every level need to better understand the impact of their decisions on their company’s success in today’s business environment. The report is a major contribution to that understanding. The reward is world-class performance and sustainable growth, now and in the future.

*This year’s study offers a basis for assessing the degree to which firms are achieving operations excellence, and how well resources are being utilized to create efficient and effective supply chains.*

## Operations Excellence: Is Your Supply Chain in Order?

This study is an analysis of current trends in logistics and supply chain management. Based on survey responses from more than 185 logistics professionals, it emphasizes the benefits of creating visibility in the firm through key supply chain processes.

The results of the study have been arranged in three sections. The first section, **Six Drivers of Adaptive Supply Chain Excellence**, briefly examines six key characteristics that drive the transformation to greater efficiency in supply chain, logistics, and distribution processes. These drivers—collaboration, optimization, connectivity, execution, speed, and visibility—are the benchmarks we used to evaluate our survey participants’ progress in achieving logistics excellence. Last year’s report focused on the need for increased visibility in the supply chain. This year’s emphasis is on operations excellence, the foundation of an adaptive supply chain.

The second section of this report, **Getting Your Supply Chain in Perfect Order**, presents the case for understanding operations excellence. This section consists of four parts: meeting customer expectations, responding to changing requirements, performance management, and resource management. We report on the current status as it relates to operations excellence, as well as describing some of the gaps firms are now experiencing.

Finally, we conclude with our **Point of View**, which highlights the authors’ perspectives on the results of the past year and offers recommendations for the future. This year’s **Point of View** is presented from two perspectives: the managerial and the academic. Both of these perspectives provide an assessment of the current state and, more importantly, suggest future direction for achieving the desired end state in logistics and supply chain excellence.

## Participant Profile

Aggregated as a profile group, half of the companies who responded to our survey have annual revenues under \$1 billion (48%), while those with annual sales of \$1–3 billion accounted for 25.5% of the sample. Firms with sales greater than \$3 billion made up 26.6% of total respondents. Compared to last year, there was an increase in the percentage of firms with revenues greater than \$1 billion completing the survey.

Previous analysis indicated that revenue base as a measure does significantly differentiate firms in terms of logistics and supply chain strategic initiatives. In general, “larger” firms are noted for taking the lead in developing and growing innovative capabilities in logistics and supply chain management. In many cases, it is their financial wherewithal that enables them to amass the critical resources to do so.

The companies that participated in this year’s study also command a great deal of attention because together they spend more than \$18.6 billion on transportation annually. Collectively, they have a significant impact on current and future trends in logistics and supply chain management.

While all industrial sectors are represented in this study, manufacturers led in survey responses, comprising 61% of the survey sample. This is an increase of approximately 3% from the 2002 study. The next largest sector was Retail, at 9.8%.

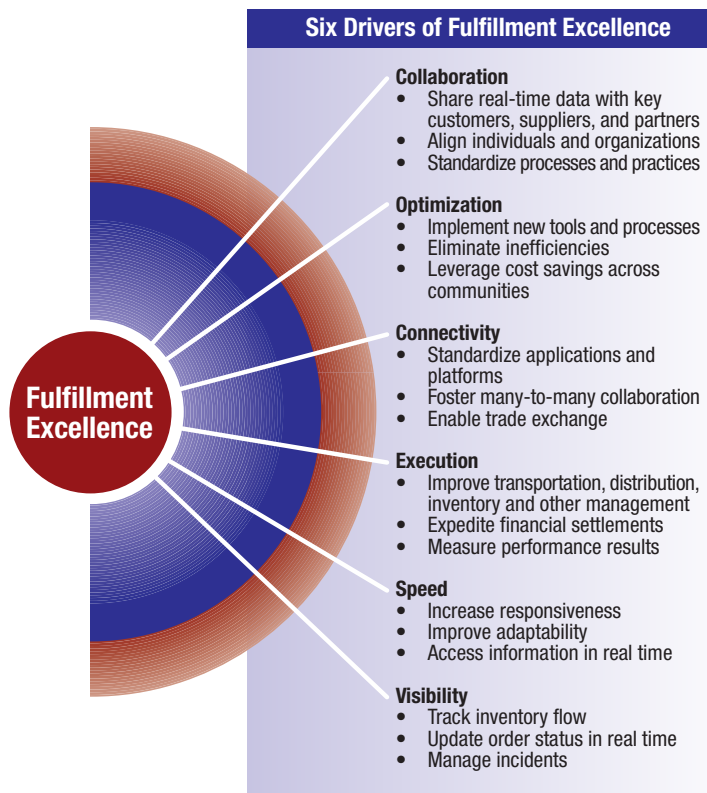
## Six Drivers of Fulfillment Excellence

### A Look Back

In our 2000 report, *Logistics @ Internet Speed*, we introduced the six drivers necessary for achieving logistics and supply chain management excellence (Figure 1). These drivers are the key components found in adaptive supply chains. The research indicated that customer demand and technology advances would drive the implementation toward adaptive networks in order to provide greater visibility and control in supply chain, transportation, and distribution activities. In the 2000 report, we predicted a continued migration toward the application service provider model (ASP), in which providers host and maintain leading software applications on the Internet, enabling firms to collaborate with suppliers and logistics partners on a common, ubiquitous platform.

Our 2001 study, *Transforming Logistics: A Roadmap to Fulfillment Excellence*, reported a slower than expected migration toward the

Figure 1



application service provider (ASP) model, as well as the implementation of newer tools and methods in the discipline. Technological advances in logistics continued at a dramatic rate, and seemed unaffected by the changes in economic conditions. As we predicted in our 2000 report, the rate of alliances and partnerships among technology and service providers increased, and we saw increased consolidation through 2001 and continuing to date.

As we closed out 2001, many asked if any of the six drivers were more critical than another. In 2002, our response was that supply chain managers needed to focus on visibility in their supply chain. Visibility is more than just a tactical supply chain issue; it has profound strategic implications for the entire organization. It sustains, accelerates, or enables the other drivers.

Without true visibility, the firm is hindered from achieving agility in a volatile world. This lack of agility leads to sub-optimal supply chain event management decisions—decisions that often diminish a company’s effectiveness and efficiency. To achieve agility, firms must learn to balance cost and service. Below, we discuss how well this challenge is being met.

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*Economic malaise exists across the globe. If a company’s goal is more than just survival, then supply chain strategy must be configured to simultaneously improve customer service and satisfaction while increasing profitability. Operations excellence provides that level of focus.*

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## Getting Your Supply Chain in Perfect Order

### Challenges in 2003

As we go to press, the global economic conditions remain flat, with little growth expected in the near term. Many industries are experiencing overcapacity. Others, especially in Europe, are moving manufacturing jobs farther east to minimize labor costs. Interest rates are at all-time lows and can no longer be counted on to stimulate growth.

While some argue that this is a temporary situation, we must ask: what if it is not? In other words, what if the “new economy” is the one we are experiencing today?

Security issues remain on the front burner. C-TPAT, DHS, ACE, and 24-hour rule are all becoming part of today’s supply chain lexicon. Expenses are expected to increase due to barred or detained goods, the cost of compliance, and the cost of increased inventories to minimize risk. Managing all of this is part of surviving in the new reality.

Technology drives on. Mergers, acquisitions, or bankruptcies seem to be common. Newer technology is being introduced in a depressed market, making adoption of more efficient methods difficult to secure. The promise of collaboration is sought by many, but obtained by few.

Yet, in all of this, there is one constant: customers want more for less.

The challenge facing companies today is to build supply chain processes that can be tactically efficient and, at the same time, effective in customer service. As this report shows, customers are becoming more demanding, and suppliers more capable.

## Operations Excellence Defined

In order to define operations excellence, we need to take a step back to define its prerequisites.

**Functional** excellence is the result of optimizing a particular supply chain process or business driver. It might be reducing inventory, or accelerating cycle times, or increasing visibility into suppliers. These are necessary but not sufficient. If the supply chain is still divided into silos, individual managers can optimize a number of such drivers without improving the firm's ability to satisfy customers. A firm must be able to achieve the right balance of tactical efficiencies to support strategic objectives, such as customer satisfaction and profitability. The critical factor is integration.

**Operations** excellence integrates top performance across multiple functions, sharing information and leveraging excellence in specific areas, in order to meet or exceed customer requirements at minimal cost. It cuts across silos and business processes. It means knowing as much about the customer's needs and expectations as about the supply chain. Operations excellence is the ability to effectively and efficiently "make the promise" and "keep the promise" to the customer.

Functional excellence is still a critical prerequisite. It's impossible to achieve strategic objectives efficiently without efficiencies in tactical areas. The key is to focus on achieving the right efficiencies and combining their effectiveness. Operations excellence in turn is a prerequisite for an adaptive supply chain, which must balance adaptability with the capacity to meet customer expectations at minimum cost.

Operations excellence is founded on the observation that customers directly experience operations quality, and that they increasingly factor that experience into their perceptions of vendors

and their buying preferences. It recognizes the essential implication of the current business climate: *The shift to product-plus strategies requires companies to be very good at providing superior customer service and minimizing their operating costs.*

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*Operations excellence is founded on the observation that customers directly experience operations quality, and that they increasingly factor that experience into their perceptions of vendors and their buying preferences.*

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This represents a new and daunting set of rules for many firms. Until recently, companies could rely on establishing a foothold within a market niche. They could function either as a high-service firm that charged more for its superior service, or as a low-priced commodity firm that could undersell competitors but was not particularly tolerant of specialized customer needs.

Consequently, not so long ago being superior at either customer service or functional efficiency was sufficient for success. Such "either/or" strategies are no longer tenable. The power shift from manufacturers to retailers and demanding customers has raised the customer service ante considerably for everyone. And sustaining "every-day low pricing," clearly requires "every-day low operating costs."

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*Operations excellence leverages tactical efficiencies to support strategic objectives.*

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During the 1990s, companies that maintained parity with competitors in terms of service and cost were able to achieve good profitability and, in many cases, grow their markets. These same companies realize that the 2000s will not yield the same results. Keeping abreast of the competition is not sufficient in today's business climate. Instead, this decade will be characterized by strategies that increase market share and profitability through operations excellence.

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*"One is not wise to turn hope into strategy. One thing has become clear during the past three years. We are not going to succeed solely by pursuing the promise of collaboration."*

*Bob Delaney  
14th Annual  
"State of Logistics Report"  
June 2, 2003*

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Implementing this strategy in the supply chain requires focusing on the four key areas outlined in this report. “Getting Your Supply Chain in Perfect Order” is about delivering on promises and being able to rapidly react to events and situations to ensure that customer requirements are always met. The challenge is to do this while reducing supply chain costs through excellence in performance and resource management.

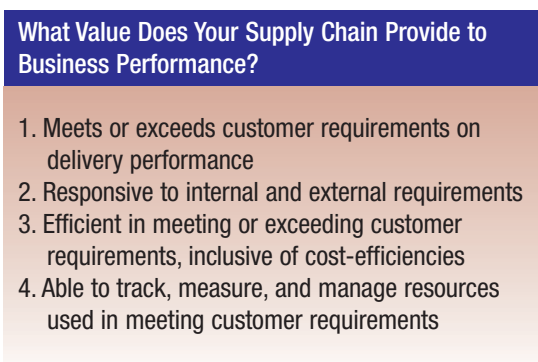
A supply chain consists of multiple, complex systems that are interdependent with regard to the creation and distribution of goods, services, cash, and information. Each system is comprised of processes that have their own challenges, goals, and operating strategies. Our research suggests that operations performance can be measured by four attributes:

- ❑ How successful is the company in terms of meeting (or exceeding) customer requirements in delivery performance?
- ❑ How responsive is the supply chain to changes in requirements—both internal and external?
- ❑ How efficient is the company in meeting (or exceeding) customer requirements? How does increasing the level of responsiveness change supply chain costs?
- ❑ What are the factors that determine how well the company uses its resources in meeting customer requirements?

The combination of these attributes determines the total value created by the supply chain.

Performance on these attributes is discussed below.

Figure 2



## Exceeding Customer Expectations?

The evolution of physical distribution into logistics and supply chain management was enabled by innovation from a variety of sources. Change was necessitated by rapid shifts in global and technological environments. The economic conditions of the last three years have added to the complexity of doing business in the logistics and supply chain arena. For many firms, this has created a seemingly unpredictable and often volatile climate for conducting day-to-day business.

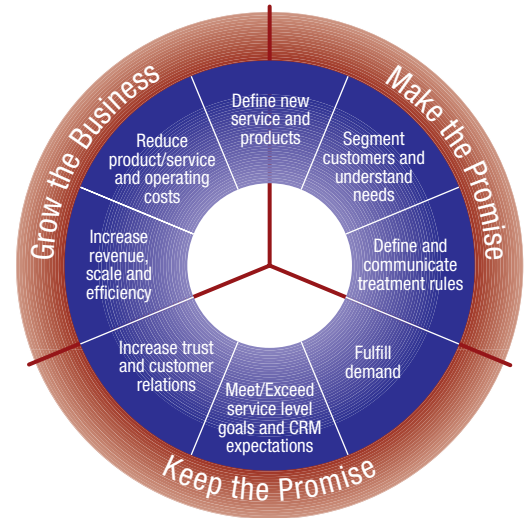
Yet, even in a sea of change, there remains one constant: the basic requirement of meeting the needs of the customer. Effective and efficient order fulfillment is only possible through operations excellence. The core of operations excellence is the marriage of customer relationship management (CRM) and supply chain management (SCM). Like any marriage, both parties must work together and communicate effectively to make the relationship work.

How should we define efficient and effective order fulfillment? A good definition might be: Providing the right amount of the right material in the right condition, in the right sequence, in the right orientation, at the right place, at the right time, and at the right cost using the right methods, right partners and right information.

All of the “rights” in the definition are made possible by knowing the customer, understanding their needs, providing the correct level of priority, and ultimately fulfilling the order. As indicated in the figure below, business growth can only be achieved by “making the promise” and “keeping the promise” (Figure 2).

Figure 3

The essence of operations excellence is to effectively and efficiently “keep the promise” to customers. The cycle highlighted below (Figure 3) must continue in order to achieve operations excellence today and in the future. It requires operations to continuously learn and adjust to the changing needs of customers. Likewise, the CRM operations need to incorporate capabilities that continue to enhance the customer experience (e.g., available to promise, order tracking, order visibility, distributed order management, purchase history or shopping lists, up sell and recommended purchases, and quantities based on price and expected need). Adaptive CRM and SCM capabilities will be required to ensure that the design of the strategy, solution, and deployment adjust to the changing needs of the customers.



These findings reinforce the acceptance around measuring and utilizing the perfect order. A perfect order has been defined as “complete, on time, damage free, and contains a correct invoice.” The perfect order measures what a customer experiences, not what they were promised. Faultless execution leads to a perfect order; if one element is missing, the perfect order suffers. Faultless execution of the basics will determine whether a company will survive, grow, or go the way of the Crosby automobile.

*Operations excellence is about effectively and efficiently “keeping the promise.” However, only by “making the promise” that can be kept can you grow the business.*

Impressively, compared to last year’s results, overall scores have improved (Figure 4). This would suggest that meeting customer expectations is improving, but it is still far from perfect. The attribute that experienced the greatest improvement was the ability to send a correct invoice. This suggests that internal processes and information flows are slowly starting to improve.

When asked to identify the attributes most important to serving their customers, respondents’ top four answers were:

- (1) on-time delivery
- (2) correct invoice
- (3) ability to match POs, invoices, and BOLs (bills of lading)
- (4) over / short / damage

The Perfect Order
1. On time
2. Complete
3. Damage free
4. Correct invoice

What keeps a customer satisfied? It is not surprising that the participants in our study noted that the same service elements discussed earlier also led to measurable results in customer satisfaction. However, the following should also be noted:

- ❑ On-time delivery was essential to keeping the customer.
- ❑ Responsiveness to changing requirements and order fill rate enabled the firm to satisfy and retain their customers.

Figure 4

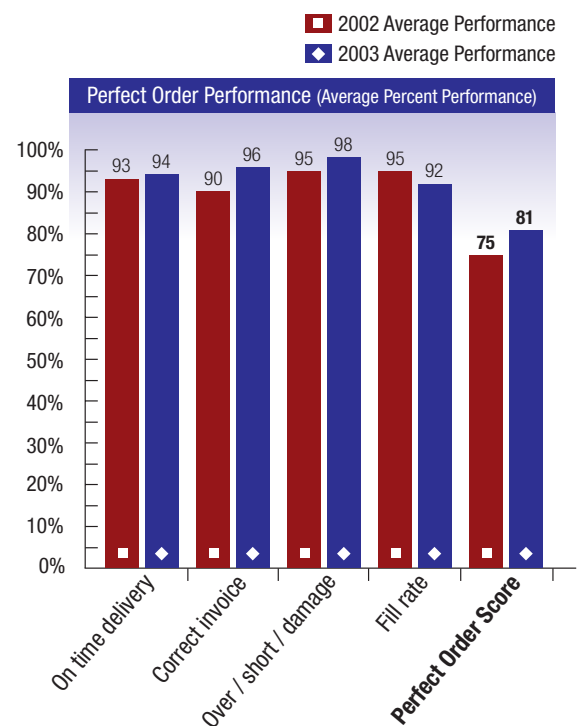


Figure 5

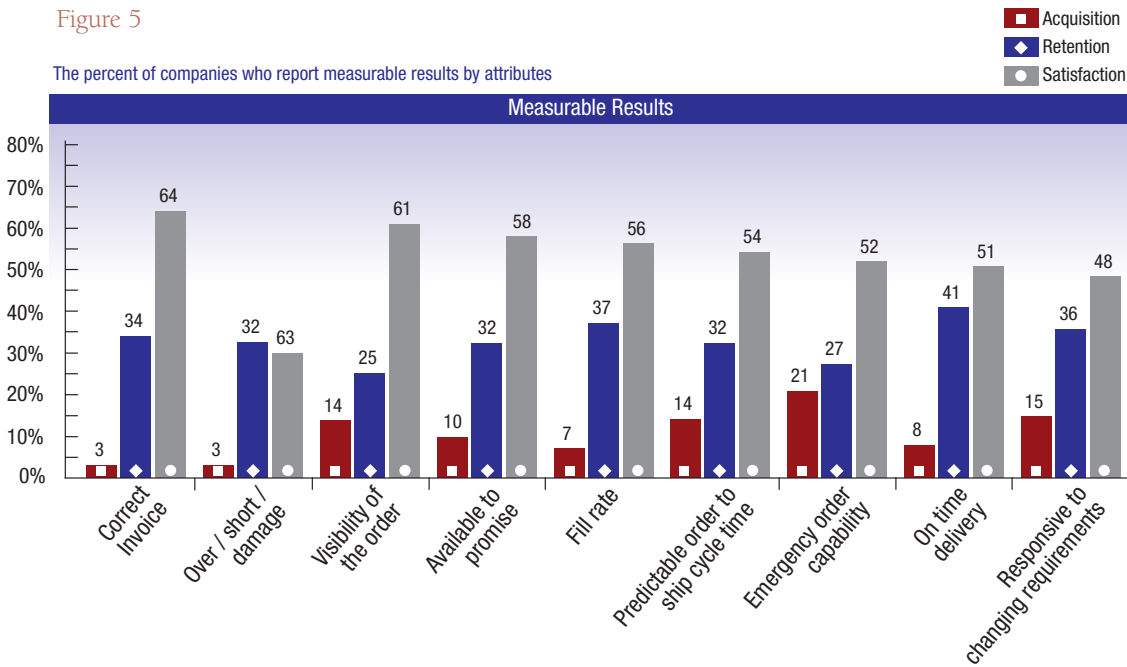


Figure 5 also highlights a gap yet to be bridged by logistics and supply chain professionals: leveraging functional excellence to acquire new customers. Perhaps marketing has yet to fully appreciate the performance of logistics; perhaps functional excellence is a prerequisite for bidding on new work.

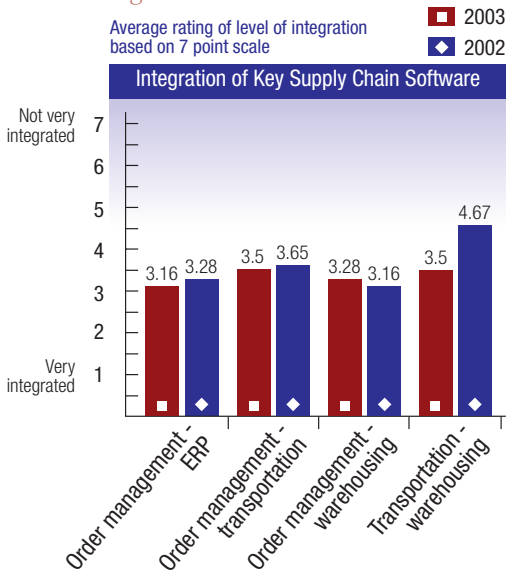
## Responding To Changing Requirements

While companies have made improvements in demand forecasting and planning, it is still a challenge to get the right products to the right place at the right time, and in the right condition. In the ideal supply chain, demand would be met by “pulling” from the point of raw materials or component parts with minimal inventory and a short cycle time.

Maintaining the ideal supply chain, however, is not a reality for most firms. Instead, supply chains must develop the ability to react quickly to satisfy customer requirements that may change daily. Changes may occur in the middle of the order cycle. Regardless of how late a change occurs, today’s customers expect their strategic suppliers to provide excellent performance at all times.

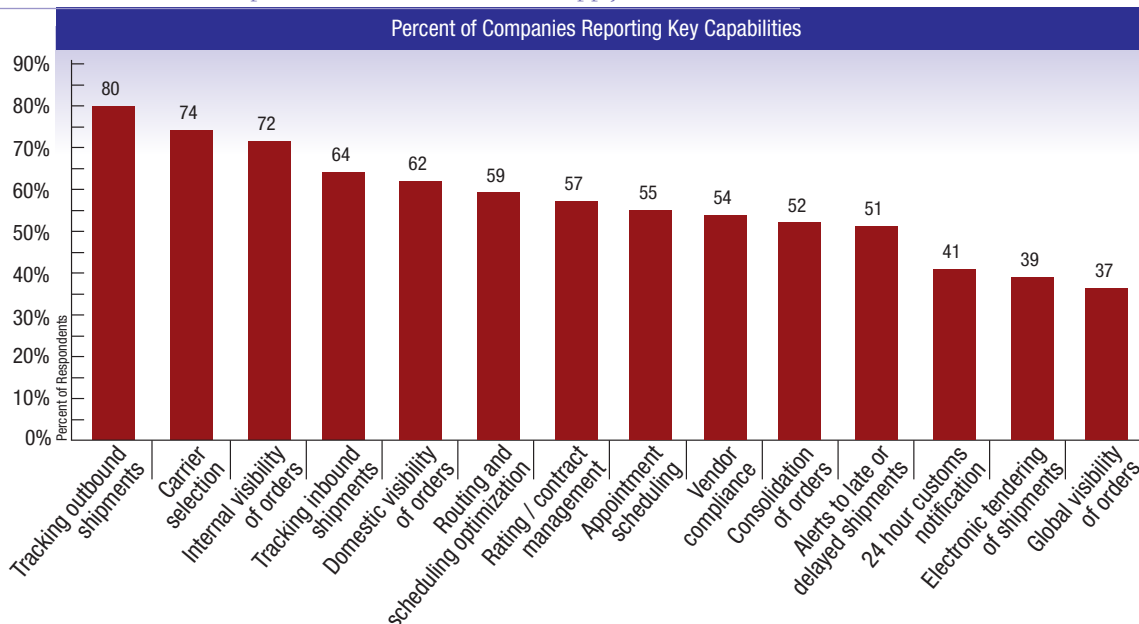
Building a responsive supply chain that will efficiently and effectively manage changing requirements has proven to be quite a challenge. Visibility is a key driver in building a supply chain that will drive down costs, improve service, and create value for all supply chain members. The level of visibility in the supply chain will either enable or hinder the company’s ability to accommodate changing customer requirements.

Figure 6



Some have argued that the integration of processes and systems are enablers for functional excellence. If so, how well integrated are today’s technologies? According to our respondents, most firms have achieved some degree of success in tying together the front-and back-end operations. With ERP as the backbone, order management is linked to both transportation and warehousing.

Even more important in terms of functional excellence, transportation and warehousing are beginning to report higher levels of integration than in previous years. As noted in last year’s report, event visibility allows supply chain managers to see the flow of materials and orders, and therefore to better manage capacity and resources. As shown in Figure 6, this area is the least integrated of key supply chain software.



Currently, visibility is somewhat limited—“four walls and the truck is on the way.” As distance from the plant or warehouse increases, visibility decreases. As illustrated in Figure 7, visibility is lacking for tracking inbound shipments (64%) compared to respondents’ ability to track outbound shipments (80%). Just over half of respondents have alerts to late or delayed shipments, leaving the rest at the mercy of variation in the process.

The ability to respond to changing requirements hinges on visibility. As noted earlier, it is one of the key attributes that leads to customer satisfaction; it is an ability that is important to customers.

Unfortunately, the current state for most freight is characterized by the inability to tell a customer precisely where their shipment is. And groundbreaking work done by FedEx has raised customer expectations, so customers now expect everyone to be at least as good as FedEx.

While the data in Figure 7 may suggest that visibility has been achieved, this is not the case. Respondents were asked to rank several key initiatives in their distribution process, based on the level of emphasis they planned to place on them. As Figure 8 suggests, order visibility—both internal and external—will be receiving significant attention this coming year.

*“I’m sorry – we’re not FedEx.....”*

*Response to a customer by the account manager for a leading LTL carrier*

*Operations excellence depends on the ability of the company to align organizations and departmental units with business processes. In other words, operations excellence is dependent on functional excellence.*

Figure 8

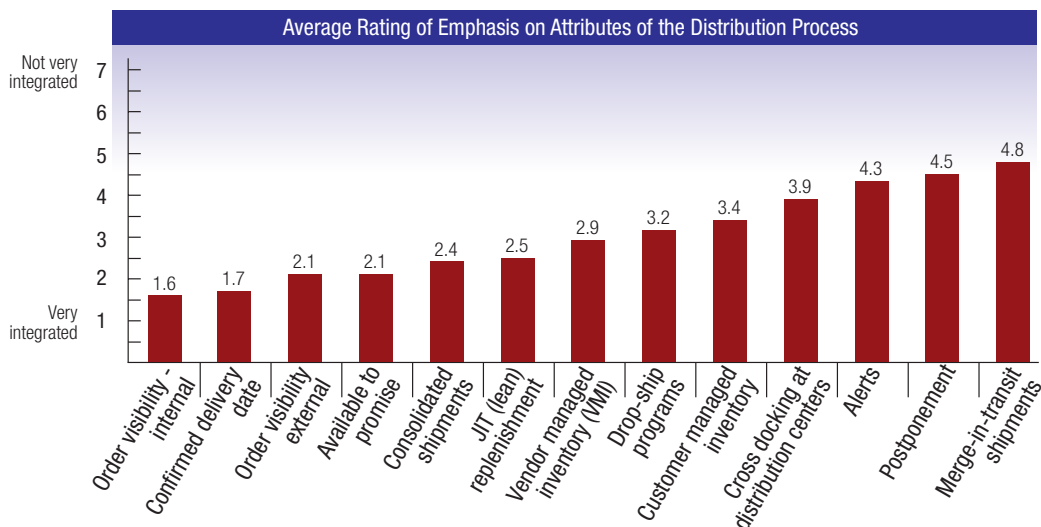
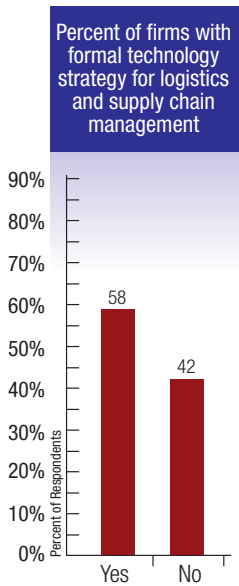


Figure 9



There are, however, a few roadblocks to developing adaptive supply chains. Given the heavy reliance on information technology to provide visibility, one might expect firms to have a formal technology strategy as it related to logistics and supply chain management. Yet, as Figure 9 indicates, only 57.6% have developed such a strategy. Given the volatility in the technology space, this is somewhat surprising. The good news is that, for those that have a technology strategy, a strong majority have linked it to their overall business strategy (Figure 10).

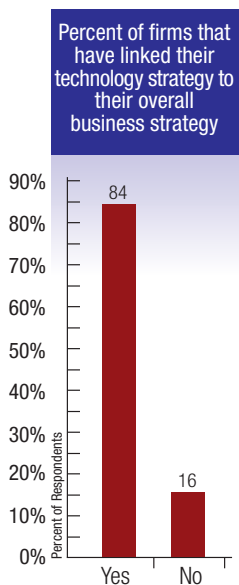
Another impediment to a company’s ability to respond to changing requirements can be summed up in a single word: culture. Respondents were given a set of attributes to describe various business dimensions in their firm. Organizationally, most of these firms are very departmental; over one third describe themselves as functional silos when it comes to integration. Decisions are typically made at the departmental level. And over 40% of the respondents utilize point solutions instead of integrated solutions.

Responding to changing requirements isn’t all about technology. The ability to respond requires not only having the technology in place, but also having processes aligned and people trained and rewarded to respond in an appropriate manner. Having two out of three of these may be good, but it is not responsive.

Finally, the true measures of responsiveness in a supply chain are execution and speed. In part, these can be measured by the level of inventory kept on hand, and how quickly it is turned during the year. For the past three years, the results were static; this year, the trend shows an improvement.

In spite of a challenging business environment, it appears that logistics and supply chain professionals have achieved improved overall supply chain performance. For our respondents, the days sales in inventory dropped by 25% from 2002 to 2003. The reduction in the amount of inventory held was also reflected in the improvement in the number of turns, which increased from 12 to 14.5 from 2002 to 2003. This 21% increase is

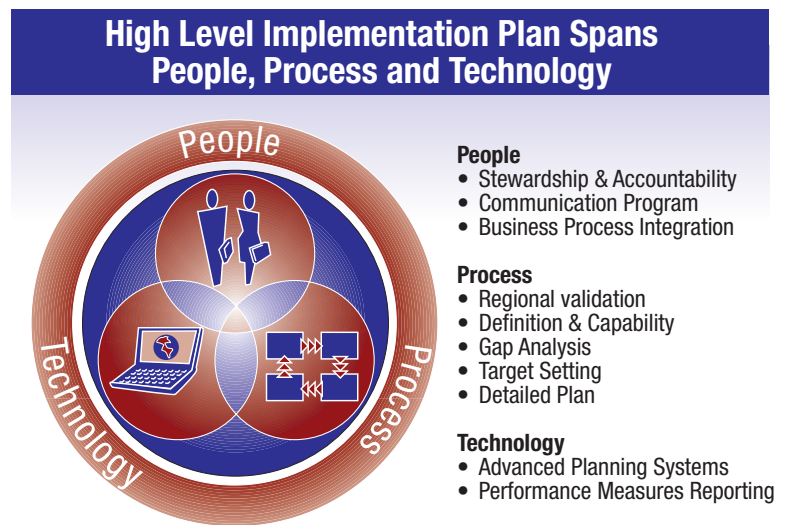
Figure 10



*“Our biggest issue—our biggest source of pain—is ourselves.”*

Senior Vice President

Figure 11



further evidence that firms are becoming more responsive. A lean supply chain optimally deploys finished goods inventories on a day-to-day basis to fulfill customer requirements while minimizing operating costs.

The trend toward improvement in turns and inventory management is also highlighted by comparisons between the amount of inventory held in 2000 compared to this year (Figure 12). It is interesting to note that the average amount of inventory held is falling, as is the range (the maximum amount minus the minimum amount of inventory held) when comparing the two years. Firms are cutting inventory and expecting to keep less on hand in the future. Making this change permanent requires greater collaboration between customers and suppliers.

Figure 12

Inventory Improvement (Averages)				
	2000	2001	2002	2003
Days Sales in Inventory (finished goods only)	42.1	46.7	49.4	37.0
Average Days Sales Outstanding (A/R)	42.2	40.3	45.7	40.0
Number of Turns	16.0	10.5	12.0	14.5

*“In our business, inventory can be a good thing, especially given our products, and the volatility of the current environment. Yet, holding inventory isn’t the answer. What we are working on is being responsive to changing needs, and meeting those needs by being adaptive.”*

Pete Moore  
 Vice President-Supply Chain  
 Bacou – Dalloz  
 International safety products manufacturer

## Performance Management – Managing SC Costs

Getting a group of logistics professionals to be quiet is not hard—one only needs to start talking about ways to reduce supply chain costs. This topic seems to remain a high priority, regardless of economic conditions.

In 2002, we reported that the largest-ever percentage of firms (54%) named reducing costs as the primary objective or goal for the business unit. While a similar percentage of respondents in this year’s study are still focused on cost reduction, a larger proportion of firms are concentrating on maximizing profitability: 27% for 2003 vs. 15% for 2002 (Figure 13).

Some might suggest that the emphasis on reducing costs in the supply chain is a direct result of a firm’s overall strategy, or that it is linked to how logistics is perceived by the top management team. Respondents were asked about both.

Less than a quarter of the respondents are focusing on cost leadership as their strategy to compete in the market place, which is unchanged from last year. Also unchanged is the percentage of companies using customer service as their core strategy. Regardless of the strategy chosen, in three of the four cases—with customer service as the exception—the primary objective of the division was to reduce costs (Figure 14). In other words, strategy matters, but it must achieve lower costs at the same time.

Figure 13

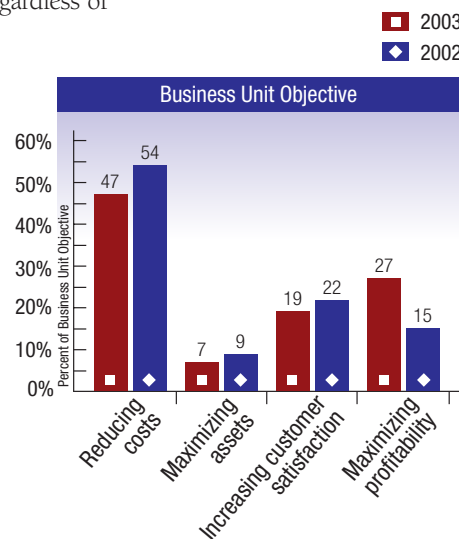
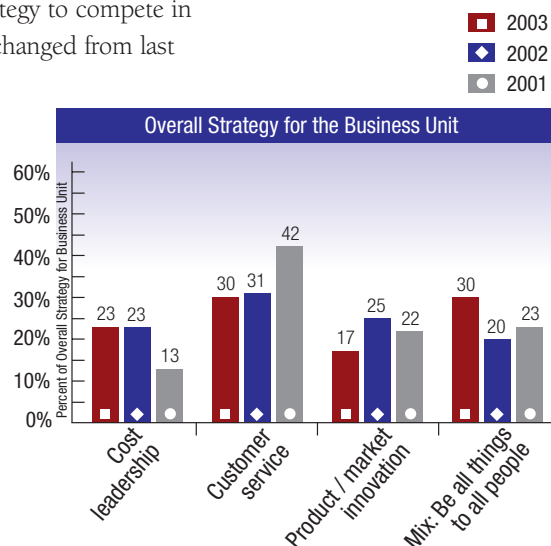
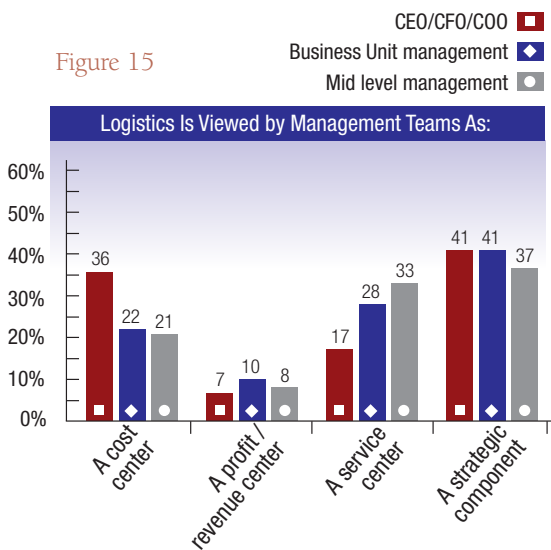


Figure 14



This linking of supply chain management to cost reduction is reflected in the boardroom. More than one third of respondents report that their C-level team views them as a cost center. Yet, there is good news: logistics is viewed as a strategic component by a larger percentage of executives, regardless of the management level (Figure 15).

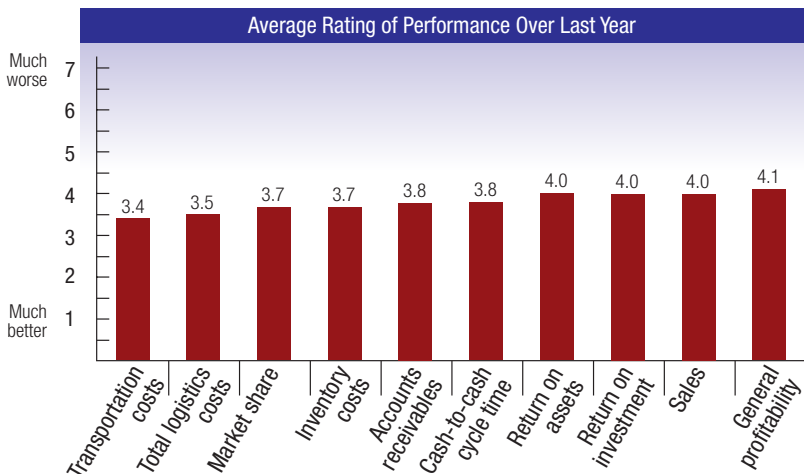
Figure 15



Has this emphasis on supply chain costs paid off? Comparing actual performance to budgeted targets reveals that respondents met or exceeded their targets, especially in the case of transportation costs and total logistics costs (Figure 16). This contrasts with companies' overall financial performance, which only met expectations. The standard continues to be

raised; functional excellence must translate to bottom-line results in order for logistics professionals to distinguish themselves.

Figure 16



## Resource Management – Managing the Asset Base

This focus on the importance of cash is also seen as one of the ways of creating working capital efficiency. Working capital efficiency has been identified as one of the major drivers of market value, along with fixed capital efficiency, tax minimization, profitable growth, and cost minimization. These drivers, when appropriately aligned and optimized, lead to increased shareholder value.

This research project takes the area of order fulfillment to a new level by including an additional component. Previously, order fulfillment only looked at the time from which the customer placed the order. Now it must capture where all of the assets are located and where a logistics manager may actually control product. This new level of information in the area of order fulfillment has been termed “Made to Cash.” Made to Cash (MTC) is the time it takes to convert finished goods to cash. For a retailer, MTC starts at the point in an organization where products are received into the system, and ends at payment. For a manufacturer, the cycle starts at the end of the production line and ends at the receipt of funds from the customer. In both cases, MTC takes into account how long a product is stored, picked, packed, and in transit, and tracks it until payment is received from the customer.

*Made to cash is the time required to convert finished goods to cash.*

Why should a firm begin to look at their Made to Cash process? The biggest advantage of MTC is that it looks solely at throughput of finished goods, and measures the firm's ability to manage its finished goods assets and convert them to cash. Benchmarking based on MTC is more effective than traditional order fulfillment metrics.

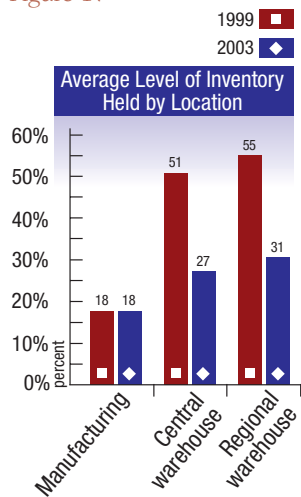
One of the major components of MTC is how well inventory flows through the firm’s supply chain. That is, MTC reflects how much is stored at the manufacturing plant, or the series of warehouses used by the firm. Each stop in the flow adds cost—and time—to the supply chain.

On this one component, respondents have demonstrated a significant improvement compared to our previous study. First, the trend for lower levels of inventory in the supply chain is real. Second, and more important, the level of variation is also declining. That is, there is less of a bull-whip effect taking place; information is starting to replace inventory.

This is not to suggest that the answer for asset management in supply chains is always to reduce inventory. There must be enough inventory to meet customer demands, and it must be accessible to customers in a timely fashion.

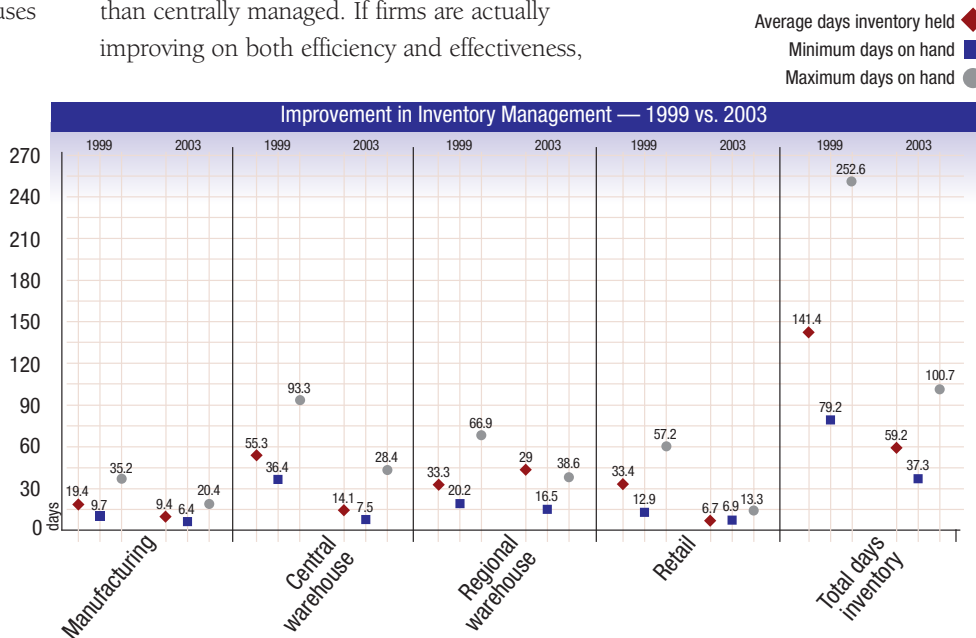
Inventory can be held at a manufacturing plant, a central warehouse, or a regional warehouse (or some combination of the three)(Figure 17). When

Figure 17



we compared the percentage of inventory held at each node, we found that, on average, inventory was more likely to be stored in regional warehouses than centrally managed. If firms are actually improving on both efficiency and effectiveness,

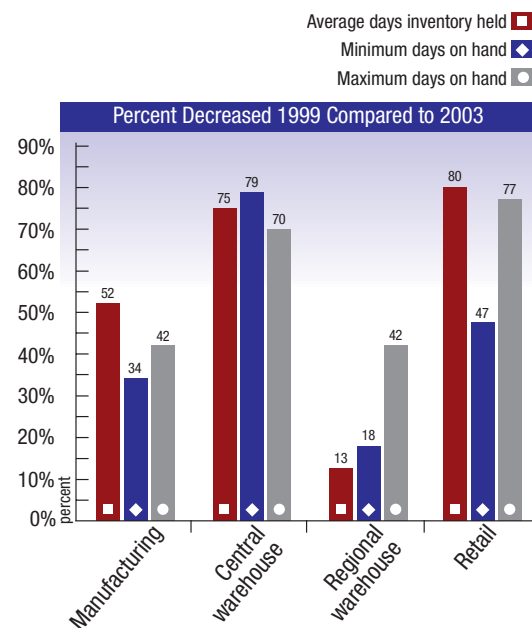
Figure 18



there should be a shift in where inventory is held and the amount of inventory in the supply chain will be lower. As noted in Figures 18 and 19, this is currently the case. Since 1999, significant improvements have been realized.

Figure 19

*To continually meet or exceed the financial targets set by the firm, effective and efficient use of resources must occur. Efficiency comes after effectiveness in functional excellence. The firm must focus on doing the right things before it concentrates on doing things right.*



Technology is not the only tool available to manage the asset base. Another strategy is to review products, look at customer profitability, streamline offerings, and undertake product and supplier rationalization studies. While the number of firms that have completed rationalization projects over the last two years has increased substantially since last year, a significant number of firms still have

not begun the process of identifying their key suppliers, customers, or products. To continually obtain or exceed the financial targets set by the firm, effective and efficient use of resources must occur. Efficiency comes after effectiveness in functional excellence. The firm must focus on doing the right things before it concentrates on doing things right (Figures 20 and 21).

## Our Point of View

After the much anticipated and successful migration to a new century of business in 2000, many firms anticipated continued market exuberance and growth into the future. In combination with technology advances, we predicted in the 2000 report *Logistics @ Internet Speed* that these conditions would drive the implementation of adaptive networks to create greater visibility and control over supply chain, transportation, and distribution activities. In 2000, only a few firms fully understood the compelling need to transform their supply chains. Even fewer firms had begun the process of developing and implementing the processes and infrastructure that would lead to adaptive supply chain performance. After all, business conditions were still very good for most firms.

The six drivers introduced in 2000 as key factors for producing unprecedented advances in customer service and driving sustainable cost reductions were largely viewed as an academic and consulting-based “theoretical model” for the ideal supply chain. The softening economy throughout 2001, however, could not be ignored. Actual implementation of newer tools and methods fell short of expectations set during year 2000. Many firms adopted a cautious approach to investing in newer logistics systems. The study results for 2001 indicated that many firms had taken a “wait, watch, and learn” approach to logistics and supply chain transformation.

In 2001, multiple leading companies invested more aggressively in newer systems and technology in an effort to reduce costs, improve efficiency, and, more importantly, position themselves to respond faster to changes in market conditions. Those investing most heavily viewed the economic condition—which was thought to be temporary—as a vital opportunity to widen the gap on competitors who

Figure 20

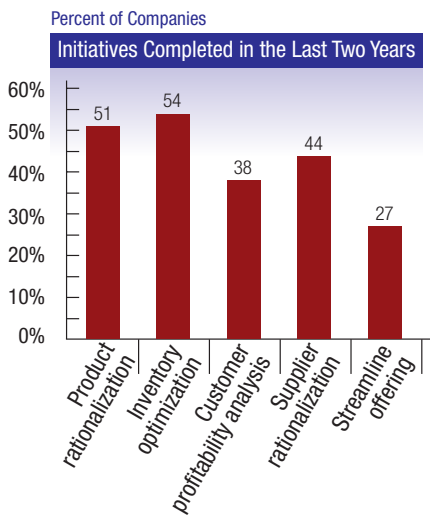
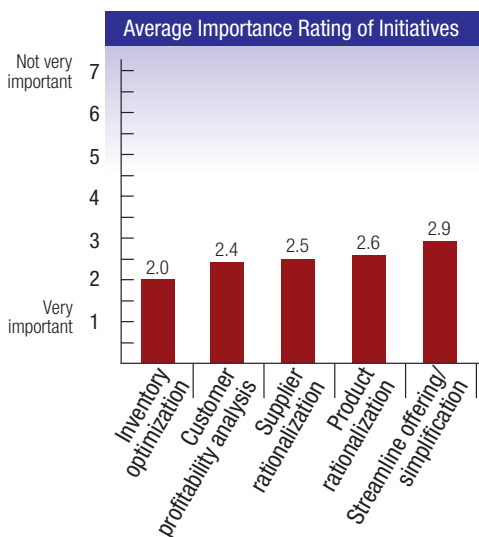


Figure 21



had halted or substantially slowed investment in this area. These representative firms embarked on changes well before the softening economic conditions; they had a vision of logistics systems and supply chains that would respond more quickly and profitably to changes of any kind.

development and sustainability of a world-class supply chain, one driver stood out as the most critical: visibility. Visibility was noted as the enabler and accelerator for all of the others.

At a tactical level, visibility allows supply chain managers to see from end to end. The impact of visibility on execution and speed is quite dramatic. Yet, the state of visibility has not yet matured, and will require leadership at the C level of the firm. While some noted that progress had been made, a large percentage of firms still struggle to implement this driver to the level necessary for maximizing their efforts in terms of execution and speed.

What if the current economy is the new economy? This would mean that businesses can't wait for things to get better; the need to act today is paramount. If deflation takes hold, it will be even more critical for firms to focus on operations excellence. In the current economic climate, it is more important than ever for suppliers to understand that customers at all stages in the supply chain expect increased efficiency. The

**An adaptive supply chain is characterized by the following characteristics:**

- 1. Read and respond
- 2. Plug and play
- 3. Learn and leverage

The changes in the economic climate since the 2001 report *Transforming Logistics: A Roadmap to Fulfillment Excellence* could not

have been more profound. In the 2002 report, we re-stated that it was time to develop newer, adaptive supply chain networks that would lead to unprecedented advances in customer service, drive less-responsive firms out of business, and pose significant barriers to market entry. The compelling need to achieve this adaptive state is now quite apparent to all businesses. The six drivers that constitute the fulfillment (or functional) excellence model are being implemented by a much broader group of firms than in 2001. Over the last two years, we began to address the order in which the drivers should be implemented for leveraging the firm's efforts in achieving an adaptive state. While each of the drivers plays a critical role in the

Figure 23

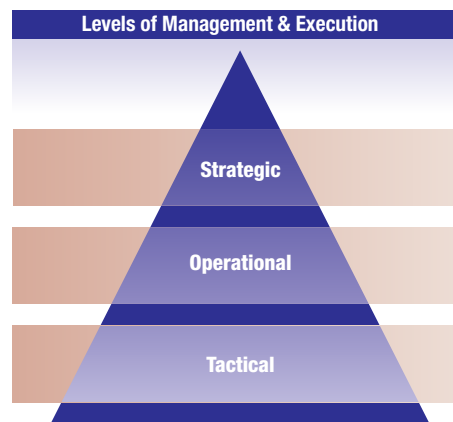
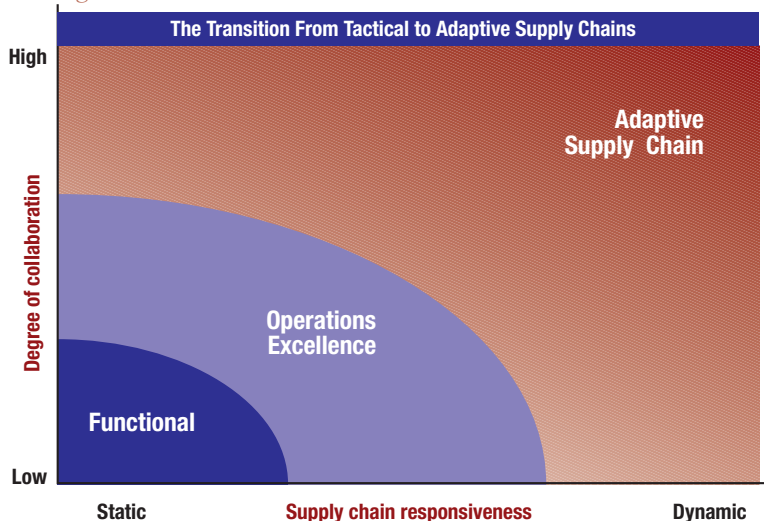


Figure 22



results of this year's study indicate that, to a certain extent, this message is being heard: supply chain performance has improved. Yet, a great deal of work remains to be done before an adaptive supply chain state is reached. From 2001, progress was seen in the integration of processes and technologies, with TMS and WMS integration reporting the largest improvement.

This integration enables visibility both internally and externally, and, more importantly, will leverage the firm's efforts in execution and speed.

At the core of this year's focus on operations excellence is "getting back to the basics."

Our point of view can be summarized as follows:

- ❑ Firms seeking operations excellence first must achieve functional excellence. Functional excellence is not an end in and of itself; its goal is collaborating internally to achieve operations excellence.
- ❑ Operations excellence is the foundation on which to build an adaptive supply chain. The ability to respond to changes—and not simply react to them—requires adaptable processes and information flows.
- ❑ Technology that is not integrated or quickly adaptable may hold back significant growth. Technology should enable growth, not hinder it. This means that today's technology solutions must be capable of integrating with current solutions and processes, as well as being easily adapted to market changes.

Each of these issues is about managing the firm's resources in a manner that meets stringent and changing customer service requirements, minimizes the costs of manufacturing and distribution, and attains the fullest possible return on assets in inventory. The driving force in meeting this challenge is operations excellence. Stay tuned for next year's report to see how well this goal has been understood and achieved.

## What does it mean? – CGE&Y Perspective

### **"What Gets Measured Gets Done, What Gets Rewarded Gets Repeated"**

More than ever, the customer of the fulfillment process is making greater demands on the supplier. Most large companies, from Wal-Mart to Dell and GlaxoSmithKline, are basing their long-term commitment to suppliers on tighter and tighter fulfillment metrics, because their own customers' expectations are increasing. Satisfying such demands certainly requires functional excellence – the ability to continually drive down costs and improve performance in specific areas of business.

But functional excellence is just the foundation. Truly "keeping the promise" to customers requires operations excellence, the ability to leverage efficiencies in specific processes across the entire supply chain. It's a combination of management policies and practices, organizational operations and structure, and processes and technologies that support fulfillment of demand at the lowest cost while meeting or exceeding customer requirements.

Just as important, operations excellence requires knowledge of the customer's needs and expectations, and the ability to segment services to meet those needs. That's why we're working with our clients to bridge the gaps between supply chain management (SCM) and customer relationship management (CRM). We're moving them from "make the promise" to "available to promise" to "capable to promise" to "profit to promise".

Of course, to be rewarded and grow the business, companies must still meet or exceed the promise made. To generate that growth, every employee at every level must have ownership of their company's efforts to achieve operations excellence. As was found in this year's study, SCM managers (at all levels and in all functional areas) need to more fully grasp the impact that SCM has on their company's success.

Functional excellence enables operations excellence; only by achieving operations excellence can we build a foundation for evolution and adaptation, which are the keys to sustainable growth.

## **What does it mean? – Academic Perspective**

At the beginning of our research on fulfillment excellence, we took every opportunity to ask logistics and supply chain professionals to rank the importance of the six drivers in creating an adaptive supply chain. On a consistent basis, the results indicated that the majority felt that execution and/or speed—not visibility—were the top priorities. With last year's study, we believe that we sufficiently made the case for visibility as the critical enabler for the remaining five drivers. With visibility in place, the next critical elements of an adaptive supply chain are execution and speed. As stated throughout this report, the desired outcome from these two drivers is operations excellence.

Why is operations excellence the goal? Quite frankly, it is because too much time, energy, and resources are being used by firms on “point solutions.” Point solutions address problems, not processes; they also tend to be siloed in nature. Operations excellence puts the focus on solutions that are integrated with the rest of the firm's infrastructure, and, even more importantly, with the firm's supply chain partners. Operations excellence is an end-to-end perspective, with tactics and strategy aligned to accomplish this goal.

Supply chain leaders in the area of operations excellence are continually raising the bar. The increasing demand for efficiency and customer responsiveness is in fact a measure of how fast companies are evolving. The message is loud and clear: if you don't reach functional excellence quickly, and then integrate those capabilities into operations excellence, you will be left behind. History has taught us that the environment is not kind to those who do not evolve. Eventually they cease to exist. In this dynamic, complex, and global environment, supply chain leaders are beginning to heed this lesson. Survival requires it.

How does your company measure up?

## The Participants

### Tony Ross

Mr. Ross is a Senior Manager with Cap Gemini Ernst & Young, where he manages large-scale, global supply chain projects in the pharmaceutical and retail industries and acts as the Logistics & Fulfillment Leader for the Americas across all sectors. He has over 28 years of experience in corporate supply chain management and consulting, and has held management positions in distribution, engineering, sales, and consulting. Mr. Ross has been quoted in leading supply chain periodicals such as Supply Chain Management Review, Inbound Logistics, Transportation & Distribution, and Logistics Management, and has presented at numerous conferences, including the Council of Logistics Management, WERC, and Georgia Tech Logistics Institute.

### Dr. Karl B. Manrodt

Dr. Manrodt is an Assistant Professor in the Department of Information Systems & Logistics at Georgia Southern University. His research interests revolve around the role of information in logistics systems, performance measurement, the role of logistics in health care, and customer value determination in a logistics setting. His publications have appeared in such journals as the Supply Chain Management Review, Transportation Journal, the International Journal of Physical Distribution and Materials Management, Interfaces, and the Journal of Business Logistics. His research on top shippers has appeared in Logistics Management for the last eleven years. Dr. Manrodt has recently coauthored a second book, *Keeping Score: Measuring the Business Value of Logistics in the Supply Chain for the Council of Logistics Management*.

### Dr. Mary Collins Holcomb

Dr. Holcomb is Associate Professor of Logistics and Transportation in the College of Business at The University of Tennessee. Her research interests focus on two related areas of strategic logistics management: process design for quality and customer service measurement. Dr. Holcomb's professional career includes eighteen years at the Oak Ridge National Laboratory in transportation research for the U.S. Department of Energy, U.S. Department of Transportation, and the U.S. Department of Defense.

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## **About Cap Gemini Ernst & Young, Georgia Southern University, and The University of Tennessee**

### **Cap Gemini Ernst & Young**

The Cap Gemini Ernst & Young Group is one of the world's largest providers of Consulting, Technology, and Outsourcing services. The company helps businesses implement growth strategies and leverage technology. As of early 2003, the organization employed approximately 53,000 people worldwide and reported 2002 global revenues of 7.047 billion euros. More information about individual service lines, offices, and research is available on our global website at [www.cgey.com](http://www.cgey.com).

### ***Supply Chain Management Services***

With specialists based in the Americas, Europe, and Asia Pacific, Cap Gemini Ernst & Young U.S. LLC (CGE&Y) is a recognized leader in supply chain consulting. In addition, we provide blurred solutions across Customer Relationship Management (CRM), Information Technology (IT), and Strategy Transformation to deliver true value across the enterprise. This significantly differentiates us from our competitors. CGE&Y helps clients build adaptive supply chains by enabling them to get closer to customers, collaborate more effectively with suppliers, leverage digital marketplaces, and optimize the use of information. Our suite of supply chain management services ranges from supply chain strategy and architecture development to business and technology integration to full-service process and technology outsourcing. In addition, we have developed new offerings to address the current market's customer-centric business challenges and to help companies build dynamic, adaptive supply chains. For further information, please visit [www.cgey.com](http://www.cgey.com)

### **Georgia Southern University**

Georgia Southern University is a growing nationally recognized logistics program located in Statesboro, Georgia. The university is a major teaching and research institution. The faculty publishes on a wide range of topics and is invited to speak at events across the globe.

### **The University of Tennessee**

The internationally recognized logistics program at The University of Tennessee, Knoxville, is one of the most comprehensive and contemporary programs in the nation. This university is a major research entity. The faculty publishes widely on topics of current industry concern and explores future trends through research and studies. The university has been ranked as the top school in the country for educating logistics/distribution managers, and its Logistics and Transportation Program has been ranked as the best program of its kind in the United States.

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