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*IBM Institute for Business Value*

Supply Chain  
Management

# Placing a lens on supply chain planning



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IBM Global Business Services, through 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 by the Institute's research team. It is part of an ongoing commitment by IBM Global Business 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](mailto:iibv@us.ibm.com) for more information.



# Placing a lens on supply chain planning

*Sales and Operations Planning (S&OP) is becoming a necessity for successful supply chain execution. With globalization of sourcing and manufacturing, shifting resources, facilities and inventories across the world, more and more companies are relying on effective supply chain planning to truly synchronize supply, based upon actual and forecasted demand. Keys to success include a dedicated governance model, an integrated, networked and formal S&OP process from sales and marketing to the supplier base, with an added “spicing” of innovation and vision.*

## Introduction

IBM Global Business Services completed the 2006 Supply Chain Planning Survey in conjunction with APQC and the *Supply Chain Management Review* magazine. This survey was designed to identify leading practices by capturing significant trends and operational performance benchmarks in these areas:

- Demand and supply planning
- Sales and operations planning
- Inventory management

IBM designed the survey and APQC conducted the survey by asking its subscribers to participate. The survey included 25 questions about overall business objectives, enabling technologies and current planning practices, as well as key performance data such as cash-to-cash cycle time, inventory turn rate or order cycle time. There were a total of 138 respondents, the majority of which are in the Industrial Products and Consumer Products industries, with representation from Distribution and Transportation, High Technology, Retail and Wholesale, Agriculture, Government, Services and Energy.

This major research project was undertaken to gain perspective in four parts:

- Demographics of the survey participants across such parameters as industry, company size and geography
- Management practices and information technologies employed in the supply chain planning processes
- Key Performance Indicators (KPIs) in cash-to-cash cycle time, inventory turns, perfect order performance, and other critical areas
- Practices of the top performers across the KPIs.

This report places the research findings into an overall context and provides insight into current leading practice KPIs in supply chain planning and supply chain planning management principles.

# Placing a lens on supply chain planning

## Globalization is impacting supply chain performance, mandating supply-demand synchronization

Supply chain planning – specifically, sales and operation planning (S&OP) – is one of the most prevalent topics in the supply chain community today. CEOs recognize that sustainable growth requires several different types of innovation and, based on the IBM Global CEO Study 2006, are allocating their innovation emphasis and resources accordingly:

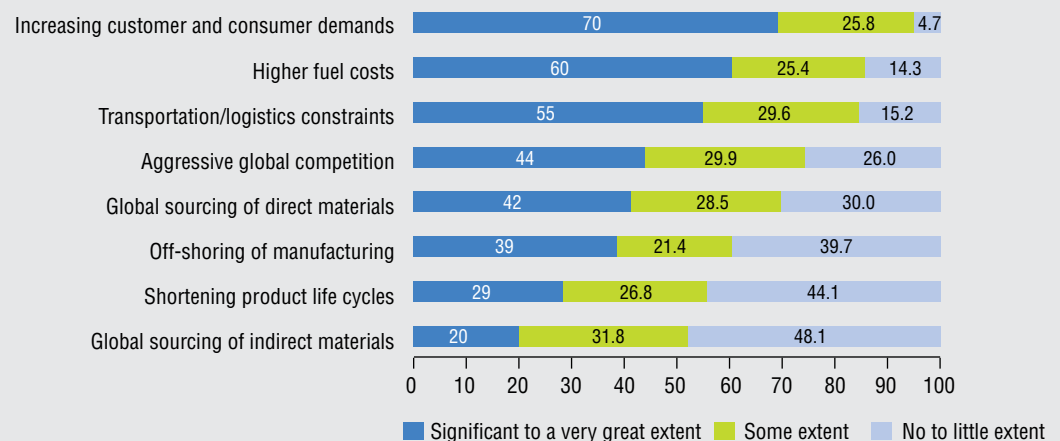
- Products/services/markets (42 percent)
- Operations (30 percent)
- Business models (28 percent).<sup>1</sup>

In times where growth and innovation are on the CEO agenda,<sup>2</sup> it is becoming more important to deploy an agile, responsive supply chain planning process and organization to significantly enhance supply chain synchronization and performance.

Complexities of conducting business on multiple global fronts – supplier base through customer channels – have increased pressure on performance. Additionally, global sourcing and aggressive global competition, combined with increasing customer demand, are affecting the supply chain significantly, compounded by transportation/logistics costs and constraints in capacity and infrastructure (see Figure 1). To combat these global market

FIGURE 1.  
**Globalization and market challenges.**

(Percent of respondents)



Source: IBM Institute for Business Value.

**The increasingly complex global market is leading manufacturers and retailers to become more demand-driven, with a “pull” business model replacing the traditional “push” model.**

complexities, manufacturers and retailers are shifting from a “push” business model (one that is premised upon planning, developing and marketing products pushed into the marketplace) to a “pull” business model – one that relies upon forecasted and actual demand signals to generate production plans, material plans and supply requirements. The desire to become demand-driven is expanding the market for sophisticated, agile solutions at every juncture along the supply chain.

Future requirements of responsive supply chains are enabling market conditioning through trend analysis, and supply and demand synchronization – using order trends and actual demand to provide early warnings of constraints and excesses, identifying key forecasting events and order events that provide advanced insight for demand conditioning. The processes and systems can correlate and analyze the information, and detect likely supply constraints and excesses, then alert the appropriate parties of exceptions and recommend actions. These early warnings allow the company to position itself to condition demand for existing and planned supply.

To support demand-driven planning and execution, collaboration and visibility (internal and external, local and global), are becoming top priorities. Over sixty percent of the companies surveyed have visibility initiatives underway and fifty percent collaborate with their partners’ supply chains.

Various chain planning strategies and tactics have a positive impact on supply chain performance when adopted to counter these growing complexities. Typically, supply chain performance is positively impacted by adopting these practices:

- Responding rapidly to changes in market conditions with demand/supply planning and synchronization. Developing “smart” supply chain models that deliver game-changing standards of service at competitive cost, integrating the end-to-end supply chain with differentiating approaches based on product/customer segments.
- Optimizing variable supply chain costs in alignment with revenues. Behind this trend is the imperative not only to seek unit cost advantage and secure best market capabilities but also to share risks with partners and create a “pay as you use,” variable supply chain model.
- Enabling “realtime” supply chain information visibility inside and outside the enterprise. The shift to customer driven supply networks can realize this goal, with demand and supply management driven in real time by critical demand and supply events supported by customer self service capabilities and end-to-end supply chain visibility and decision making.
- Enacting collaborative demand planning, forecasting and replenishment programs with customers (CPFR). Within collaborative demand planning the customer and supplier develop a single forecast and update it regularly based upon data exchanged dynamically, designed to increase in-stock customer stock while cutting inventory.
- Implementing customer inventory planning and deployment programs, such as vendor-managed inventory (VMI). VMI processes manage actual customer inventory stock positions based upon forecasted requirements, target inventory levels and actual replenishment requirements.

The diffusion rate is growing. Generally, 50 to 60 percent of respondents are implementing initiatives: to gain visibility, to respond more rapidly to changing customer requirements and market conditions, to collaborate and share risks along the global network. Many are implementing vendor managed inventory and collaborative planning and forecasting programs, not only with key customers, but also their supplier community (see Figure 2).

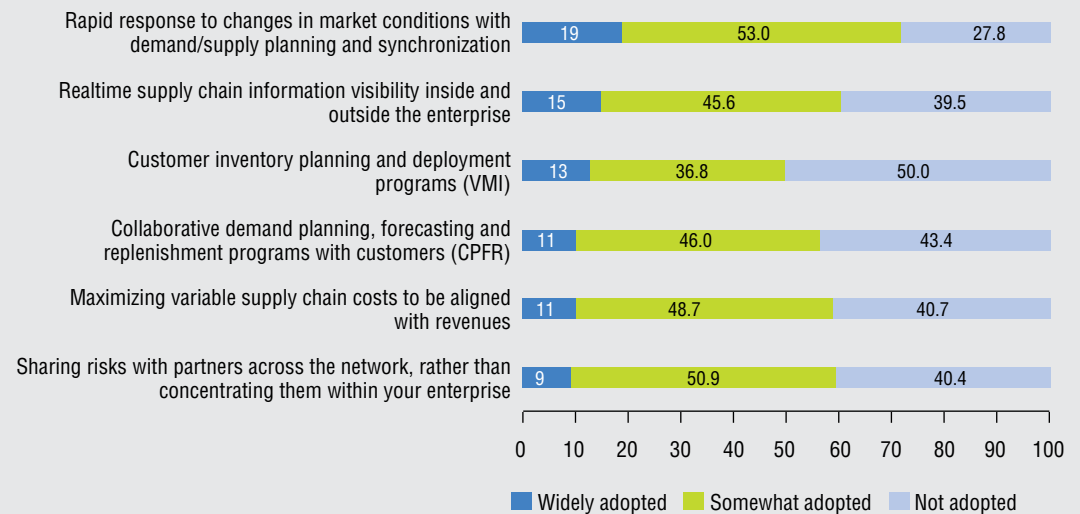
Supply chain organizations that formally align their demand and supply plans across business functions, as consensus-based forecasting and planning, can increase their inventory turn rate and perfect order performance.

## Collaborative S&OP is becoming a key differentiator

The vision of S&OP is to establish an integrated planning process that enables and supports a common framework and a demand-driven supply chain, while still hitting target service levels and optimizing total costs through the balancing of supply and demand. Supply chain excellence may be characterized as:

- *Consumer-driven* – Replenishing stocks to product demand
- *S&OP planning* – Making decisions on the same, accurate information
- *Synchronized* – Matching supply and demand with little inventory

FIGURE 2.  
**Supply chain planning strategies and tactics.**  
(Percent of respondents)



Source: IBM Institute for Business Value.

**Integrated S&OP requires formal collaboration among planning, logistics and finance functions, as well as disciplined governance practices supported by senior management.**

- *Reliable* – Enabling each network component to perform consistently and as planned
- *Flexible* – Enabling each network component to be responsive and act quickly
- *Collaborative* – Allowing trading partners to work together to achieve common goals
- *Visible* – Making fresh, accurate and specific information available.

Supply chain leaders establish formal S&OP processes within their supply chain planning organizations to create an integrated planning process while extending the effectiveness of overall performance. More than 70 percent of the respondents have a formal S&OP process in place.

Those companies with a formal S&OP process involve different functions in this integrated process to help ensure collaboration in synchronizing demand and supply; sales and marketing (62 percent), logistics (47 percent), manufacturing (44 percent), purchasing (42 percent), information technology (22 percent), and research and development (14 percent).

An integrated approach among planning, logistics and finance functions, result in higher performance but also alignment in rapidly resolving supply chain issues. Most are extending the S&OP process with:

- Formal meetings with sales, marketing, and supply chain operations (72.2 percent)
- Demand and supply plans that are formally aligned and agreed upon across business functions (consensus-based forecasting and planning, 60.5 percent)
- External demand collaboration with customers (60.7 percent)
- Integrated demand and supply chain planning applications (59.3 percent)

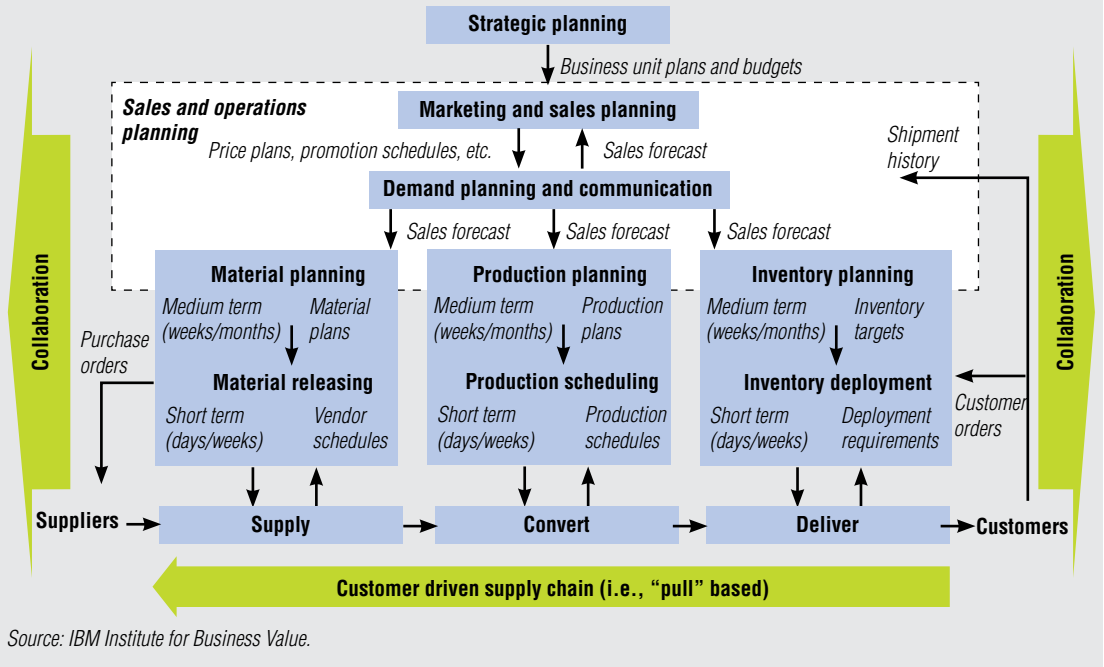
- External supply planning collaboration with suppliers (58.4 percent)
- Transportation management optimized based upon the integrated demand/supply plans (49.5 percent).

Integrated sales and operations planning principles include demand-driven, pull-based processes, consistent, accurate end-to-end visibility of inventory and replenishment requirements, with integrated decisions across multiple time horizons (see Figure 3). For example, long-term forecasts for all products may represent 18 months, and updated monthly with an annual three-year plan that is updated annually. Short-term forecasts for all products may represent two to four weeks updated daily, and medium-term forecasts may represent a 13-week period, and updated weekly. Products are segmented into different planning horizons based upon characteristics such as volatility, market demand and margin.

The S&OP governance model is important and must be a disciplined approach with senior management participation. Critical to the success of establishing an effective S&OP structure are:

- Proactively managing the change and securing organizational commitment to the new vision
- Deploying rigorous project management techniques to stay on track
- Developing a cohesive and high performing project team composed of experienced subject matter experts and consultants who are committed to a fixed, aggressive schedule
- Integrating decisions across the multiple forecasted time horizons
- Integrating production and inventory deployment strategies with responsive manufacturing and distribution.

FIGURE 3.  
Integrated S&OP processes and planning horizons.



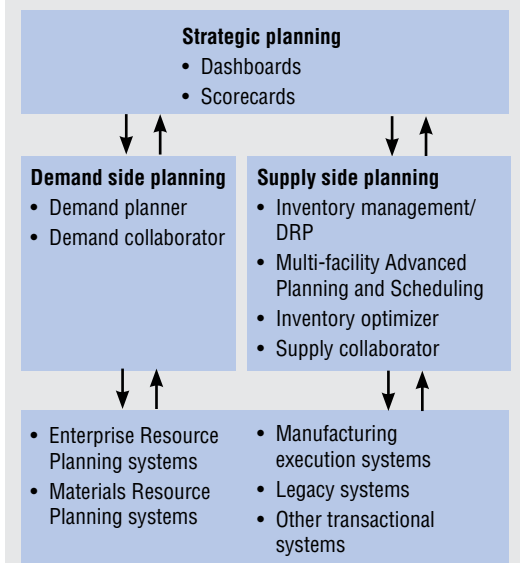
Source: IBM Institute for Business Value.

### Technology helps to achieve better performance, ROI and support an integrated S&OP process

An integrated supply-demand planning technology architecture is required to enable the S&OP process, often utilizing decision support tools that enable fast and effective evaluation of supply/demand trade-offs and constraints-based planning.

As companies advance in their S&OP process maturity from formal meetings to event-driven meetings to detect supply-demand imbalances, so must the sophistication of the enabling information technology (see Figure 4). In a marginal process, spreadsheets may be used. As companies progress, demand plans are reconciled, supply plans are aligned to demand plans and the technology shifts to functionally optimized demand planning systems and advanced-planning systems. As the S&OP processes become more integrated,

FIGURE 4.  
Integrated supply-demand planning technology components.



Source: Lapide, Larry. "Sales and Operations Planning Part II: Enabling Technology." *The Journal of Business Forecasting*. Winter 2004-2005.

demand and supply plans are jointly aligned and include external collaboration with limited number of suppliers and customers. At this point, demand planning packages and supply planning applications are integrated. External information from customer's forecasts and actual demand commitments are included, as well as supplier capacity plans. In the "ideal state," demand and supply plans are aligned internally and externally. An advanced S&OP workbench is in place indicating key planning horizon statistics, supporting data and key performance criteria. External-facing, collaborative software is integrated to the internal demand-supply planning applications (see Figure 4).<sup>3</sup>

The majority of respondents use supply chain planning applications, with most preferring vendor packaged applications. But spreadsheets remain widely used in S&OP, (42 percent) and transport management (41 percent). Although we are all familiar with the benefits of spreadsheets – easy to use, easy to implement – integrated processes require integrated information and spreadsheets are proprietary and nonstandard.

Although business performance is the driver of technology use, only fifty-two percent calculate the return on investment (ROI) of implementation success. Forty-two percent, however, have achieved an ROI in supply chain planning software in less than 12 months, which suggests that it has paid off for many companies.

So, who is involved in the selection of supply chain planning systems? When asked if different corporate functions were involved, the majority answer was "no" for each of the following:

- Corporate planning (72 percent)
- Finance (70 percent)
- Sales and Marketing (70 percent)
- Manufacturing (60 percent)
- Information technology (54 percent).

On the other hand, a majority of respondents cited two groups as typically involved in the selection of supply chain planning systems:

- Logistics (54 percent)
- Purchasing (54 percent).

Unfortunately, supply chain planning remains primarily the responsibility of the planning and logistics functions – these statistics illustrate the ongoing lack of involvement of the other parts of the business, to create a truly integrated S&OP Process. Many companies, who have also integrated finance, marketing, operations and production into the planning process collaborate to define target customer service levels for product and market segments. With the right tools in hand, they make fact-based, service-level trade-offs that reduce inventory, optimize margins or decrease obsolescence as an integrated part of the planning process.

Technology is becoming more critical as an enabler and a platform to assure responsive supply chain planning with the necessary prerequisites of accurate demand forecast from customers integrated with actuals;

**By formally aligning their demand and supply plans across business functions, respondents were able to improve key metrics, including higher perfect order performance and inventory turn rates.**

accurate supply plans; current production plans; and inventory status. Each internal (cross-function) or external supplier, customer or logistics partner will have its own view, which must be reconciled to create the “single point of truth” shared by all.

### **Synchronizing demand and supply planning is hard work**

Effective supply chain planning is more than “just planning” with cross-functional team members. It is more than conducting several collaboration activities with suppliers, logistics service providers, contract manufacturers and perhaps even customers. It is hard work.

Developing a demand-driven supply network with an integrated S&OP framework requires discipline, endurance and adherence to these key principles:

1. Develop a common vision for the customer-driven supply chain and integrated S&OP framework including demand and supply planning, operational constraints, global sourcing considerations.
2. Develop a common management governance that respects differences in individual business units and allows for flexibility when necessary.
3. Take a holistic approach and consider organization, process, trading relationships and enabling technologies when developing the final vision and solution.
4. Implement organizationally integrated collaborative planning processes (such as sales and marketing, supply chain operations, finance and IT) with key customers, suppliers and service providers.
5. Develop specialized and differentiated supply chain strategies based on customer segmentation, customized service levels and product/service mix.
6. Improve the underlying demand and supply planning information: use actual customer demand commitments, supply commitments and constraints, and service capabilities.
7. Think realtime information. Model, optimize and simulate. Implement decision support tools that enable fast and effective evaluation of supply chain trade-offs.
8. Proactively manage the change, securing organizational and partner buy-in and commitment to the S&OP framework.
9. Integrate decision making: end-to-end and event by event.
10. Monitor performance.

The S&OP practices and initiatives that respondents of the supply chain planning study are implementing make it evident that synchronizing supply and demand yields better performance in key measures. Those who have formally aligned their demand and supply plans across business functions, such as consensus-based forecasting and planning, report lower customer order cycle time, as well as higher perfect order performance, better cash to cash cycle time performance and inventory turn rates (see Figure 5).

FIGURE 5.  
Performance-ranked S&OP practices.

<i>To what extent do the following statements describe your site's S&amp;OP process?</i>		<b>Customer order cycle time</b> < = 8 days	<b>Perfect order performance</b> > = 96%	<b>Cash-to-cash cycle time</b> < = 13 days	<b>Inventory turn rate</b> > = 27
Formal meetings with sales, marketing, and supply chain operations	No extent	16.7	5.6	18.2	10
	Little extent	11.1	5.6	0	0
	Some extent	27.8	38.9	54.5	50
	Significant extent	44.4	50	27.3	40
Demand and supply plans are formally aligned and agreed upon across business functions (consensus-based forecasting)	No extent	13.9	5.6	20	20
	Little extent	30.6	33.3	10	0
	Some extent	22.2	27.8	30	20
	Significant extent	33.3	33.3	40	60
External demand collaboration with customers	No extent	22.2	27.8	22.2	11.1
	Little extent	33.3	33.3	11.1	22.2
	Some extent	27.8	22.2	44.4	33.3
	Significant extent	16.7	16.7	22.2	33.3
External supply planning collaboration with suppliers	No extent	16.7	27.8	9.1	0
	Little extent	25	5.6	45.5	20
	Some extent	36.1	38.9	27.3	40
	Significant extent	22.2	27.8	18.2	40
Supported by integrated demand and supply planning applications	No extent	22.2	27.8	27.3	10
	Little extent	16.7	11.1	9.1	0
	Some extent	38.9	27.8	36.4	40
	Significant extent	22.3	33.3	27.3	50

Source: IBM Institute for Business Value.

Most organizations can benefit significantly from innovating their supply chain planning processes. The goal is to create a highly responsive global supply chain environment that can react with speed and flexibility to the non-synchronized world of supply and demand.

For additional information about the IBM Institute for Business Value 2006 Value Chain Study or the IBM Global CEO Study 2006, please contact us at [iibv@us.ibm.com](mailto:iibv@us.ibm.com). To browse through other resources for business executives, visit our Web site:

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## About APQC

APQC is a research organization that solves business problems in the areas of metrics, measurement, best practices, process improvement, benchmarking and knowledge management.

## References

- <sup>1</sup> "Expanding the Innovation Horizon: The Global CEO Study 2006." IBM Corporation. March 2006. <http://www.ibm.com/bcs/ceostudy>.
- <sup>2</sup> Ibid.
- <sup>3</sup> Lapide, Larry. "Sales and Operations Planning Part II: Enabling Technology." *The Journal of Business Forecasting*. Winter 2004-2005.





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