

Energize your supply chain network

New competitive advantage from existing investments



An IBM Institute for Business Value executive brief

The IBM Institute for Business Value develops fact-based strategic insights for senior business executives around critical industry-specific and cross-industry issues. This executive brief is based on an in-depth study created by the IBM Institute for Business Value. This research is a part of an ongoing commitment by IBM Business Consulting Services to provide analysis and viewpoints that help companies realize business value. You may contact the authors or send an e-mail to iibv@us.ibm.com for more information.

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Introduction

IBM Business Consulting Services conducted the 2003 *IndustryWeek* Value Chain Survey in conjunction with *IndustryWeek* magazine. This survey identifies current practices, captures significant trends and establishes operational performance benchmarks in five key areas of supply chain management (SCM): new product development, supply chain planning, customer order management, procurement and logistics.

IBM and *IndustryWeek* distributed a total of 25,000 surveys, five survey questionnaires each to 5000 *IndustryWeek* subscribers throughout the United States. Surveys included 18 to 24 questions about overall business objectives, enabling technologies and current practices, as well as core performance data, such as level of resources (full time equivalent), cycle times or efficiency rates. There were a total of 1,461 respondents, the majority from the consumer products and industrial products industries, with limited representation from distribution and transportation, high technology, energy, services, retail and wholesale industries.

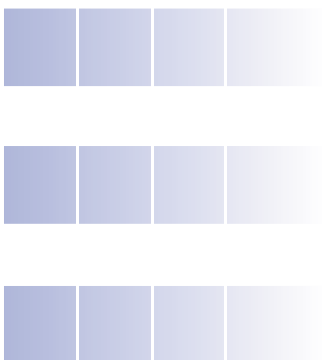
This major research project was performed to better understand where SCM is today and how it is evolving. This report places the research findings into an overall context and provides perspective on the continuing evolution of supply chain and value chain management principles.

Executive summary

Supply chains are facing broader and deeper challenges than ever before. Traditional supply chain business models are giving way to the emergence of new horizontally integrated, high-performance, on demand *value chain networks*.

These new supply chain strategies open up competitive advantage opportunities to those able to execute with partners at a high level of performance. Companies that will not energize their supply chain through implementing new and innovative business models, may face significant obstacles to delivering expected profitability on a long-term basis.

Supply chain executives and managers identified three areas of focus: *profitability, performance and partnership*.



Profitability has become the new top objective of SCM. Pure cost reduction and pure revenue increase are secondary objectives if they do not lead to increased profitability. The quest for profitability is demonstrated through supply chain initiatives that can deliver a rapid return on investment.

There is renewed focus on *performance* in the supply chain. Companies are challenged to continuously improve their performance indicators (reduced time-to-market, reduced lead times, on-time delivery) and increasing their compliance (adherence to plan, perfect order). They are broadening the reach of their key performance indicators to measure the extended value chain network that includes customers, suppliers, service providers and other partners.

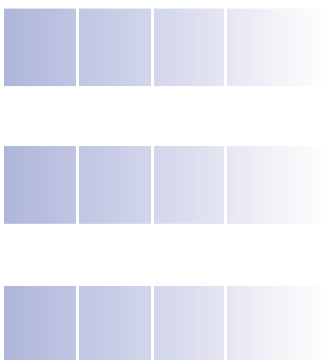
Collaboration is becoming the next frontier of improvement to reach a new level of operational excellence. True *partnerships* are required to develop new product and services (faster, better and more complex), produce hybrid and cost-effective products and services, and deliver them to multiple channels.

During the past years, companies have focused on supply chain improvements with initiatives centered on operational excellence (rapid return on investment) and cost cutting. New SCM business models are required to meet the expected level of profitability, performance and partnership. Following best-in-class supply chain leaders, companies are now investigating how they can leverage the supply chain to outperform their competitors and progress in supply chain maturity.

Key survey insights by functional area

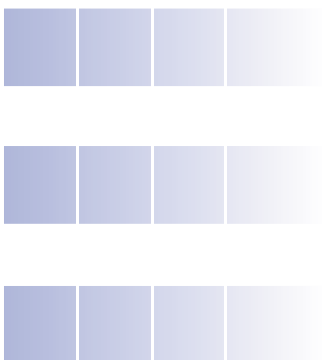
The survey revealed that supply chain executives are concentrating on operational excellence while meeting profitability and other business performance objectives. In each of the major process areas, responses indicate:

- *New product development (NPD) – Cost and time are paramount, driving the NPD Strategy.* Product innovation management is essential to optimize the return on investment for NPD. Companies are developing strategies for cost reduction, such as increasing the level of commonality of components, platforms and assets for reuse and for revenue growth, such as improving speed-to-market. Also, many are implementing integrated, collaborative processes with partners to manage product change and new, derivative product launches.



- *Supply chain planning – It's all about sensing and responding.* Advanced planning systems and leading supply chain practices have been implemented or piloted to increase the responsiveness to customer demand. The complexity of products and markets results in companies extending their strategy to their end-to-end extended supply network. Leaders are increasing their capability to sense market changes while developing capabilities to respond faster through collaboration with partners.
- *Customer order management – Realtime processing leads to superior customer experience.* Order management processing is paramount to attainment of superior customer service and perfect order standards. On-time delivery and inability to fulfill sales orders due to out-of-stock, continue to be challenges in meeting customer responsiveness and satisfaction targets. Companies are slow to embrace leading customer relationship management (CRM) practices of self-service, automated cross-selling and up-selling and purchasing customer focus groups.
- *Procurement – Globalizing to go to the next level of advantage.* The trend toward global sourcing is on the rise, with growth rates of 6-8 percent from three years ago. Attainment of perfect order delivery to original request date is growing rapidly, but supplier lead times have remained somewhat static. Greater than 30 percent of the respondents indicated average supplier lead times of 20-plus days. Information technology focus is on integration of internal procurement and supplier management functions, as well as external integration with trading partners.
- *Logistics – Focusing on differentiating competencies through outsourcing.* Specifically in logistics transportation, warehousing/distribution and freight bill audit and payment, outsourcing was a theme for 70 percent of the respondents. Companies are implementing flow-through strategies (cross-docking, merge-in-transit) to provide specialized logistics services by customer segment. Over 50 percent of the respondents are achieving order fill rates of 97 percent or greater, but on-time delivery rates are low. New technologies, such as radio frequency identification (RFID) are creating significant change in logistics performance and inventory control.

The focus for the majority however, as evidenced by this year's results, has remained operational excellence attainment (*performance through partnership*) and managing the supply chain to deliver increased *profitability*. We have labeled this new focus: the three π model.



New competitive advantage from existing investments: Profitability, performance, partnership

The continuous global and local economic fluctuations have increased the stress on manufacturing businesses. SCM processes are challenged to provide operationally excellent, lean, cost-effective and rapid delivery of products and services globally. Product lifecycles are becoming ever shorter as customer demand is becoming increasingly volatile. Markets, supply and operations are becoming progressively more global.

Results of the 2003 *IndustryWeek* Value Chain Survey show that key trends are emerging and evolving:

1. Supply chains increasingly include outsourcing and partnerships, presenting ever greater challenges in managing demand and supply, and controlling logistics spend.
2. Realtime and accurate access to relevant customer and supply chain operational data, such as inventory, orders and shipments is essential to meet customer service level requirements.
3. Pure product innovation is lessening in importance as focus moves toward the product time-to-market and lifecycle management to support higher sales and profitability objectives. There is also increased importance being placed on product "afterlife" management.
4. Optimizing supply chain performance, productivity and responsiveness is increasingly important to achieve cost- and service-level objectives.
5. Technology components with proven and rapid return-on-investment are favored to support critical supply chain processes, such as leaner manufacturing processes, demand-driven supply chains and customer responsiveness. New technologies, such as RFID are changing the game in SCM.

Supply chain executives and managers are now concerned about the three π focus areas for SCM success: profitability, performance and partnership (see Figure 1).

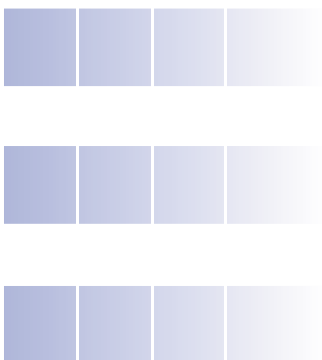
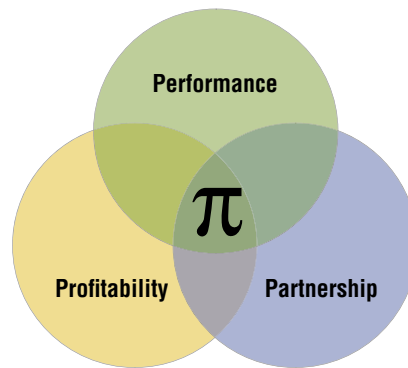


Figure 1. Supply chain management success criteria: The three π model.

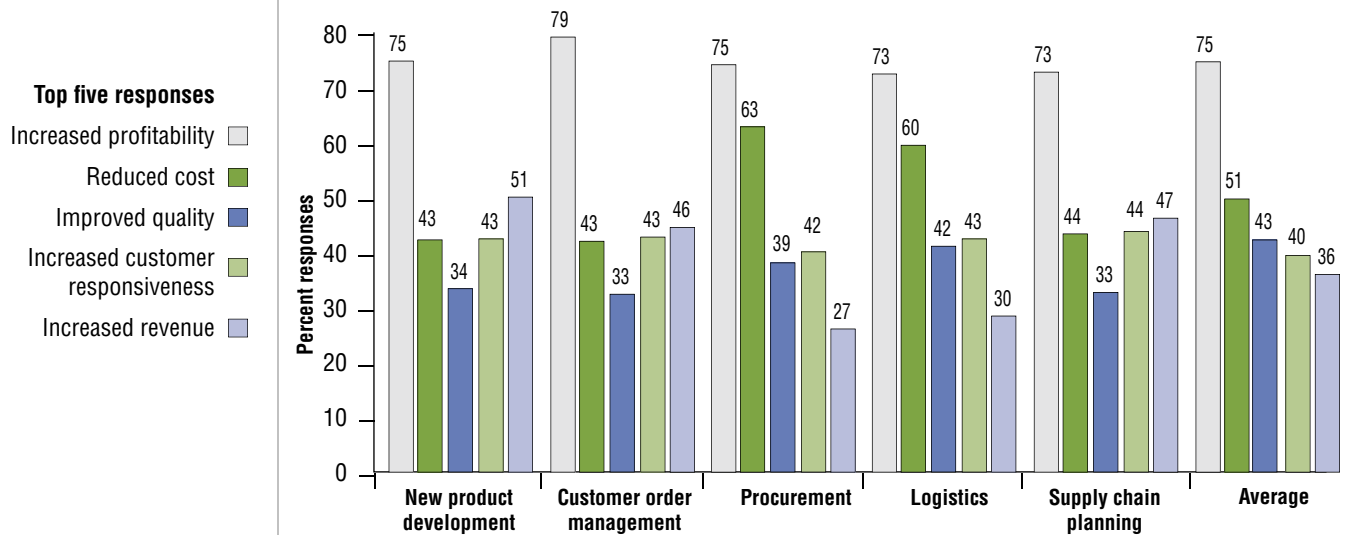


Source: IBM Business Consulting Services.

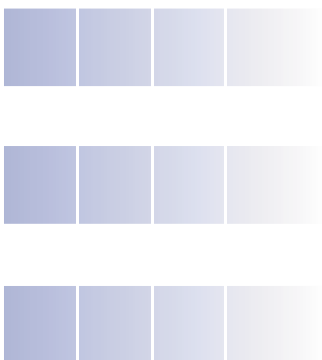
Profitability

Overwhelmingly, survey participants representing cross-industry sectors agreed that their primary objective is to increase profitability (with supporting objectives of both cost reduction and increased revenue). With greater uncertainty and volatility of demand, increased customer responsiveness is also important for respondents.

Figure 2. Top objectives by supply chain process area.



Source: IndustryWeek Value Chain survey conducted by IBM.



Traditionally, SCM focus for most companies has been fixed primarily on cost reduction. Current margin pressures are severe, and supply chain performance is centered more and more on the overall business impact and shareholder value. As a result, companies need to reduce the fixed costs and capital requirements of supply chain operations and move to a more "variable" cost structure that can be controlled and managed in direct relationship to customer demand.

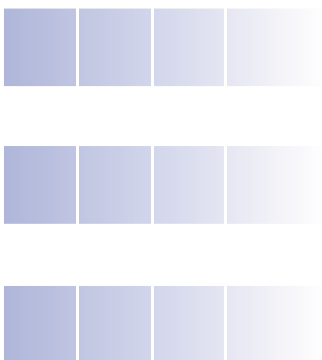
Companies are centering their efforts on their customers to deliver higher profits. This is true for all supply chain activities, including the development of new products.

Performance

There is renewed attention on optimizing supply chain performance effectiveness to support profitability objectives. Performance objectives – when viewed from an end-to-end supply chain perspective – require realtime integrated visibility of key functions and processes with a multitude of value chain network partners. By creating an environment of viable information, supply chain activities are proactively managed through:

1. Realtime access to transactional information to quickly identify root causes of issues
2. Shared information about plans, issues and actions that enables rapid decision-making in collaboration with partners and service providers
3. Exception management through intercompany alert messaging, proactively warning a decision-maker if an action must be taken or a trend is emerging
4. Standardized and aligned measurements to monitor and assess daily performance
5. Scorecards and trend analysis of historical data to identify performance trends and recurring issues.

The survey shows that supply chain performance is being monitored for: "perfect order" attainment (on-time, right product, right price, damage free); cycle time reduction in new product time-to-market; and customer product delivery. Productivity initiatives and performance score-carding continue to target improvements in customer fill rates, retention, stock-outs, supplier order fill rates and lead times and inventory turns.



Partnership

More and more, successful companies are organizing their supply chains horizontally (as opposed to the traditional functional silos) and are orchestrating end-to-end, extended supply chains (value chain networks), integrating inside and outside of the four walls to the extended enterprise.

As businesses focus on their core capabilities, non-core supply chain processes are increasingly being outsourced. The use of outsourcing partners for cost and capability reasons has increased dramatically, expanding the number of players involved in delivering value to a customer. As the number of players increases, so do the complexities. To optimize efficiency and enable effective and responsive customer value delivery across the extended enterprise, collaboration, process and information integration and visibility with strategic supply chain partners is imperative.

According to survey results, many companies are continuing to focus efforts on partner collaboration and the need to coordinate/integrate supply chain event management to reduce latency and end-to-end supply chain cycle time. Supply chain managers are concerned about latency in the extended supply chain, which is the time from the occurrence of an unexpected event until resolution. Many companies are decreasing latency, as they focus on the synchronization of demand/supply and execution activities.

Innovative supply chain management performance is characterized by on demand maturity

Survey responses illustrate the ongoing evolution of SCM, as companies progress from a static, nonintegrated enterprise model through incremental steps – including functional optimization, horizontal process integration and automation, external collaboration and optimization – toward the vision of an on demand supply chain model that is integrated end-to-end across the business and with key partners, suppliers and customers.

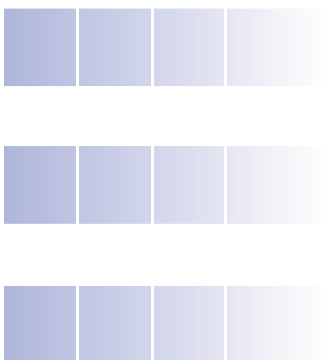
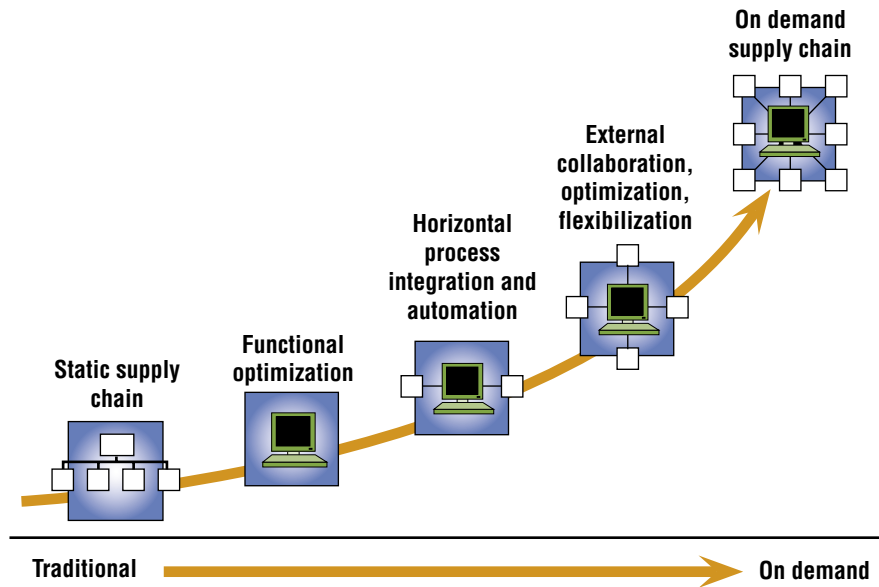


Figure 3. Supply chain maturity model: The path toward on demand.

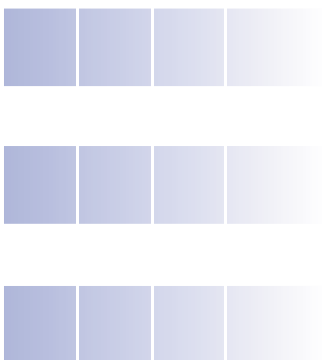


Source: IBM Institute for Business Value.

Survey results indicate that many companies are now advancing from functional excellence to horizontal process integration and automation by concentrating on improving a single supply chain process, such as warehouse management and integrating its supporting processes and information cross-functionally throughout the enterprise. There also appears to be some incremental progress in external collaboration with supply chain partners and constituents.

Attributes of an on demand supply chain include:

- *Focused* – To identify core supply chain capabilities and strategic competencies to be managed in-house while selecting and orchestrating a network of strategic supply chain partners to manage the non-core and non-strategic tasks
- *Responsive* – To sense and respond with flexibility and speed to any customer demand, market opportunity, or external threat, no matter how frequent or sudden
- *Variable* – To build variable cost structures designed to execute at a high level of productivity, cost control, capital efficiency and financial predictability
- *Resilient* – To cope with threats, disruptions and changes while striving to control the impact on the efficiency of the overall supply chain.



Survey results highlight need for energized supply chain to help increase profitability, performance and partnership

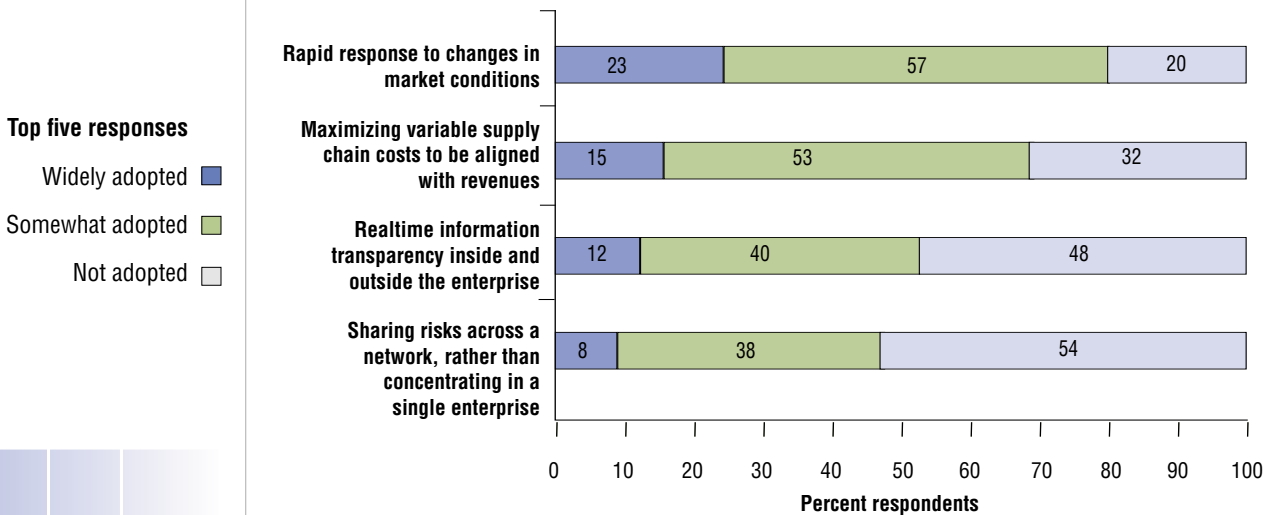
The survey provides insight into the adoption of leading practices by capturing significant trends and operational performance benchmarks. Across the end-to-end supply chain, survey respondents are adopting SCM advanced practices, sometimes with caution, on the road to supply chain maturity.

The turbulent market conditions and competitive environment of the early twenty-first century have raised the stakes for SCM. Over 70 percent of the survey respondents have adopted rapid response practices to adjust to changes in market conditions.

Companies need to help ensure that costs are variable and can move up or down, based upon revenues. During revenue growth times, costs will go up, as expected. But if revenue declines, then costs will also go down if costs are aligned with revenue. Over 68 percent of the survey respondents indicated that they are optimizing variable supply chain costs in alignment with revenues.

Advanced supply chain management principles include sharing risk outside the four walls of the company – with suppliers, partners and others, rather than concentrating inside. Forty-six percent of the respondents report some risk-sharing across a network, rather than concentrating in a single enterprise, though only eight percent share risk "widely", while over 54 percent have not adopted this practice.

Figure 4. To what extent has each of the following supply chain practices been adopted at your site?



Source: IndustryWeek Value Chain survey conducted by IBM.

Top five responses

- Widely adopted ■
- Somewhat adopted ■
- Not adopted ■

Vision: Superior innovation of products and services, with rapid time-to-market, collaborative synergies and effective cost management are critical to attainment of the new value chain network performance model.

To respond to changes and conditions faster than traditional supply chains, advanced (mature) SCM practices are supported by applications and an open architecture that can enable rapid or realtime, accurate information visibility inside the company, as well as outside its four walls. Fifty-two percent of the survey respondents have adopted practices to enable realtime information transparency inside and outside the enterprise, though just 12 percent have widely adopted this fundamental capability. Forty-eight percent have not, indicating yet another opportunity for improvement.

We have described the overall findings of the survey, explained how the three π focus areas can support SCM strategies and improvement agendas, and reported on the new, required attributes of supply chains. We will now explore the results in detail, give our vision of the future and provide some recommendations on actions for organizations to consider as part of developing advanced or energized end-to-end SCM strategies.

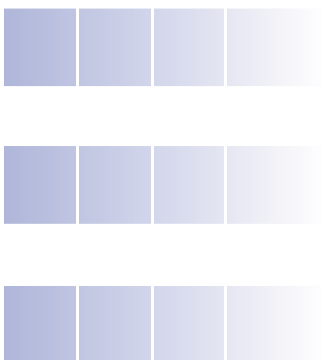
Survey results from the five key areas of SCM

New product development is about profitability: Cost and time are paramount

The accelerating pace of innovation and the growing ability of competitors to replicate new product features (such as service) require NPD processes and solutions to reach a new level of performance. Companies failing to reach that level of performance will obtain fewer market successes and report reduced profits due to shortening product market life. Even if time-to-market has to be further reduced, development cycles have already been compressed through the use of new approaches for NPD. Companies will now develop strategies to master the cost of innovation (headcounts, infrastructure, technology and support) but also manage the implications of product lifecycle management (PLM) throughout the entire end-to-end supply chain.

Leading *NPD* practices include:

1. Product innovation management (market planning, portfolio and pipeline management)
2. Collaborative product development lifecycle management (extended enterprise):
 - Design with customers through collaborative requirements gathering
 - Collaborative product design with suppliers
 - Logistics and "get-to-market" requirements included in product/service design
3. Component, platform and asset commonality (increased component reuse)
4. Design outsourcing for non-core technologies

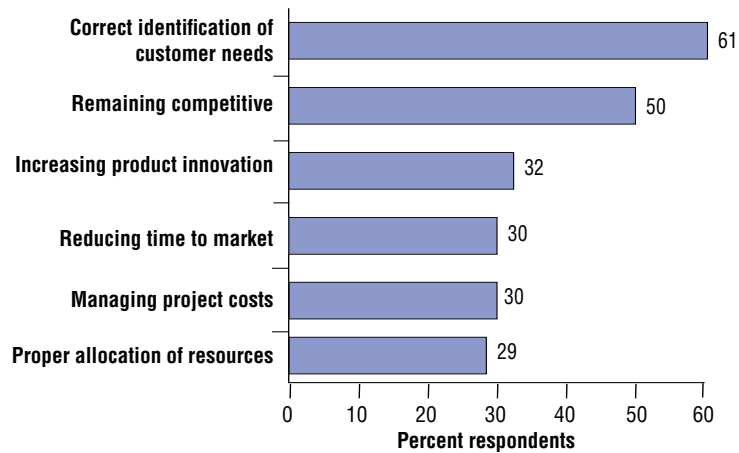


5. Multi-technology design process integration (for example, mechanical, electronics, software)
6. Optimizing investments in software technologies through virtual product design simulation and optimizing PLM software functions to address specific industry design issues. Use of grid-enabled technologies to validate product design against the virtual model.

Survey findings

Increased profitability is the major objective shared by most of the respondents (75 percent). New product development emphasis is on better service to customers, leaping the competition, and delivering products and service to market profitably.

Figure 5. Management challenges for new product development efforts.



Source: IndustryWeek Value Chain survey conducted by IBM.

Dynamically changing customer requirements and increased levels of global (multichannel) competition create greater challenges for NPD efforts. Balancing dynamically changing customer requirements while managing costs and resources, is key to bringing new products and services to market in a timely fashion to meet profitability objectives.

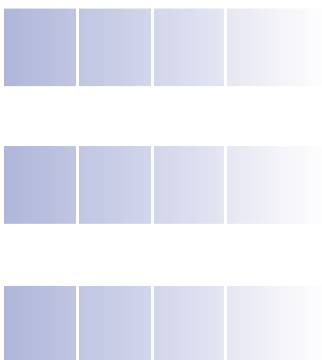
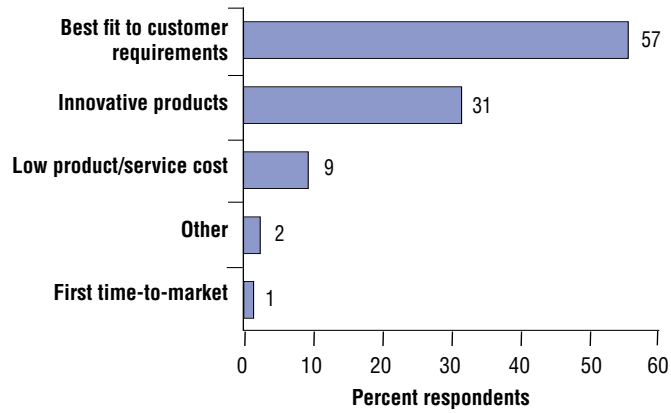


Figure 6. Primary strategy for NPD efforts.

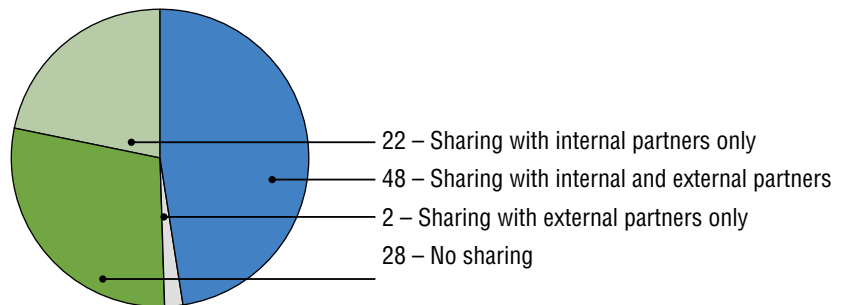


Source: IndustryWeek Value Chain survey conducted by IBM.

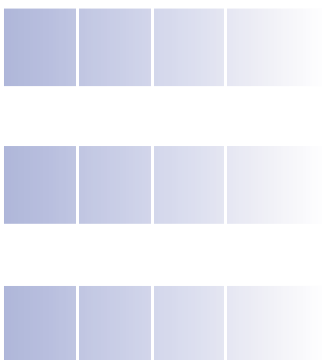
An innovation strategy is essential to gain a sustainable competitive advantage and leapfrog the competition. Fifty-seven percent of the respondents have developed an NPD approach focused on customer requirements. The continuous innovation strategy is critical at a time when customer requirements are more unpredictable due to globalization. Despite the fact that innovation is not a top three objective, 31 percent of the companies are focusing on developing innovative products in order to increase their profitability. This is particularly true for those that identify innovation as one of the top three objectives (49 percent).

Combining product/service innovation with a focus on changing customer requirements is the balancing strategy of new product development success. Partnerships and internal collaboration with manufacturing require companies to be able to share technical documents (drawings, specifications, and the like)

Figure 7. To what degree are product drawings and specifications shared electronically with internal and external partners?



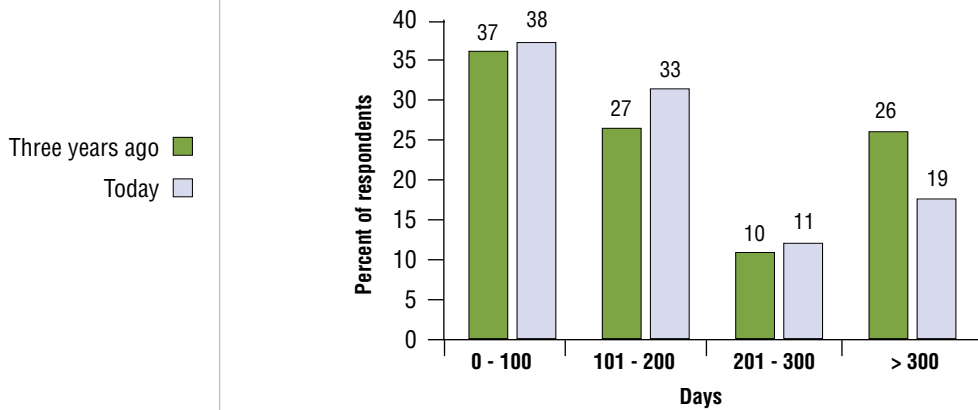
Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.



Fifty percent of companies share NPD documents with external partners and only 29 percent do not share them at all. Large companies tend to be more open to sharing technical documents with external partners.

Companies not only have to harness the development challenges, but also increase their performance for NPD by being able to reduce the time-to-market and keep their development projects on track. There has been a steady improvement in time-to-market, driven by the implementation of stronger development processes and systems to support it.

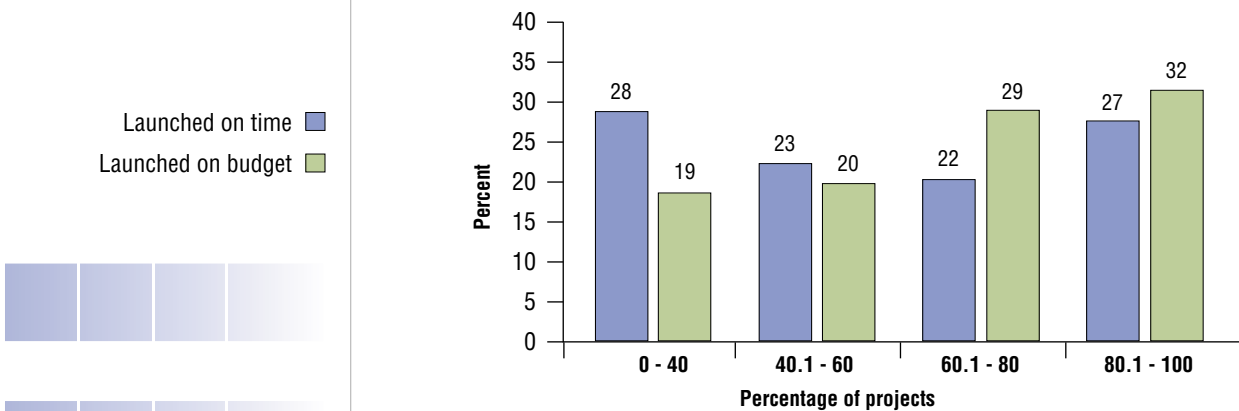
Figure 8. Average time-to-market - Today versus three years ago.



Source: IndustryWeek Value Chain survey conducted by IBM.

Companies have reduced their time-to-market in the last three years. The average time-to-market has been reduced from 216 to 185 days (-15 percent) and the median time-to-market has dropped from 180 to 150 days (-17 percent). This indicates that companies are becoming more responsive to the market requirements.

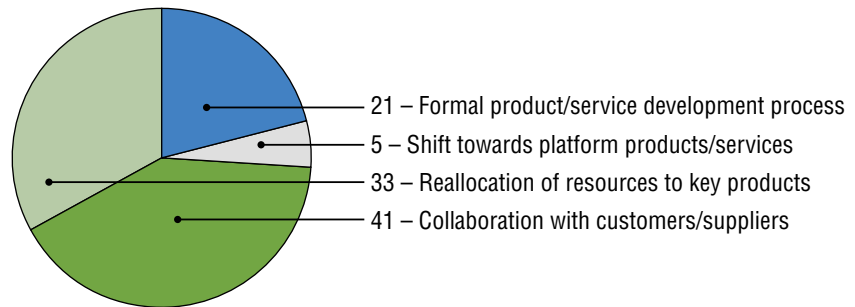
Figure 9. Products launched on time and budget.



Source: IndustryWeek Value Chain survey conducted by IBM.

Nevertheless, further analysis shows that only 27 percent of the respondents launch at least 80 percent of their projects on time, while 32 percent reach 80 percent or greater on budget attainment. This shows that despite the emphasis on time-to-market reduction initiatives, most have continued to miss their time-to-market and cost management objectives. This had a dramatic impact on profitability since significant profits usually come after product launch (impact varies by industry). Companies that list innovation as one of their top three objectives tend to have poorer performance on time-to-market and are less compliant with both the planned costs and the schedule. Companies have already identified areas of improvement to reduce both time-to-market and development costs.

Figure 10. Actions with most significant impact on reducing your site's product development time-to-market?



*Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.*

Collaboration with customers and suppliers is considered the best way to better sense customer requirements and propagate the information up the value chain to suppliers. The reallocation of resources is a way to increase performance of the NPD processes by focusing on key products. Formal processes are required to both optimize the internal resources (headcounts and technical means) and build a framework to engage in NPD collaboration with business partners.

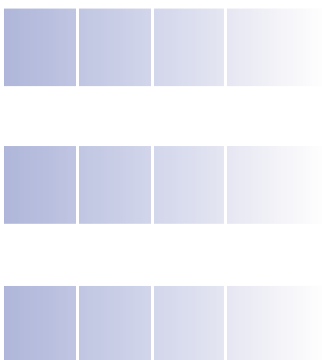
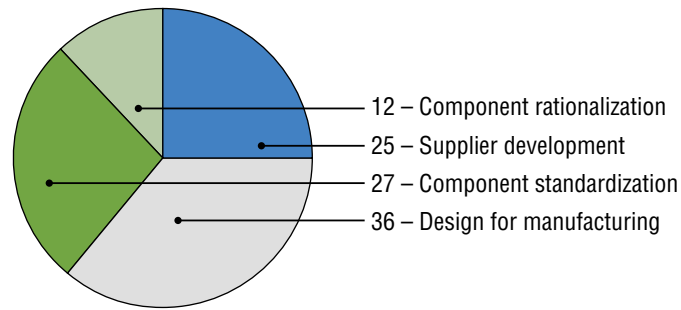


Figure 11. Actions with most significant impact on reducing your site's product development cost?



Note: Responses expressed in percent.

Source: IndustryWeek Value Chain survey conducted by IBM.

Recommended actions: To deliver superior innovation of products and services, with rapid time-to-market

1. Create superior innovation processes of products and services to meet customer needs in collaboration with supply chain design and executive partners
2. Develop and implement solutions and systems to enable superior PLM leading practices and processes
3. Create superior capabilities for managing the evolution of the product lifecycle from launch to service to phase out in a networked value chain environment.

When successfully implemented, these actions will facilitate achieving the objectives of:

- *Profitability* through standardized components
- *Performance* by designing products/services you can manufacture and deliver to market rapidly
- *Partnership* by leveraging your supplier's development capabilities.

Supply chain planning: It's all about sensing and responding

The increasing volatility of customer demand and the supply shocks generated by the environment require supply chains to become more responsive and more adaptive. Companies are also focusing their operations on core competencies, increasingly outsourcing more of their operations and collaborating with an increasing number of supply chain partners.

Vision: Demand-driven synchronization of supply chain planning and execution activities, in collaboration with suppliers and partners, is paramount to achieving the new profitability and performance objectives of the new, energized SCM model.

As supply chains become more complex and less linear, due to both external constraints and opportunities, supply networks planning and collaboration will become the new standard. The competition among companies is now shadowed by a competition among supply chains.

Leading *supply chain planning* practices include:

1. Specialized and differentiated supply chain strategies based upon customer segmentation, customized service levels and strategic planning (asset optimization, make or buy strategies)
2. Collaborative planning and forecasting with customers, including continuous replenishment programs for customers, shared management of inventory (visibility)
3. Price optimization based on profitability (plan to optimize profitability)
4. Collaborative planning and forecasting with suppliers
5. Multisite inventory optimization
6. Price optimization based on profitability (plan to optimize profitability).

Survey findings

Political and economic uncertainty has resulted in increased costs or decreased sales for more than half of the surveyed sites and has therefore impacted their profitability. Twenty-eight percent of the respondents also report that lead times have been negatively impacted, despite their supply chain efforts. Seventy-three percent are considering increased profitability as one of their top three objectives for today's business environment. Revenue increase, customer responsiveness and cost reduction are also among the top three objectives of most respondents (44 to 47 percent each).

These figures demonstrate that companies have developed a clear understanding of the fact that their sustainability will depend on their ability to be responsive, resilient and variable in order to drive superior financial performance. Large company sites (over US\$100 million revenue) put even more emphasis on customer responsiveness (50 percent) and value innovation (28 percent). This shows a renewed shift toward customer focus. Two out of three have implemented supply chain planning systems to increase their planning performance.

Applications for supply chain planning, especially for demand planning and inventory planning and replenishment are widely used – both vendor applications and custom-developed applications. Companies are progressively adopting planning tools to increase both productivity and profitability. System-based supply

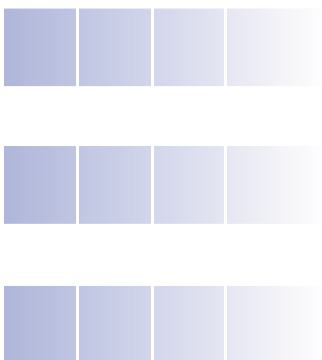
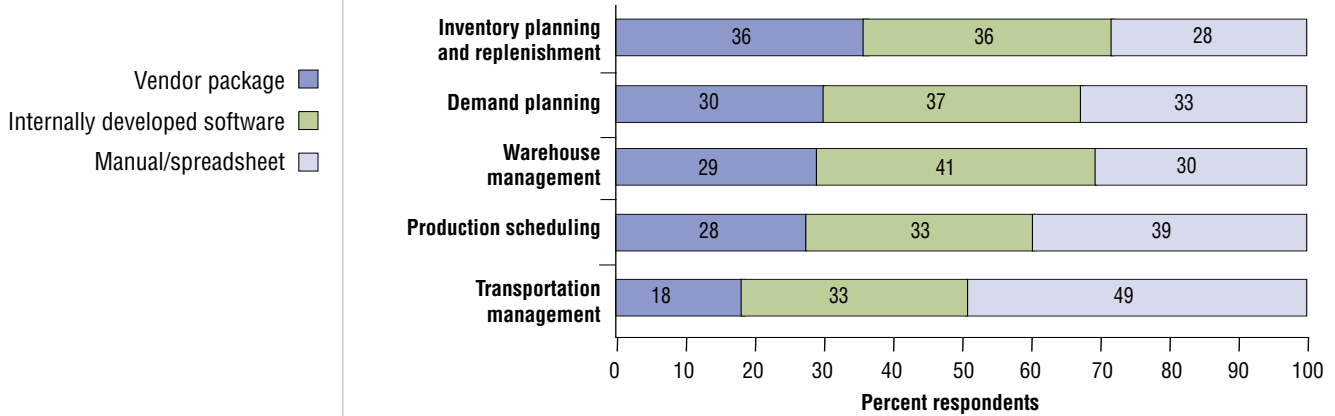


Figure 12. For each supply chain process listed below, indicate the system/technology used.

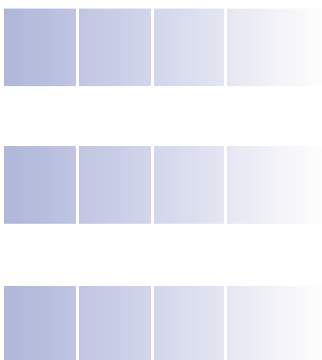


Source: IndustryWeek Value Chain survey conducted by IBM.

chain planning has now reached a level of maturity. Companies are progressively adopting planning tools to increase both productivity and profitability. A more detailed analysis shows that the level of adoption is heavily dependent upon the size of the company. The majority of large company sites (revenue > US\$100 million) have implemented systems (vendor packages - internally developed software) for inventory planning (65 percent - 24 percent), demand planning (57 percent - 29 percent) or warehouse management (61 percent - 36 percent).

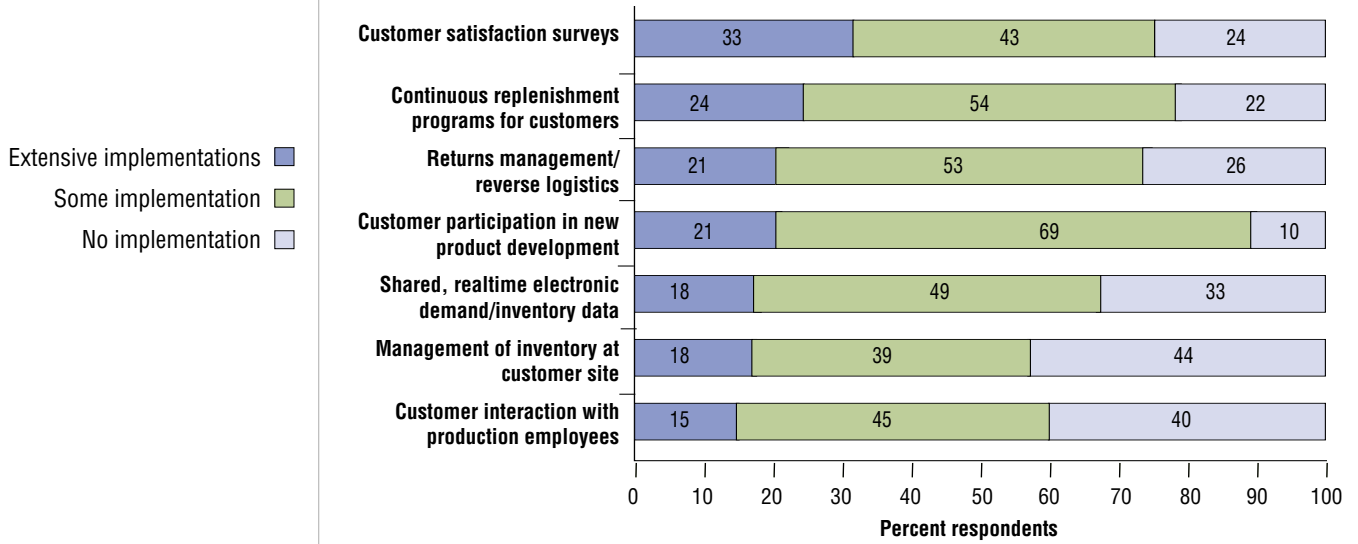
Over forty percent are using manual spreadsheet manipulation for both production scheduling and transportation management systems. There are a few assumptions that can be made to account for this lack of automation and manual management techniques. One might be that these companies have developed specific production scheduling rules and processes to support a specific production capability; another that outsourcing of transportation management to multiple partners has resulted in a lower level of automation.

A deeper analysis indicates that those that have implemented a vendor package for demand planning or production scheduling are showing the best performance in terms of the site's average production schedule attainment for a planning period (about 90 percent). Companies that have implemented an internally developed customized software solution for demand planning (or respectively, production scheduling) are showing strong performance for that same measurement (about 86 percent). Those that have not implemented a



system solution for demand planning or production scheduling are showing the worst performance in this area (less than 75 percent). Less than 20 percent of the respondents have extensively implemented advanced customer practices, but 50 percent have at least piloted these practices.

Figure 13. To what extent have the following customer practices been implemented at your site?



Source: IndustryWeek Value Chain survey conducted by IBM.

A first level analysis shows that companies are implementing more “soft” collaborative customer practices (such as customer satisfaction surveys) than “hard” collaborative customer practices (such as shared, realtime electronic demand and inventory data) or even “medium” collaborative customer practices (returns management). Hard collaborative customer practices require business partners to develop a high level of trust and transparency to develop a solid supply chain partnership.

A deeper analysis shows that large companies demonstrate a higher degree of adoption for both the extensive implementations of these practices (24 percent for continuous replenishment, 18 percent for sharing of demand and inventory data) and the pilot implementation (54 percent for continuous replenishment, 49 percent for sharing of demand and inventory data). This indicates a trend toward the adoption of these practices.

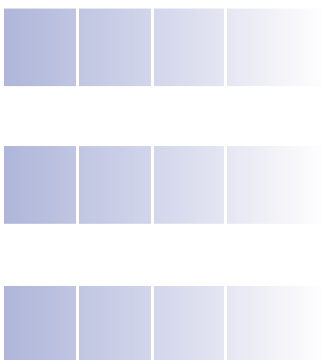
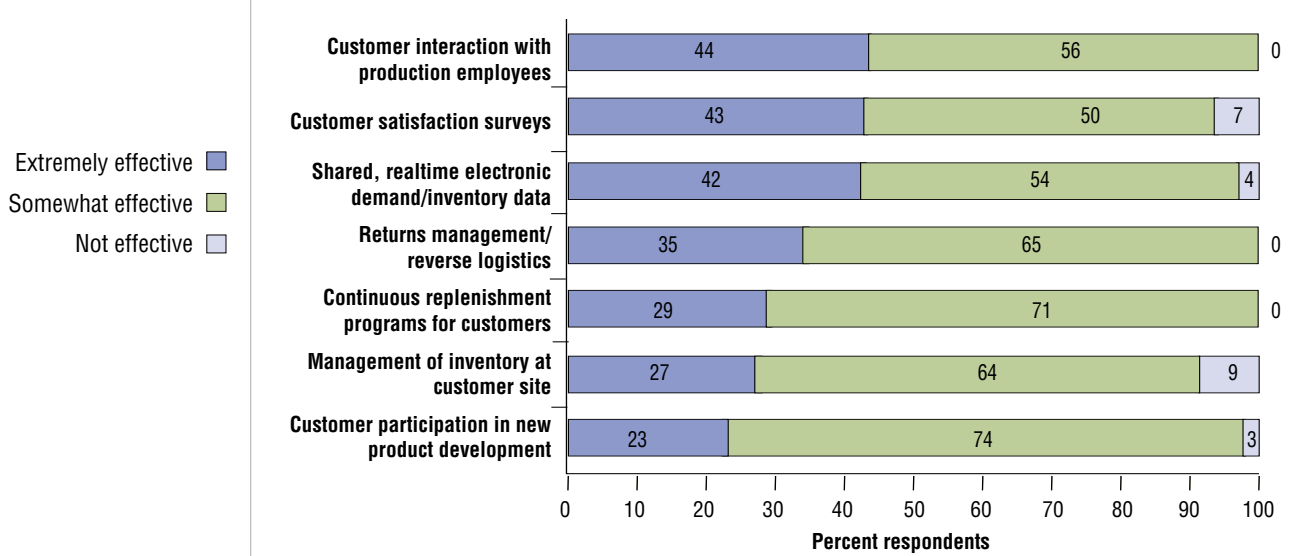


Figure 14. If implemented, how effective has each practice been in reaching your site's top three objectives?

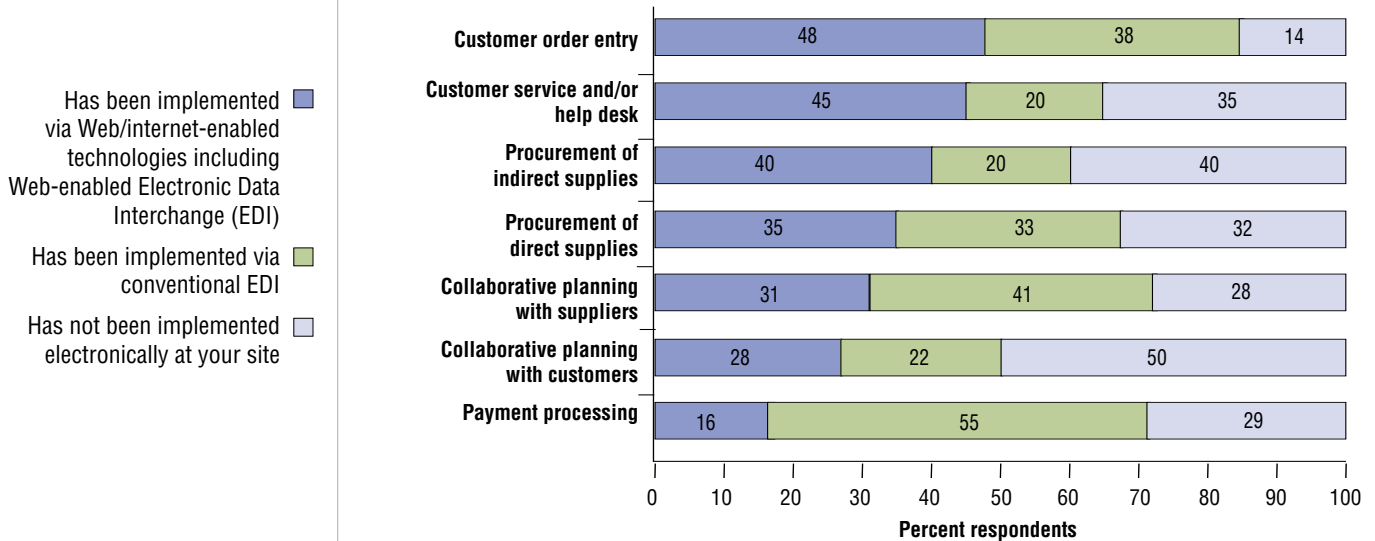


Source: IndustryWeek Value Chain survey conducted by IBM.

The overwhelming majority of respondents consider that the implementation of these leading practices proved to be somewhat or very effective in supporting their objectives (profitability). Furthermore, those that have extensively implemented these practices also recognize their level of effectiveness.

Again, with the exception of the management of inventory at customer sites, large companies consider that the implementation of these practices had a more positive impact on their objectives. Twenty-seven to 43 percent regard the impact as very effective and less than 9 percent stated that there was no impact.

Figure 15. Indicate which of the listed processes ...



Source: IndustryWeek Value Chain survey conducted by IBM.

Companies are increasingly adopting collaborative supply chain practices, such as collaborative planning with customers or suppliers. This trend is again reinforced for large companies: over 72 percent have implemented collaborative planning with suppliers. Consumer goods companies show a higher level of adoption of collaborative planning with customers, whereas industrial companies have focused on implementing collaborative planning with suppliers.

Recommended actions: Demand-driven synchronization to eliminate supply chain waste (time, inventory, effort, money)

1. Implement a robust capability to sense and respond to customer demands and other critical events as they occur
2. Create superior responsiveness and cost/profit performance models to decide on the best supply response to optimize opportunities or resolve problems with speed and flexibility
3. Develop and implement the ability to execute across the networked value chain in a synchronized way.

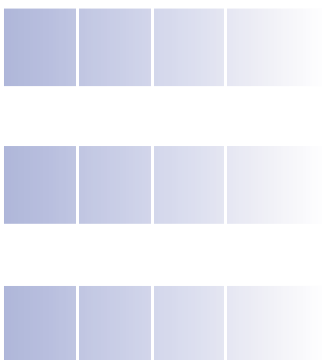
When successfully implemented, these actions will facilitate achieving the objectives of:

- *Profitability* through segmentation of customer product/service strategies with pricing optimization for profitability
- *Performance* by implementing realtime demand information to achieve "actual" forecasts
- *Partnership* through collaborative planning and forecasting with customers and suppliers.

Customer order management: Realtime processing leads to superior customer experience

Customers are becoming more demanding. Their expectations are evolving toward greater levels of service and response with higher degrees of product and service customization. Empowered customers expect on-time delivery, self-service with realtime order configuration and status information, with product/service bundles priced optimally. New customer and distribution channels are being created, enhanced by technological innovations and geographical expansion. Existing channels are under pressure and require constant change to retain market position. Customer satisfaction, continued sales growth and retention depend upon accurate and efficient order management and fulfillment.

Vision: Profitability achievement will require a passion for customer retention and growth. The new value chain network strategies are driven by customer-facing business models.



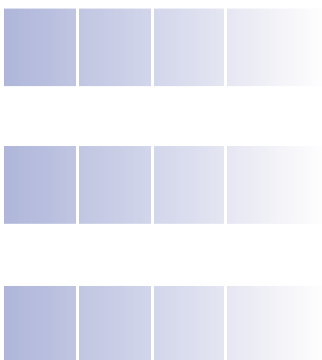
Leading *customer order management* practices include:

1. Supply chains that can respond "on demand" to shifting customer requirements and fluctuating demand signals
2. Realtime visibility and event monitoring of customer, product and supply information throughout the value chain
3. CRM tightly integrated with supply chain planning and execution processes
4. Single face to the customer across business units, with order configuration and dynamic pricing
5. Conditioning demand based upon available supply, including pricing and promotions
6. Sell and promote based upon current inventory make/supply position, with ability to provide up-sell and cross-sell opportunities
7. Value chain partners (suppliers, service providers) integrated to provide differentiated customer segment product/service bundling and superior customer service levels.

Survey findings

Increased profitability (increased revenue and reduced cost) is the top driver of customer order management performance. This centered attention on profitability is probably resulting from the economic market conditions of the past few years, but may be a short-term view. Customer responsiveness leads to customer retention and revenue growth. In the longer term view, concentration on customer-facing initiatives and improvements will be significant to profitability achievement. When asked "Which of the following does your site regard as its top three objectives?" over 78 percent responded with increased profitability, while 46 percent named increased revenue and 43 percent cited increased customer responsiveness. Reduced cost ranked 41 percent, followed by improved quality, increased unit volume, reduced cycle time and innovation. Interestingly, larger companies ranked reduced cycle time over increasing unit volume and innovation.

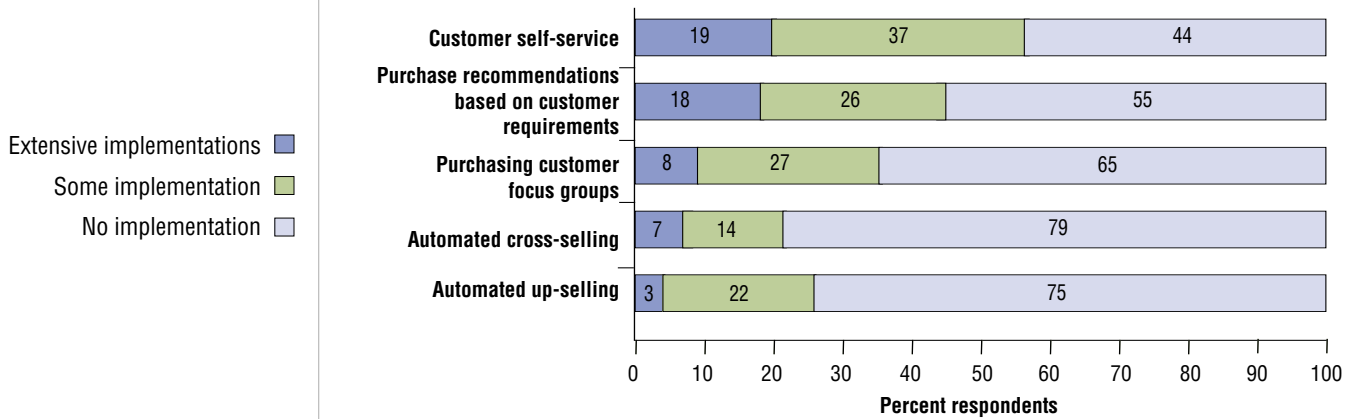
Comparing these objectives to key performance metrics, those with 95-100 percent customer retention rates named increased profitability and increased customer responsiveness as their primary objectives. Companies with sales order processing time of less than one hour cited increased profitability as their predominate objective (>80 percent); their second and third objectives are reduced cost and increased customer responsiveness, respectively.



With the major objective of increasing profitability, one should note that over 30 percent of the respondents indicated that they don't even classify customers – those that do primarily classify them on sales volume, versus profitability contribution. Leading, complex, high-volume product companies, such as the high-technology industry have shown that classifying their customer base and differentiating their product/service offerings increase profitability and revenue growth.

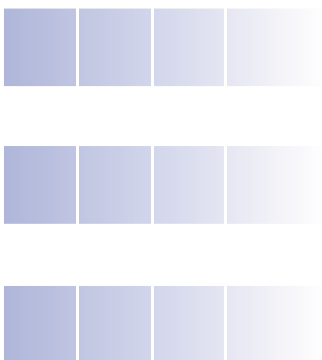
CRM practices influence customer demand and support increased revenue and profitability objectives, yet few companies have embraced these principles. As shown in Figure 16, only a handful of companies have extensive implementations of these leading practices and few have embraced these practices to any degree. Of the CRM practice implementations, however 60-80 percent found them somewhat effective, on average, and 23 percent found them extremely effective.

Figure 16. To what extent have the following CRM practices been implemented?



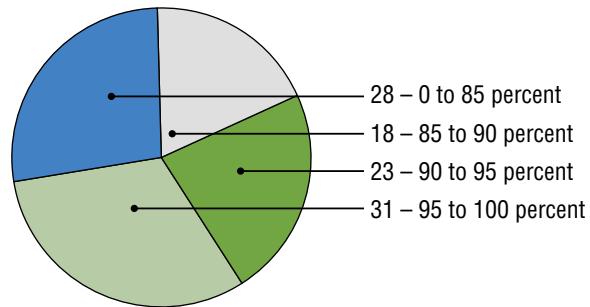
Source: IndustryWeek Value Chain survey conducted by IBM.

There is no correlation between customer self-service (that is, Internet or kiosk order entry and configuration) implementations and sales order processing time. Actually, those that have not implemented self-service experience one hour or less processing time (55 percent), as compared to those with customer self-service practices, that achieve eleven percent one hour or less process time (11 percent).



Companies that have implemented purchase recommendations based on customer requirements are experiencing higher customer retention rates (80-90 percent) than those that have not. With the price of getting a new customer estimated at about ten times that of maintaining a current customer, knowing how to deliver customer value consistently and repeatedly may be the best investment a company can make.

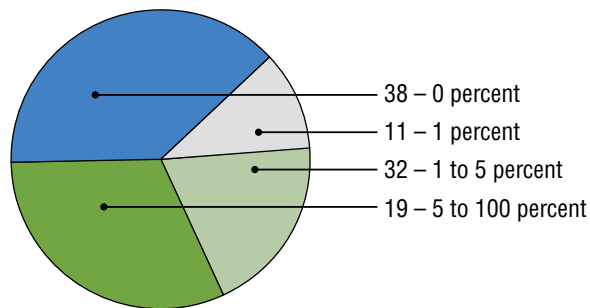
Figure 17. What percentage of your total annual sales orders is fulfilled on time to customer commit date?



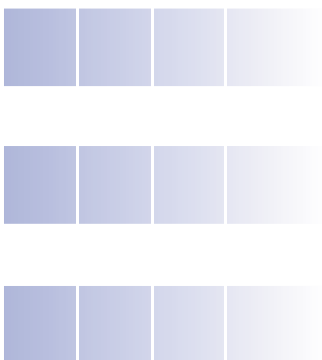
Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.

On time delivery (OTD) continues to be a key performance indicator for customer satisfaction. In today's marketplace 93-94 percent OTD is acceptable, but higher levels of performance are usually expected, although targets vary by industry. Fifty-four percent of the respondents are experiencing on-time delivery rates of 90 percent or greater, but only 31 percent are achieving 95 percent or greater OTD. This would indicate that there is a nearly 70 percent room for improvement.

Figure 18. What percentage of your total annual sales orders is not fulfilled due to stock-outs?



Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.

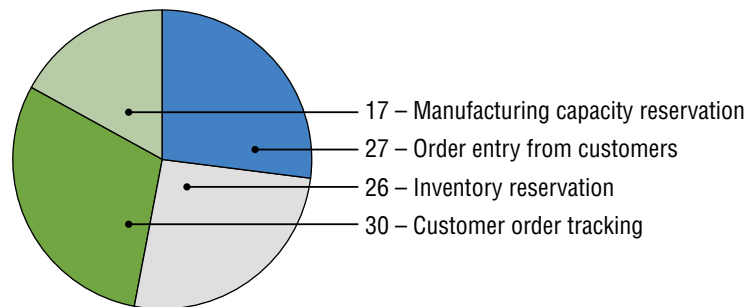


Inability to fulfill sales orders due to out-of-stock continues to be a challenge in meeting customer responsiveness and satisfaction targets. Greater than 50 percent of the respondents are experiencing inability to fulfill sales orders due to stock-outs. Companies with stock-outs less than 5 percent have higher customer retention rates (57 percent in the 95-100 percent retention range). Companies with stock-outs from 5-100 percent have lower customer retention rates. Ironically, the trend reverses – 58 percent are in the 0-80 percent customer retention range, whereby 42 percent are in the 95-100 percent retention range).

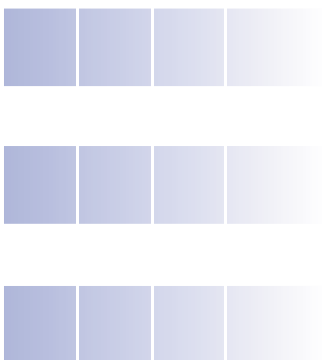
Sales order processing times are long. Forty-two percent of the cross-industry respondents require 3 to more than 20 hours, on average, to process sales orders. Supporting these long customer sales order cycle times are the means in which sales orders are received. Despite the e-commerce economy, many companies continue to receive customer sales orders through telephone (call centers) and facsimile. Survey results were surprising, in that 68 percent of the respondents receive sales orders via telephone (77 percent fax), while only 35 percent are utilizing the internet. Even direct system connect and electronic data interchange (EDI) utilization were surprisingly low. Projections for 2006 indicate some lessening of using manual means to process customer sales orders – with Internet usage increasing significantly to 75 percent.

Realtime customer sales order processing, for purposes of this survey, was defined as an average of one to three hours of processing time. Results indicated that realtime order management processing is primarily in customer order tracking, customer order entry and inventory reservation.

Figure 19. For your specific site, which of the following customer order management functions have realtime capabilities?



*Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.*



Customer retention rates of 95-100 percent correlate to rapid order management processing:

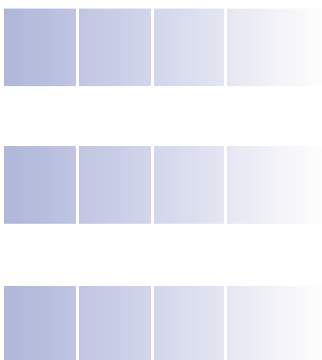
- Customer order tracking – 61 percent in the 95-100 range
- Order entry from customers – 58 percent in the 95-100 range
- Inventory reservation – 46 percent in the 95-100 range
- Manufacturing capacity reservation – 39 percent in the 95-100 range.

With the need to process customer orders faster, the trend toward smaller order size continues. Order line item size continues to diminish. Over 50 percent of the respondents indicate that the number of line items per sales order is averaging one to five line items.

Customer order management information technology is evolving, but slowly. Vendor packages are used primarily for order processing and customer service. However, a significant number of custom-developed applications are still being used (42 percent custom applications for order processing, 44 percent for customer service and 42 percent for returns management). IT integration is primarily with financial systems (billing/invoicing, accounts receivable, general ledger, customer credit) with some integration of supply chain functions (production and logistics). Interestingly, over 81 percent of the respondents have weak or no interfaces to sales force automation, yet these same supply chain managers report increasing profitability as their primary objective.

Recommended actions: New customer-facing business models are required to achieve profitable global growth

1. Implement new integrated, multichannel, business models for serving the customer and responding to relentless customer pressures
2. Create supply chain execution capabilities which provide fast, flexible, efficient and transparent response to changing customer demands
3. Develop and implement customer-driven value chain networks with demand and responsiveness driven in realtime with supply events supported by customer self-service capabilities and end-to-end supply chain visibility and decision-making.



Vision: New and energized procurement and supplier management practices include integration with finance, enterprise stakeholders and partners.

When successfully implemented, these actions will facilitate achieving the objectives of:

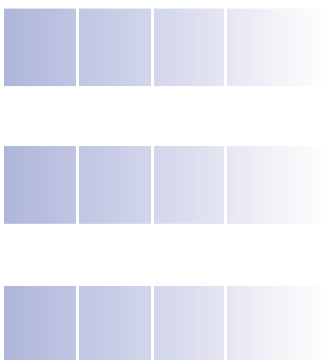
- *Profitability* through conditioning demand based upon available supply. Pushing products and services to customer segments through up-sell, cross-sell configured order recommendations
- *Performance* by implementing realtime visibility and event monitoring of demand information to achieve "actual" forecasts
- *Partnership* through collaborative planning and forecasting with customers and suppliers.

Procurement: Globalizing to go to the next level of advantage

The trend toward global sourcing and increasing use of partners for supply is set to continue, fueling the growth of networked value chains. Driving this trend is the imperative not only to seek unit cost advantage and secure best market capabilities, but also to share risks in collaboration with partners. As procurement and supplier management processes mature, they are becoming an extension along the supply chain where companies focus on continued streamlining of internal functions (internal collaboration initiatives), as well as external collaboration with suppliers and partners for joint design, planning, product management and execution. Leading companies are creating supply network transparency as they consolidate global purchases, develop global best sources, aggregate demand with external partners and leverage procurement to reshape the value chain.

Leading *procurement* practices include:

1. Establishing a strong procurement infrastructure to execute on strategic supply initiatives, using an empowered organization structure, fully integrated to the stakeholder and finance organization
2. Rationalization of global and regional supplier base. Supplier managed inventory and replenishment
3. Integration of sourcing and procurement (purchase, receive, inspect) through payment processes (automated reconciliation) enabled by realtime information
4. Full spend visibility and tracking
5. e-sourcing to manage request for information/quotation activities, requests for proposal and supplier awards
6. e-procurement order processing for nonstrategic goods and services
7. Cash flow forecasting and control
8. Daily performance monitoring and supplier scorecards.

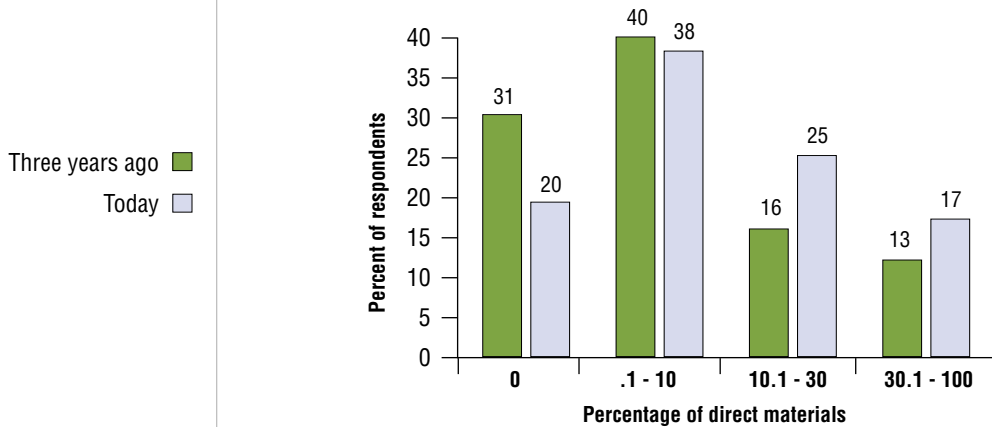


Survey findings

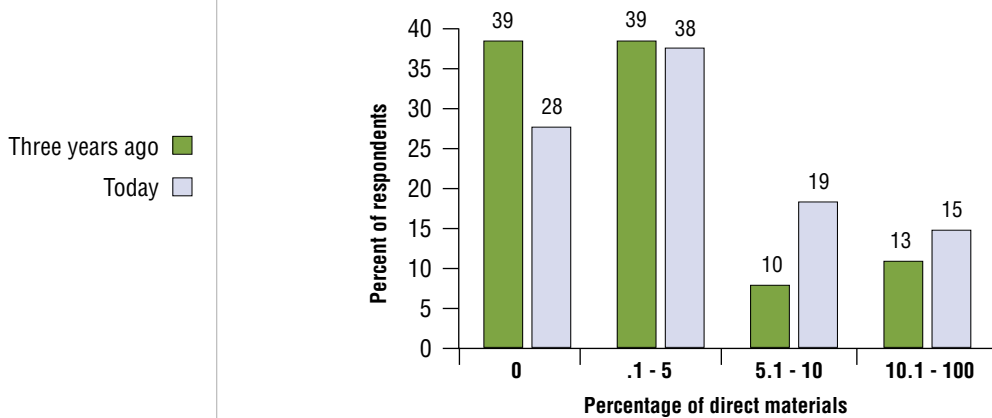
Increased profitability, reduced cost and improved customer responsive/service are the top drivers of procurement performance. When asked "Which of the following does your site regard as its top three objectives?" over 74 percent cited increased profitability, while 63 percent mentioned reduced procurement cost. Forty-two percent responded that increased customer responsiveness and service levels (to end customers) was their third major objective, following with improved quality (39 percent), increased revenue (27 percent), decreased cycle time (22 percent), increased volume (13 percent) and trailing with innovation (11 percent). High technology led the industry response with 100 percent stating increased profitability as their primary objective, over 76 percent in consumer products, 75 percent energy, 73 percent of industrial products respondents and 71 percent in distribution/transportation.

The trend toward global sourcing is on the rise. As indicated in Figure 20, sourcing outside of the U.S. is growing 6-8 percent, on average, from three years ago, while sourcing outside of North and South America is growing, on average, 5-12 percent.

Figure 20. What percentage of your site's direct materials is sourced outside of the United States?



What percentage of your site's direct materials is sourced outside of the United States, Mexico and Canada?

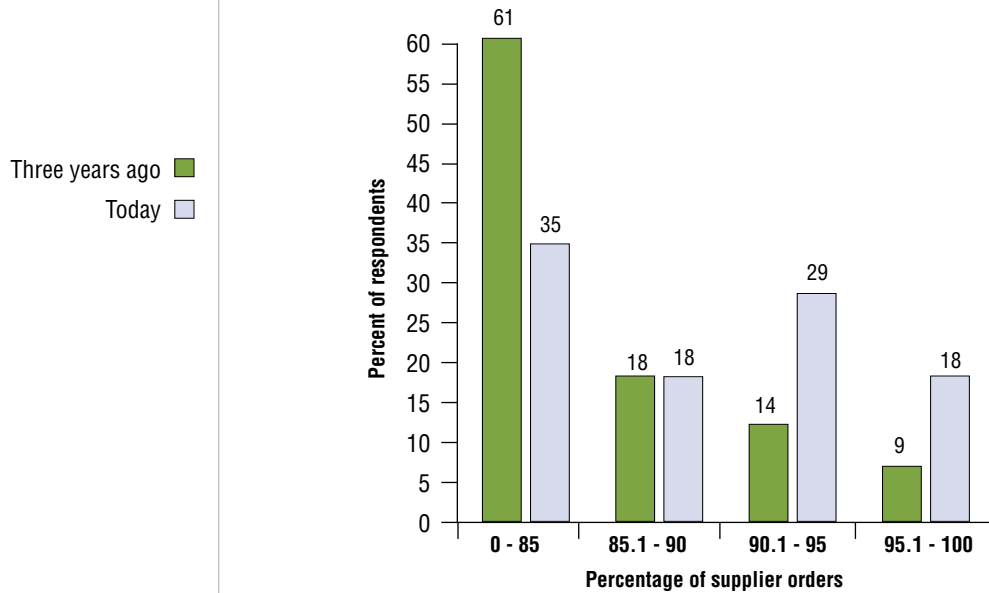


Source: IndustryWeek Value Chain survey conducted by IBM.

On average, respondents neglect to formally measure supplier relationship performance – 75 percent have either not implemented formal supplier scorecards or have implemented scorecards for some active suppliers. However, 52 percent of the large company respondents have implemented some level of scorecarding for active suppliers.

The proportion of large companies attaining perfect order delivery to original request date is growing rapidly. As seen in Figure 21, over 46 percent of the respondents are achieving OTD rates of 90 percent and above, up from 22 percent three years ago. Yet, the results concerning supplier lead times have remained largely the same, and are slightly longer for larger companies than the average. The average response indicated greater than 30 percent of companies had lead times of 20-plus days and at least 10 days for over 63 percent of the respondents. Forty-seven percent of these same respondents show no improvement over the last three years in supplier lead time performance.

Figure 21. What percentage of supplier orders is delivered by the original request date?



Source: IndustryWeek Value Chain survey conducted by IBM.

Annual raw material inventory turn rates varied slightly from the average for larger companies. While approximately 19 percent of all company respondents reported turns of 12-26 per year, only 9.9 percent achieved over 26 turns per year, on average. In comparison, 16.4 percent of larger companies reported turns over 26 per year.

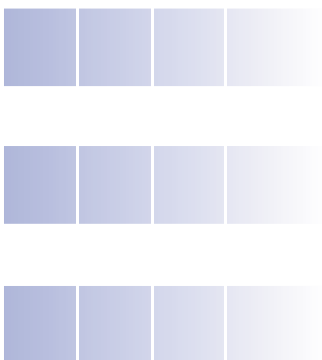
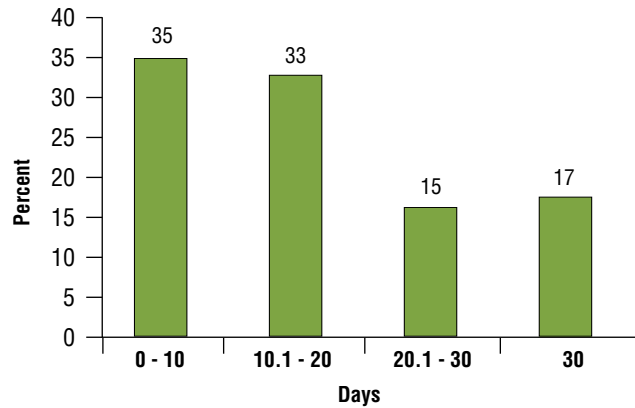
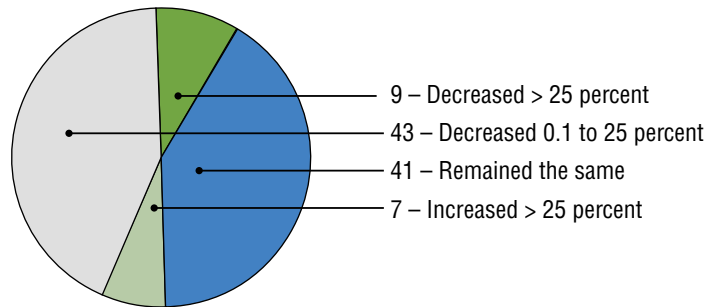


Figure 22. What is your site's average supplier lead-time on purchased materials?



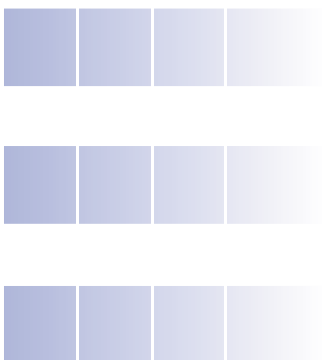
Over the past three years, how have your site's supplier lead times changed, and by what percent?



*Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.*

Information technology appears to be stable for procurement and supplier management processes. Across all respondents, most do not plan to invest in procurement systems, but demand for supply chain integration technology and electronic payment appears solid. Nearly 40 percent of the large company respondents are planning to invest in integration: both internal supply chain integration and external integration with trading partners.

Although most respondents have automated purchasing systems (44 percent vendor packages, 38 percent internally developed, 18 percent manual/spreadsheet), supplier selection and contract management functions are largely performed manually. Sixty percent of the respondents are using manual/spreadsheet means to evaluate supplier performance and manage contracts.



Vision: Logistics networks and processes must be variable and flexible to grow or diminish according to demand. They must be fast-to-action (responsive) to compete – supply chain to supply chain.



Recommended actions: Procurement excellence creates value for the end-to-end networked value chain

1. Develop and implement global sourcing and supply networks with end-to-end visibility and adaptability – networks of supply chain partners that sense and respond in a coordinated fashion to changes in their environment
2. Transform procurement and supplier management performance through a renewed focus on operations procurement excellence internally, and in managing the performance of partners and suppliers in the networked value chain
3. Implement collaborative supplier relationship management and execution processes including inventory replenishment, procurement, quality, returns management and performance management.

When successfully implemented, these actions will facilitate achieving the objectives of:

- *Profitability* through the implementation of "procure-to-pay" realtime visibility to manage procurement processes profitably
- *Performance* by proactively managing procurement activities with supplier score-cards and event monitoring of exception events
- *Partnership* by reengineering procurement and supplier management processes, integrating both finance and stakeholders.

Logistics: Focusing on differentiating competencies through outsourcing

As today's global markets continue increasing in complexity, leading companies are challenged to manage their logistics network while delivering operational excellence and high customer service levels. Distribution complexities are growing as companies compete in multichannels, while new channels (for example, Internet) expand. Innovative new technologies, such as RFID continue to emerge to enhance inventory tracking and distribution capabilities.

Leading *logistics* practices include:

1. Specialized and value-added logistics services based upon customer segmentation. Outsourcing of non-differentiating activities
2. Rationalization of distribution networks and regionalization of components (facilities, processes, people and technologies)
3. Flow through or cross-docking and direct-to-store strategies. Virtual inventory and merge-in-transit strategies

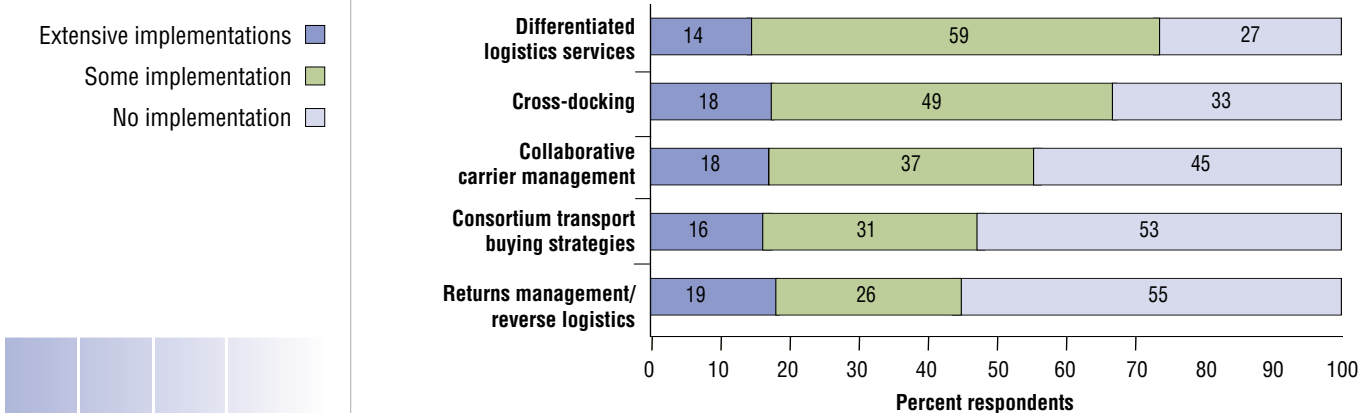
4. Use of supply chain event management technologies to monitor, alert and respond to changes and events proactively
5. Web-enabled transportation management and inventory tracking capabilities
6. Returns management with closed loop (reverse logistics) processes and quality assurance programs
7. Implementation of tax-efficient and tax-effective distribution structures.

Survey findings

Increased profitability, cost reduction, customer responsiveness and quality improvement are the top drivers of logistics performance. Over 70 percent of the respondents indicated increased profitability as their primary objective (greater than 66 percent of large companies indicated increased profitability first, followed by reduced cost). Increased customer responsiveness was the next objective, followed by improved quality, increased revenue, reduced cycle time, increased unit volume and innovation. Of the distribution/transportation companies represented, over 55 percent indicated that they are focused on increasing customer responsiveness. Consumer products and industrial products companies stress profitability and cost reduction as their primary objectives. High technology companies are emphasizing improved quality with profitability. One hundred percent of the companies with high inventory turn rate (greater than 12 turns) list increased profitability as their primary objective.

Logistics leading practices are slowly being embraced by large companies. Most are focused on differentiated logistics services by customer segment and "flow through" strategies.

Figure 23. To what extent have the following practices been implemented at your site?



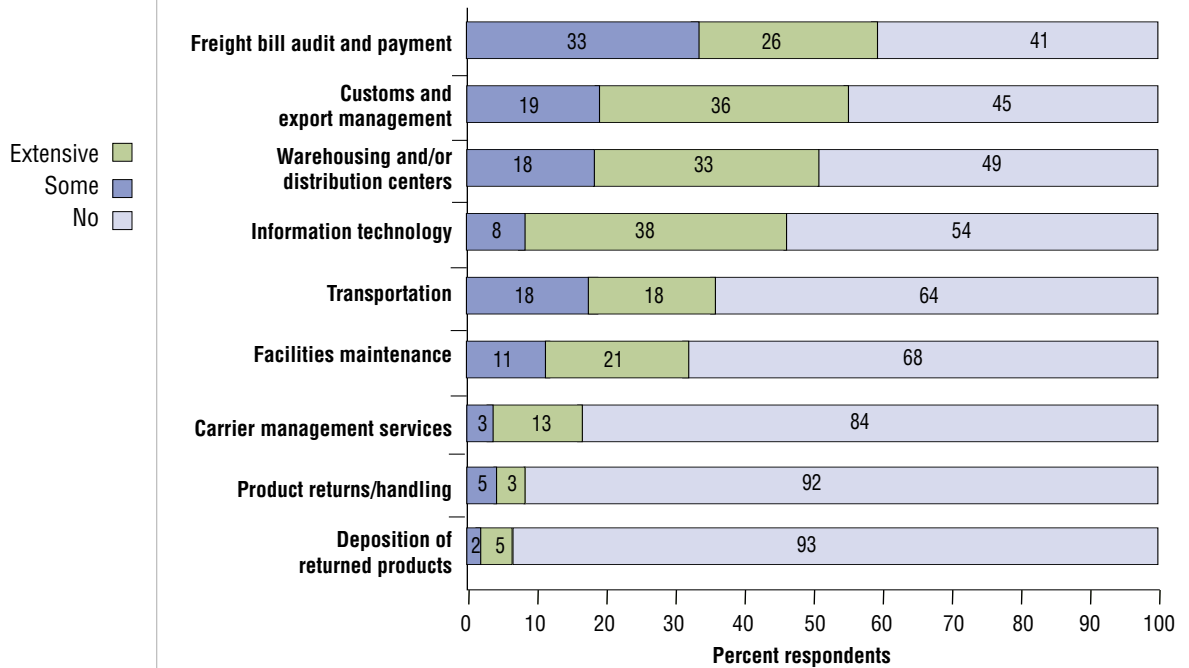
Source: IndustryWeek Value Chain survey conducted by IBM.

As seen in Figure 23, there is little progress in collaborative carrier management programs and consortium transport buying strategies. With cost reduction as one of the primary objectives, it is almost opposing that over 50 percent of the respondents have no formal process or supporting technology enabling implementations of returns management and reverse logistics operations.

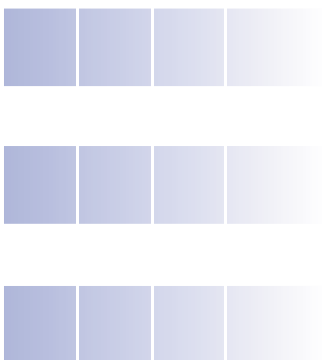
Evaluating logistics performance criteria correlated with leading practices, results show that companies with order fill rates of 97 percent and greater have implemented differentiated logistics services (greater than 60 percent). Companies that have not implemented flow through or cross docking strategies are experiencing higher customer order cycle times (55 percent at 10-20 days, 75 percent at more than 20 days).

Outsourcing of logistics functions continues predominately in the areas of freight bill audit and payment, customs/export services, warehousing and transportation.

Figure 24. To what extent has each of the following business functions been outsourced at your site for logistics functions?



Source: IndustryWeek Value Chain survey conducted by IBM.



This trend appears to be consistent within the past three years as companies continue to outsource discrete functions in transportation and warehousing, while maintaining carrier management (contract management) and facilities maintenance in-house. With the maturity of integrated transportation and distribution management systems, we might expect to see a trend toward more insourcing (bringing back in-house) of freight bill audit and payment components.

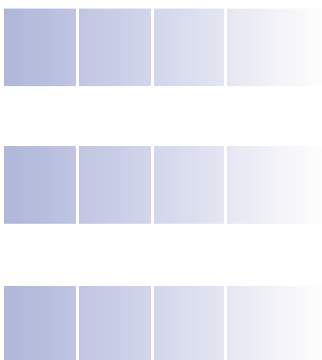
Of those functions which are outsourced, most responded that they have been effective in reaching the desired objectives:

- Customs/export management: 55 percent extremely effective, 44 percent somewhat effective
- Warehousing/distribution center management: 43 percent extremely effective, 55 percent somewhat effective
- Transportation management: 62 percent extremely effective, 35 percent somewhat effective
- Facilities maintenance: 36 percent extremely effective, 60 percent somewhat effective.

However, it is noteworthy that in the areas of carrier management services and freight bill audit and payment services respondents have a 10 percent or greater dissatisfaction rating. In reviewing returns management and reverse logistics practices, over 90 percent of all respondents are not outsourcing product returns handling and management, so this remains a predominately in-house process.

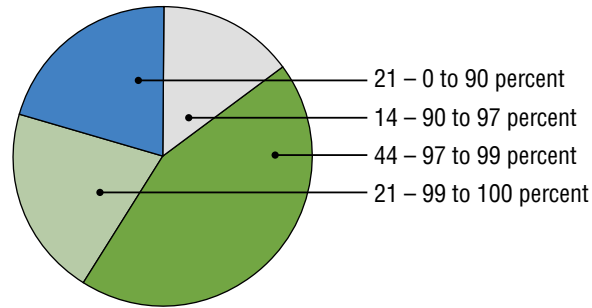
A growth area for logistics outsourcing is information technology (IT). Respondents at large companies indicated that they are outsourcing IT functions either to some degree (50 percent) or to an extensive (10 percent) degree.

Of the large company respondents, most are utilizing vendor packages for warehousing and distribution, but custom developed applications for warehousing and transportation management are fairly equally split between vendor and customized applications. To plan and manage labor and material flow, only 17 percent of the respondents are utilizing vendor packages, whereby 31 percent are using internally developed software and 53 percent are still using spreadsheets or



manual methods. Order fill rates of 97 percent and above were achieved by those companies with vendor package or custom applications (70 percent) as opposed to those with no formal applications (30 percent). Customer order cycle time decreased on average with vendor package implementations.

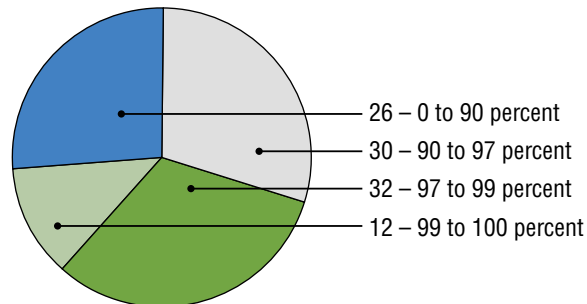
Figure 25. What is your site's order fill rate?



Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.

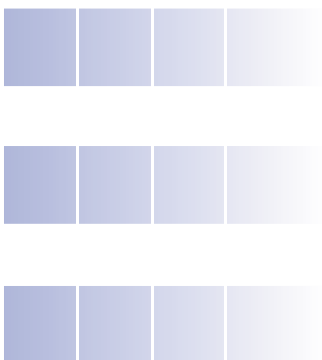
As seen in Figure 25, over 50 percent of the respondents maintain order fill rates of 97 percent or greater juxtaposed by only 44 percent with on-time delivery rates of 97 percent or greater. In a similar survey conducted last year, a surprisingly low 24 percent of the respondents reported order fill rates of 96 percent or greater, so it appears there has been a tremendous improvement.

Figure 26. What is your site's on time delivery?



Note: Responses expressed in percent.
Source: IndustryWeek Value Chain survey conducted by IBM.

Customer order cycle time averaged 16 percent delivered in 10-20 days and 29 percent in more than 20 days. The lowest order cycle times of less than 10 days were reported in the high technology (75 percent) distribution/transportation (65 percent) and consumer products (39 percent) industries.



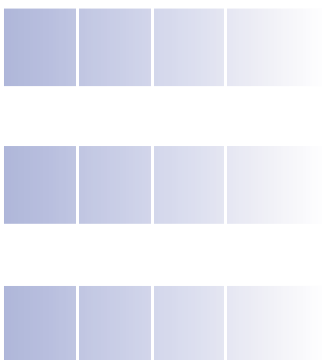
Typically, transportation and distribution functions are the largest process or activity cost buckets in the supply chain. Total logistics costs (transportation plus distribution costs) averages cross-industry were 80 percent achieving under ten percent of sales. A cross-industry average leading practice would be 3-4 percent of sales, with those of ten percent and higher evidencing an opportunity for improvement. That would indicate a 40 percent improvement opportunity for reducing logistics costs, and contributing to profitability. Order fill rates of 97 percent and above were achieved by those companies (>75 percent) with a 2-5 percent logistics cost to sales ratio. Average order cycle times of less than ten days were achieved by those companies with a 0-2 percent logistics cost to sales ratio. Finished goods turn rates more than 26 turns per year were achieved by those companies with a 0-2 percent cost to sales ratio.

Recommended actions: Focused and variable logistics network structures and processes are required for supply chain success in today's global economy

1. Create competitive "fit for purpose" supply chain structures by focusing on differentiating competencies which support the customer value proposition and exploit the advantages of global sourcing and networked value chains.
2. To accommodate the variability brought about by customer demand fluctuations and changing requirements, develop and implement dynamic and adaptive supply chain logistics structures. Control and marshal logistics assets and virtual assets acquired through outsourcing and partnerships in realtime. Integrate the entire end-to-end global logistics network and manage event exceptions proactively.
3. Create competitive advantage through aggressive exploitation of new supply chain technologies (for example, RFID) and reduced cost of operations through new ways to deliver and finance technology infrastructure.

When successfully implemented, these actions will facilitate achieving the objectives of:

- *Profitability* by driving down fixed cost by adopting flow through strategies and reverse logistics management practices
- *Performance* through implementing realtime visibility and event management technologies, and RFID to manage assets and logistics event performance
- *Partnership* by rationalizing the logistics network and outsourcing non-differentiating activities to partners.



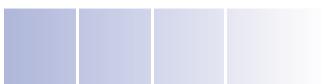
Conclusion

Today's business environment is rapidly and dynamically changing. Leading companies have demonstrated that supply chain management not only concerns operational excellence and cost reduction objectives, but more and more is focused on developing new business strategies and managing new business models to outperform competition and to satisfy customers, while contributing to shareholder value.

Our research has highlighted three major areas of focus to meet the new business agenda:

1. Profitability
2. Performance
3. Partnership

Companies that intend to transform their SCM processes and value chain networks into a competitive advantage need to excel not only in one or two of the three focus areas, but in all of them. The insights presented in this report provide a framework for companies to begin redefining their strategies, fine-tuning their performance objectives, and continuing the transformation journey of supply chain evolution towards maturity – thus, energizing the supply chain to deliver superior performance and increased profitability.



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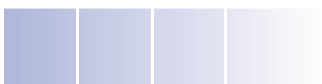
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