

Issue No. 8

Supply Chain Leader

Ideas & Innovations from i2

The Next Level of Collaboration

- Preparing for the Re-Emergence of Demand
- Shelf-Centered Collaboration
- Getting Greener Together
- Customer-Centric Strategies for Assortment Management

Plus

- Interview with LG's Didier Chenneveau
- Case Studies from:
 - Altera
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Supply Chain Leader

Issue No. 8

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Cover story



Preparing for the Re-Emergence of Demand

by Adeel Najmi

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Even the best forecast will never be 100 percent accurate, especially in today's volatile environment. By monitoring performance and taking corrective actions, companies can thrive in an unpredictable marketplace. The entire value chain must focus on ensuring the product is available, attractive to consumers and better than the competitors' product.

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by Sweeni Ponoht and Mohit Juneja

To meet the competitive and economic challenges inherent in today's tough marketplace, world-class retailers are making an important change: many are shifting cooperative efforts one step closer to the consumer. Shelf-centered collaboration is a natural and logical progression for the retail segment.

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Driven by powerful economic, social and regulatory pressures, shippers are seeking more affordable and sustainable ways to transport products. By forging more collaborative relationships, many transport-dependent organizations are gaining cost and operational benefits, while building more sustainable shipping networks.

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The retailers that are surviving—and in some cases even thriving—in the current economy are investing in a customer-centric approach to buying and assortment management. These retailers continue to achieve top-of-mind status among their desired customers by implementing four winning strategies.

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Are you ready for the recovery?

Collaboration will be the key to success in the decade ahead

In light of the economic upheavals we have all faced over the past year, companies have transformed their supply chain strategies and processes to accommodate weak demand and supplier instability. While these efforts were necessary to enable companies to weather the storm, drastic supply chain modifications will undoubtedly leave many at risk in the recovery.

In fact, a recent AMR Research report that we reference on page 5 revealed that 44 percent of executives believe their greatest risk in 2010 will be navigating the economic recovery, while just 23 percent are concerned about the consequences of a continued economic recession (“Better Times Right Around the Bend? Executives Downgrade Supply Chain Risks.” AMR Research, September 28, 2009). Those respondents who viewed the recovery cycle as their greatest risk cited concerns including potential commodity price increases, limited internal skills after workforce reductions, and problems meeting new demand with constrained capacity, low inventory and transportation challenges.

How can companies address these issues and position themselves for success in the recovery? Inevitably, one critical factor will be collaboration, which is the focus of this issue of *Supply Chain Leader*. The globalization of business demonstrated that close collaboration among all supply chain partners is beneficial—the recent recession and impending recovery will show us that it is essential.

The notion of collaboration certainly isn't new. A decade ago, electronic collaboration among businesses emerged to enable efficiencies beyond the four walls of the enterprise. Driven by the power of the internet to enable information sharing, supply chain collaboration, however, was—and still is—limited by the constraints of human behavior and the inherently insular and protective nature of many organizations. It is much easier for a company to acknowledge that sharing information across the extended supply chain will increase efficiencies than to actually put that level of collaboration into practice. By design, companies are competitive. Sharing in-depth information about their business strikes fear in the hearts of many executives. The most significant barrier to true collaboration lies not in the technology that powers it, but within the people and organizations that must implement it.

In this issue of *Supply Chain Leader*, we explore how collaboration, particularly in tough economic times, can drive success for every partner along the end-to-end supply chain. “Preparing for the Re-Emergence of Demand” (page 4), discusses the changes companies must make to

their supply chain processes in order to continue to meet ever-shifting consumer needs. A truly shelf-aware supply chain requires every stakeholder to focus on the buying decision, and to have the agility to modify supply chain strategies to match what's happening in stores.

The notion of the shelf-aware value chain gets an even closer look in “Shelf-Centered Collaboration” (page 12), which describes the need for collaboration to be taken to a new, more focused level in light of today's difficult retail environment. While retail organizations have traditionally worked closely with supply chain partners, shelf-centered collaboration represents a logical next step in the evolution of supply chain integration. By extending the power and efficiencies of supply chain collaboration to the retail shelf, branded manufacturers and retailers can ensure they produce and deliver the right product at the right place, price and time.

Collaboration is also being taken to greater heights in the area of transportation and logistics. In “Getting Greener Together” (page 18), the authors explore how many transport-dependent organizations are forging more collaborative relationships in the face of significant social and regulatory pressures. Progressive shippers are using multi-shipper collaboration, which leverages cross-shipper visibility, powerful analytics, and an innovative transaction-based exchange that encourages shippers to share and optimize excess and available trucking capacity. This exciting new approach is reducing costs, waste and the collective carbon footprint of its practitioners.

Our interview with LG Electronics' chief supply chain officer, Didier Chenneveau (page 26), focuses on LG's strategy to establish itself as a world-class supply chain organization, including its efforts to conduct collaborative planning, forecasting and replenishment with retail partners.

Companies such as LG that dedicate themselves to enabling close collaboration across the end-to-end supply chain will invariably emerge as the leaders in the decade to come. Technology undoubtedly plays a vital role in this, but to truly reap all of the benefits of collaborative supply chain management, companies must also have the supporting mindset and processes, and perhaps most important, trust in their suppliers and customers. This kind of collaborative behavior will distinguish the supply chain management leaders from the followers in the decade ahead.



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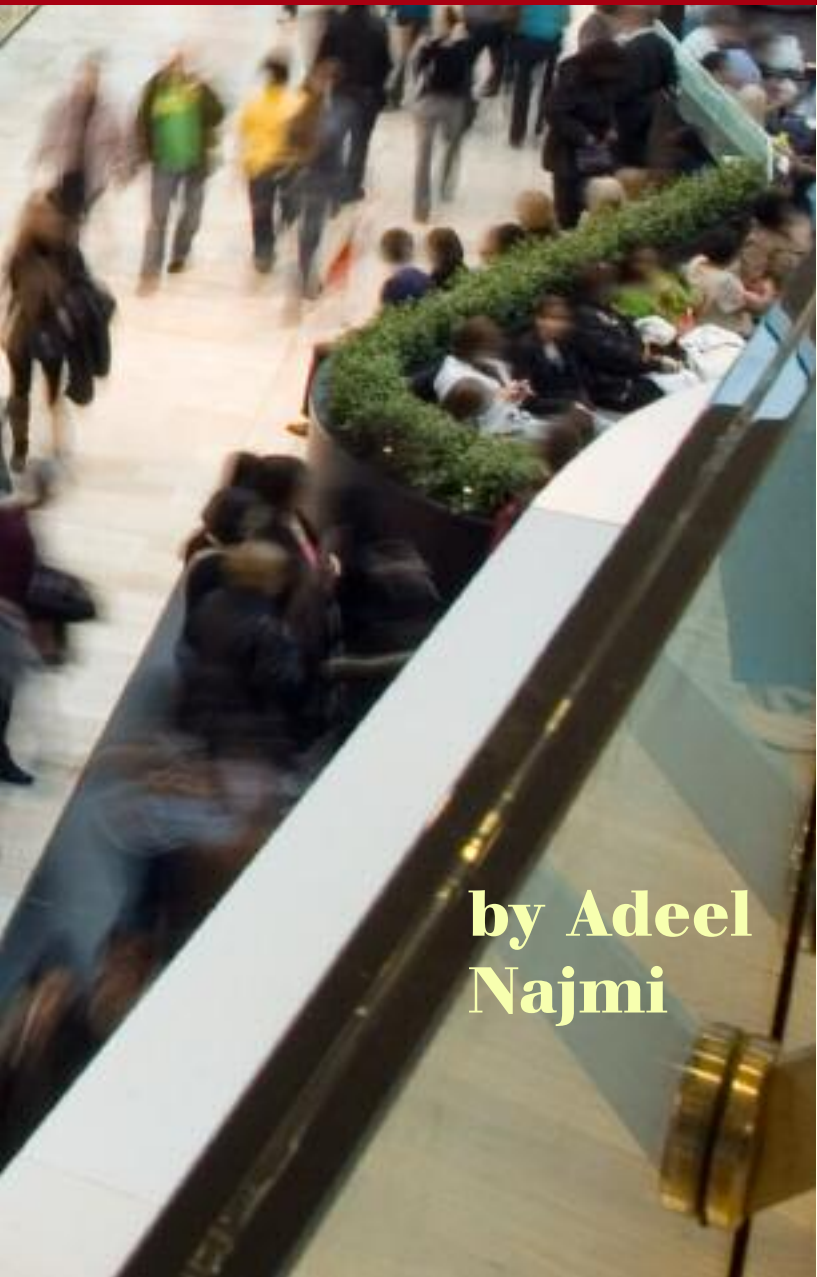
Preparing for the Re-





Many economic indicators point to new growth in consumer demand in the coming months. But when will it happen? And is your supply chain equipped to handle it?

Emergence of Demand



by Adeel
Najmi

Businesses around the world are closely monitoring market trends and economic indicators, watching to see if consumers are feeling confident again—and if demand is beginning to rebound.

While the re-emergence of demand will certainly be welcomed, it is also fraught with risk. Companies will face potential raw materials and transportation price increases as the economy rebounds. And they will be challenged to effectively meet new demand with the reduced workforce, constrained capacity and lower inventory levels they established during the downturn. A recent study by AMR Research revealed that 44 percent of executives believe their greatest risk in 2010 will be managing the economic recovery, while only 23 percent are concerned about the effects of a continued economic recession (“Better Times Right Around the Bend? Executives Downgrade Supply Chain Risks.” AMR Research, September 28, 2009).

As we prepare ourselves for the re-emergence of demand, it’s critical to recognize that “business as usual” is a thing of the past. Our world has been dramatically transformed by the economic downturn of the past two years. Every company must approach the marketplace with a new mindset, poised to react to any future demand changes with agility and responsiveness. Businesses must actively prepare to re-energize their supply chains to meet upward demand trends, but they must also mitigate their exposure to financial risks in a market that continues to be characterized by unpredictability.

RE-EMERGENCE **CONTINUED** on Next Page . . .

To effectively manage these risks, every business should take a hard look at its approach to the marketplace and, in turn, make mindset shifts in response to today's altered economic landscape. The world has radically changed, and organizations must make equally radical changes in their most basic supply chain processes in order to continue to meet ever-shifting consumer needs.

Replace “planning for execution” with “planning for discovery”

Perhaps the most significant shift companies must make involves rethinking the purpose of their planning and forecasting activities. Businesses of all types should move away from the idea that the goal is to achieve the most reliable execution plan possible—and instead recognize that real value and agility result from “planning for discovery.”

If the last two years have taught us anything, it's that even the best forecast is still only a forecast, and even the most well-defined supply chain plans will need to be adjusted as marketplace realities shift. The question that executives need to ask is not, “Will our forecast be wrong?” but instead “When will we first know the forecast is wrong, and how will we correct our course?” In today's volatile markets, plans can no longer be thrown over the wall periodically to be executed in an open-loop, single-direction manner. It is critical that feedback and correction

take place frequently so that organizations can sense and respond to demand changes.

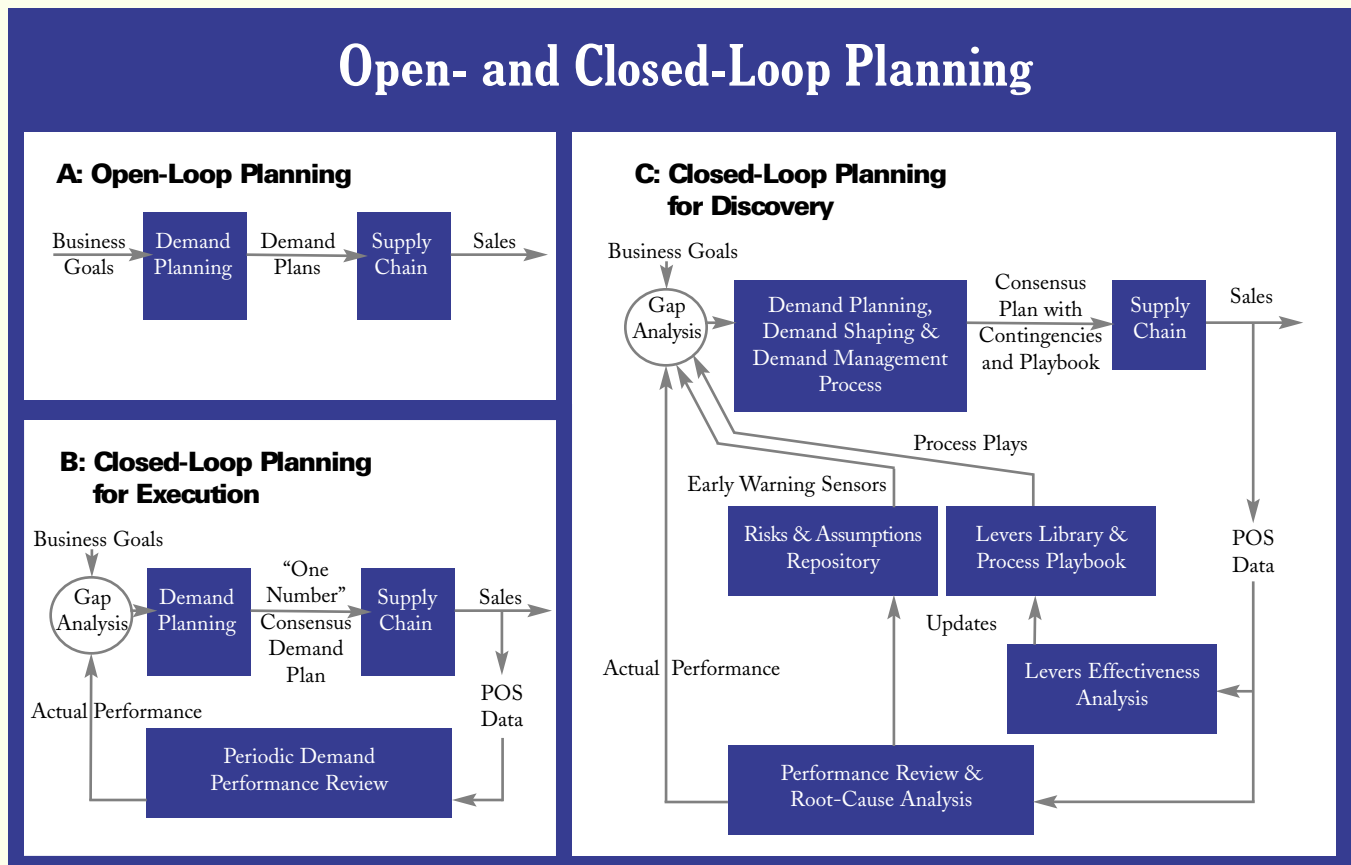
In response, many businesses have created plan-do-check-act (PDCA) cycles that continuously monitor supply chain performance and make adjustments as needed. Prior to the economic downturn, most of these organizations were investing significant time and energy in the “plan” and “do” phases: creating elaborate supply chain plans based on historic demand levels and executing them. But as demand uncertainty increased, these plans rapidly lost relevance, and companies were left scrambling to re-plan and re-execute.

In the new business world, the final stages of the PDCA cycle—“check” and “act”—have become as important as the initial planning and execution phases. Instead of being rigid and difficult to change, today's plans must be flexible enough to accommodate the constantly changing parameters under which supply chains are operating.

Companies must go beyond the typical goal of closed-loop PDCA, which is to create the most accurate execution plan possible, because this merely results in reactive re-planning. While closed-loop planning for execution is more effective than simple open-loop planning, it is still limited because its only input is a periodic, one-dimensional demand performance review.

As shown in Figure 1, the new proactive paradigm of

Figure 1



planning for discovery takes PDCA to the next level. Not only should companies monitor their performance against actual demand, they should also answer more complicated questions: “Were our assumptions correct? Did we anticipate and manage risks effectively? Did we apply the right levers to correct our course?” This is a much more sophisticated process than simply measuring forecast accuracy.

The new paradigm of PDCA requires that plan assumptions are explicit, that likely disruptions are anticipated and that opportunities for learning are built into the plans themselves. It is no longer enough to simply monitor demand and make corrections. True supply chain leaders are sensing and responding to disruptions proactively, and then driving ongoing learning through systematic post-mortems of their execution results. They are not just re-planning when deviations and exceptions occur, but are also using these opportunities to capture information that will improve their future assumptions, risk management strategies, process playbooks, lever libraries and other plan components—as part of a closed-loop, ongoing process of discovery.

Traditional sales and operations planning (S&OP) has focused primarily on cross-functional synchronization and planning, but today it must also emphasize collaborative analysis and collective learning. In a volatile marketplace, S&OP must capture knowledge regarding risks, assumptions and the effectiveness of corrective actions—recognizing that the target is no longer a fixed mark, but an ever-evolving process of understanding and responding to a changing landscape. Demand must be continuously analyzed and shaped, inventory targets must be set and re-set, and the entire supply chain must counter the uncertainty in the marketplace with agility.

While a dramatic mindset shift may be required to make this change within the typical organization, new technology solutions are emerging to support this process, from early warning systems to process playbooks that gather inputs from across the end-to-end supply chain and respond with corrective actions. These tools are growing in sophistication, reflecting the emerging needs of a volatile business world. Some supply chain events trigger an automated response that redefines the policies that govern the entire value chain, while other events may be escalated for further investigation by executives. Often, these investigations—triggered by performance exceptions—can reveal subtle, but significant, demand shifts in the marketplace.

One company that uses i2 solutions to monitor buying behavior offers a good case in point. Although its portfolio consists of thousands of individual products, i2 helps the organization discover changes in buying patterns for specific SKUs. Occasionally, these “micro” changes can signal “macro” marketplace trends. For example, i2 solutions

uncovered a change in demand for just seven parts, which triggered an in-depth root-cause analysis. This investigation suggested that a broad shift in demand was imminent, and the entire value chain was able to prepare in advance, based on a small performance deviation that was detected at a very early stage. This is the kind of organizational insight and learning that is preparing many businesses to not just survive, but thrive in today’s unpredictable environment.

Focus the entire value chain on the single moment of truth

In addition to changing their fundamental approach to planning, supply chain leaders are making a second shift. They are realizing that, in today’s new world, the entire value chain must work together to support a single moment of truth: for instance, the moment when a shopper enters the retail aisle, finds the product and makes a decision to purchase it. This requires the concerted effort of every player in the value chain, from the manufacturing facility to the retailer.

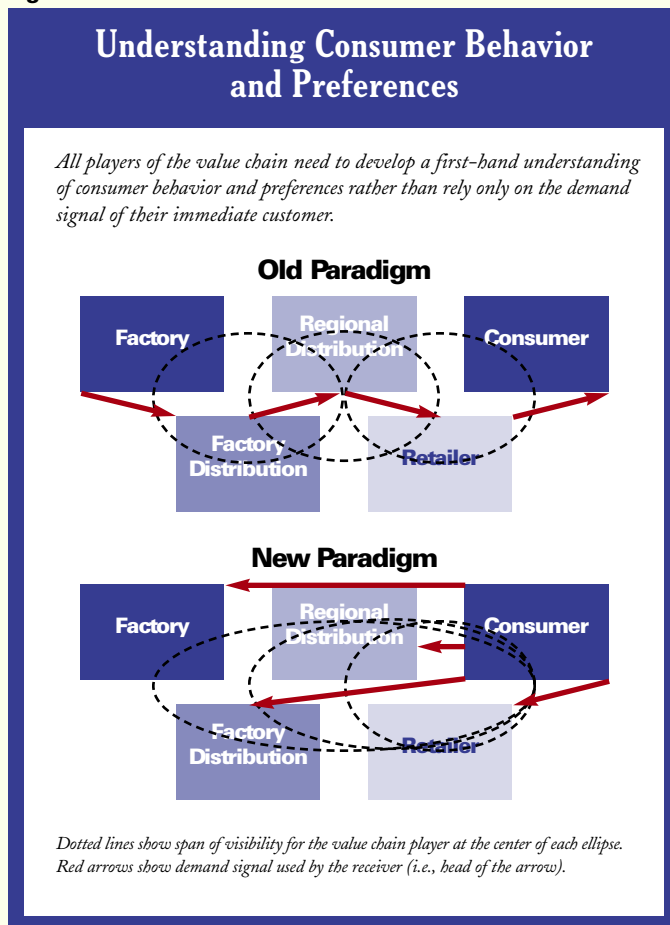
Understanding consumer behavior has traditionally been viewed as solely a sales and marketing responsibility of the brand manufacturer, but the economic downturn demonstrated very clearly that the entire value chain is impacted by changing end-user preferences and actions. Every stakeholder in the value chain, from suppliers to channel partners, must focus on the buying decision—the pivotal moment that represents ultimate success or failure.

How can companies better prepare themselves to win at this all-important moment? A number of core competencies within the business must be aligned to create a value chain that is truly shelf-aware:

- **A focus on consumer demand.** In the traditional demand-driven paradigm, all participants waited for demand signals from their own immediate customers. Today, all players in the value chain need to develop their own firsthand understanding of broader consumer behaviors and preferences (see Figure 2). Brand manufacturers cannot expect retailers to devote the resources needed to understand consumer behavior as it relates to their specific brand. Similarly, suppliers should not depend on manufacturers as their sole source of end-user insights. Instead, each stakeholder should develop its own keen understanding of consumer behavior across the entire product category so that the business can anticipate upward or downward trends in overall demand or in brand share. When any participant in the value chain develops an excess or deficit of inventory relative to true consumer demand, this raises costs for the entire chain. Point-of-sale (POS) data and other end-user insights should inform the entire end-to-

RE-EMERGENCE **CONTINUED** on Next Page . . .

Figure 2



end value chain, supporting a product offering that will ultimately win the sale. Forward-looking organizations are using a variety of sophisticated means—including real-time, in-aisle data sent via mobile device and “street intelligence” about competitor promotions—to sharpen their focus on end-user demand.

- **Intelligent use of channel data.** Value chain partners enjoy greater access to channel data information than ever before, but most struggle to make sense of it. In fact, by applying proper analytics, channel data can be translated into valuable and actionable information. At a minimum, all value chain participants must monitor trends in channel inventory and trigger risk mitigation actions when excesses or deficits are detected in inventory levels or turns. By paying careful attention to misalignment between sell-in and sell-through trends, upstream partners can establish early warning systems that signal broad market changes and ensure that their own business is prepared.

- **High in-stock availability.** Even the most appealing product will not win the sale unless it is actually on the retail shelf when shoppers enter the aisle. Today, stock-outs can translate into not only temporary lost sales, but also a permanent loss of share. For example, a shopper unable to find a brand-name product might decide to purchase a private-label alternative, then decide that the

branded product is not worth the higher price. Today, high in-stock availability—at a relatively low risk—can be achieved via inventory right-sizing strategies and pull-based replenishment schemes that take an integrated view of the value chain, working backward from the retail shelf. These approaches rely on real-time POS data that reveals actual buying trends at the individual store, category and brand levels. Channel managers must work to build retailer trust by demonstrating both forecast reliability and stocking flexibility, so that retail partners are confident that products will be on the shelf, without excess inventory on hand.

A truly shelf-aware and consumer-focused value chain enables all participants to have the agility to shift their supply chain strategies—including their inventory and replenishment policies—to reflect what is actually happening in the retail aisle and at the cash register today (see “Shelf-Centered Collaboration,” page 12).

This mindset shift places new demands on most businesses. Many product categories are extremely susceptible to demand volatility because they represent fashion-driven, short-life-cycle products or “high ticket” purchases that consumers may be willing to defer or downsize. For example, computer manufacturers operate in an especially volatile market, where feature preferences are determined by consumers’ constantly shifting budget constraints and pricing concerns.

In the last 18–24 months, even product categories once viewed as steady and predictable have exhibited increasing volatility that requires more strategic supply chain management. Facing their own economic challenges, retail giants such as Walmart are increasing the scrutiny of their product assortments in an effort to gain more sales per square foot, while also reducing their inventory levels. They are purging under-performing SKUs and giving additional or premium shelf space to those SKUs that are performing better—creating new pressure for brand owners to understand and meet end-user needs.

It is critical to recognize that while companies may have invested heavily in consumer research prior to the economic downturn, the findings no longer apply to today’s vastly changed retail aisle. Consumers are budgeting and making purchases more carefully than ever before. Consumer studies from two years ago may not reflect shoppers’ current willingness to try lower-priced, private-label brands, use coupons or seek out advertised promotions. It is not enough for a company to say that it understands the consumer; the company must understand what the consumer values *right now*.

The good news is that innovative business processes and technology solutions are making it easier to focus on consumers and align the end-to-end value chain against the ultimate “moment of truth”—ensuring that the end result is in high availability and an attractive selling pro-

position. While winning the consumer purchase continues to be a sophisticated process—and demand levels will always shift—sales forecasts and other supply chain decisions can be monitored and automated to minimize risk and increase the probability of success.

POS data and other consumer insights play a critical role, and it can be difficult for some businesses to cleanse and sift through the huge volume of information they are receiving from their channel partners today. For those businesses that lack internal capabilities in this area, managed services can be an effective means of analyzing and applying this information across the value chain. In the current retail environment, it is critical that companies find some way to understand shoppers' behavior at a very detailed, granular level that can determine specific tactics, instead of the aggregate approach that organizations may have used in the past.

Microsegment your business to minimize your risk

This “granular” concept is a key to achieving success across the supply chain today—not just in microsegmenting consumers, but also in understanding the nuances of selling different products, with diverse features, through distinct channels. This is a third competitive imperative for supply chain leaders today.

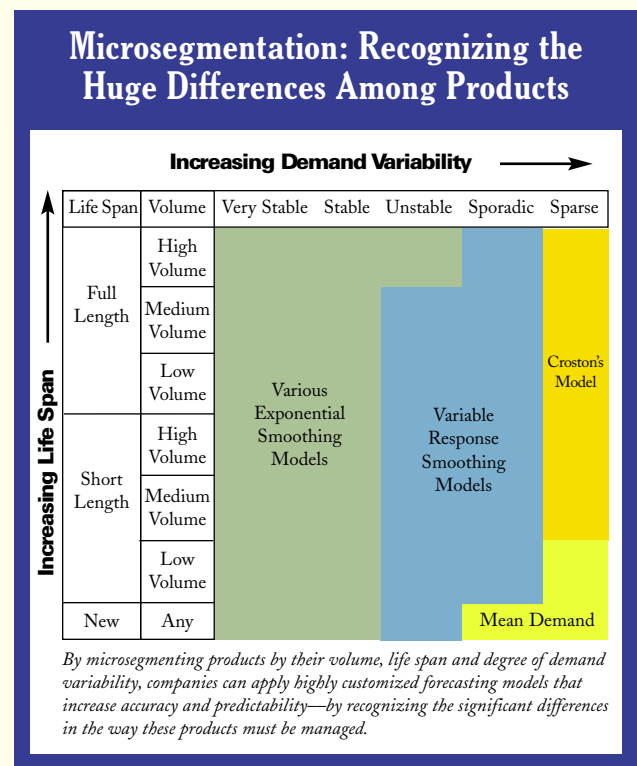
Traditionally, many supply chains have been managed with broad-brushed, one-size-fits-all policies. Implicit in these policies is the notion that a homogeneous group of products is being sold to a group of equally homogeneous retailers and consumers.

Clearly, this is not based on marketplace realities. Different products sell at different rates, and have vastly different lifecycles. Each individual product segment may require a specialized forecasting model to ensure accuracy (see Figure 3). By recognizing the critical differences in the demand patterns, end-to-end lifecycles and volumes of their products, supply chain planners can custom-tailor their forecasting techniques to meet the unique demands of each microsegment. For example, established, high-volume products with stable demand require a far different approach than new products, which typically display rapidly fluctuating demand patterns.

Effective microsegmentation can help companies improve their forecast accuracy and reduce their risk of being right at the aggregate level, but wrong at the granular level where supply chain decisions are actually made, which is a costly mistake. By applying microsegmentation strategies to manage their product lines, i2 customers in a wide variety of industries—including fast-moving consumer goods, consumer durables and service parts management—have achieved overall forecasting accuracy improvements as high as 30 percent.

These supply chain leaders are also minimizing their

Figure 3



risk by creating custom-tailored “designer” inventory strategies that are matched to the actual demand for each SKU, instead of relying on universal targets that fail to acknowledge the significant differences in inventory needs across various retail channels, price points, regions and even individual stores. These customized micro strategies define distinct performance targets that keep inventory levels closely aligned with actual demand, depending on the special needs of each product. For example, commodity and custom products have very different demand and supply risk profiles, and thus require their own inventory buffering and postponement strategies. Sales volume is another important risk factor that must be addressed by the inventory strategy. Using microsegmentation practices, postponement and replenishment decisions can be automated for every product, based on that product's unique features—as well as the top-level strategies and financial goals of the entire business (see Figure 4).

In addition to strategically managing products, microsegmentation is helping supply chain innovators more effectively—and profitably—manage their critical relationships with customers. It is neither possible nor desirable to service all market segments equally. Some customers contribute higher volumes, revenues or margins than others, and thus wield greater power. To deliver the highest-impact results, microsegmentation strategies must consider both individual products and the channels through which they are sold.

RE-EMERGENCE **CONTINUED** on Next Page . . .

Figure 4

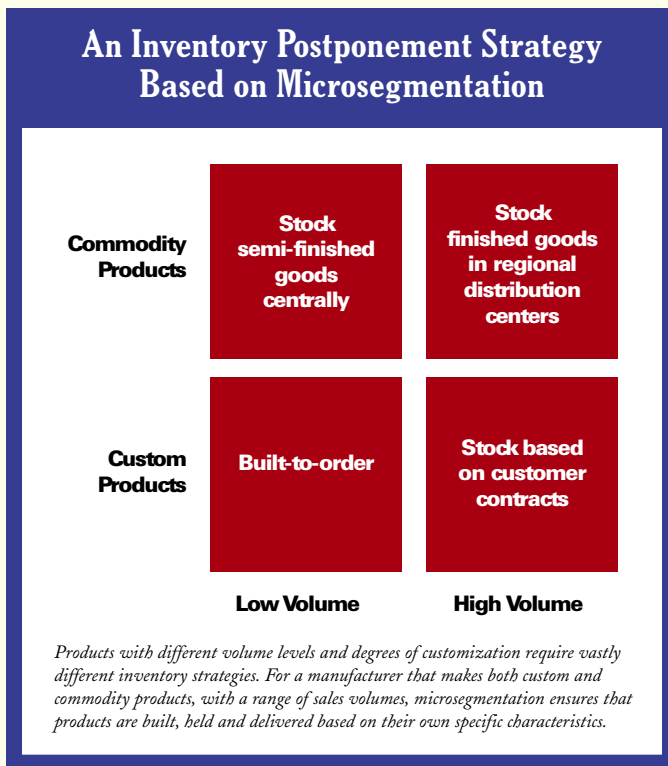


Figure 5 demonstrates one microsegmentation strategy used by a major snack foods manufacturer to define the differences among its many products and customer accounts. Using this segmentation, highly customized service can be provided to customers based on their specific product mix, volume, margin and demand profile.

High-volume, high-margin, stable segments are logically targeted for higher service levels than smaller, less profitable segments that exhibit demand volatility. This approach is significantly increasing the company’s profitability and overall service performance, while also minimizing risk and financial exposure.

There is no doubt that product mix, volume, margin and demand variability are paramount in segmenting customers—but there are other considerations that can help determine appropriate service levels. Strategic points in the new product introduction cycle may mean allocating inventory very differently among customers, depending on their consumer influence. And the growing diversity of today’s global markets means that highly customized service levels may be needed to address localized demand. New business processes and technology solutions play a vital role in enabling the microsegmentation of the supply chain by managing a wealth of information about products, features, customers and consumers at an incredibly detailed level. Dashboards, process playbooks and other tools can automate the management of diverse products across all selling channels, balancing inventory levels strategically and ensuring that the appropriate corrective actions are taken when demand or performance deviations occur.

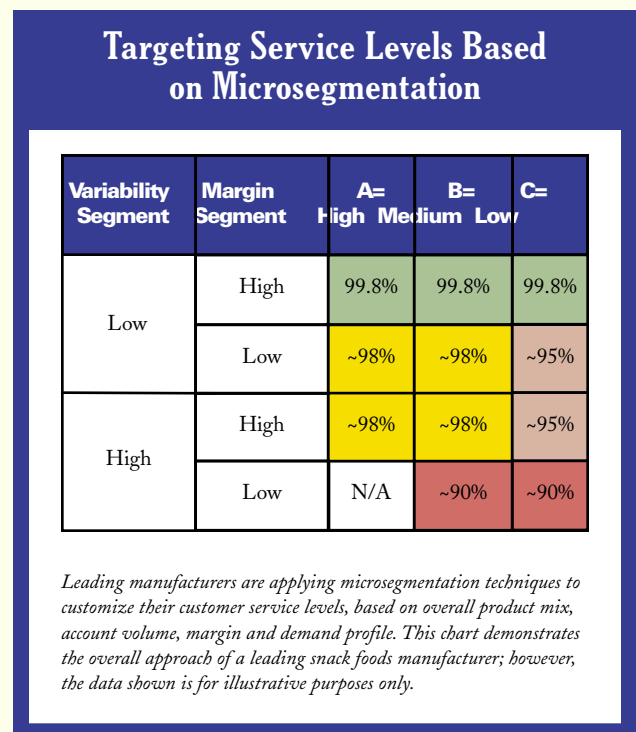
Looking ahead: assume a more proactive stance

While many businesses suffered setbacks in the last 18–24 months, the economic downturn has provided an opportunity for every organization to re-examine its fundamental supply chain principles. The greatest lesson we can collectively learn is to take a more proactive posture as we look toward the future—not waiting for the next dramatic change, but anticipating it and ensuring that we are poised for immediate action.

Every business can learn from the mistakes of the past by proactively creating a closed-loop learning organization that makes agile supply chain adjustments in response to market changes, and by capturing knowledge to improve future assumptions and results. In addition, value chains need to incorporate a consumer focus that senses upturns and downturns before they happen to avoid being unprepared.

The broad mindset shifts described here—closed-loop planning for discovery, creating a shelf-aware value chain and microsegmenting the business—will separate the leaders from the followers as we continue to navigate this uncertain consumer marketplace. Taking a proactive stance means forgetting about business as usual and changing our most basic supply chain philosophies to reflect the new realities under which we operate today.

Figure 5



Adeel Najmi is vice president for product strategy and planning at i2.

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 **Supply Chain Leader Forum**
Strategies for 2010 and Beyond



Shelf-Centered Collaboration

by Sweeni Ponoht
and Mohit Juneja

Managing products at the shelf level enables retailers to get closer to consumers

Driven by tough economic conditions, heightened competition and pressures up and down their supply chains, world-class retailers and branded manufacturers are adopting a proven and logical strategy. They're getting even closer to consumers.

Retail organizations have traditionally worked closely with branded manufacturers, third-party logistics firms and other partners on broad business issues and to tackle specific distribution challenges. But in today's difficult retail environment, astute managers are taking collaboration to a new, more focused and more effective level.

Shelf-centered collaboration, as defined by global management consulting firm Booz & Company, is the next wave in retail optimization. To catch it, retailers must recognize the need for close shelf-oriented cooperation, and they must understand the integrated capabilities required to deploy and manage a shelf-centered collaboration program. Here, we offer a primer on the rationale, requirements and advantages of shelf-centered collaboration.

Why focus on the shelf?

Manufacturers and sellers are focusing more intently on how they manage product flow at the retail shelf level, driven by a number of powerful market trends including the rise of discounters like Walmart, higher consumer price sensitivity in the current economic environment, increased commoditization of products and a corresponding decrease in brand loyalty, particularly in North American and European markets.

There are two moments of truth for any consumer: the purchase of a product and the use of that product. For a commodity product, the consumer expects instant gratification in the purchase process—so shelf availability and price positioning is critical. The goal of the manufacturer and retailer should be efficient, low-cost fulfillment of this

consumer demand. It has also been observed that, in the new world of marketing complexity, more consumers hold off their final purchase decision until they're in a store ("The consumer decision journey," *McKinsey Quarterly*, June 2009). Up to 40 percent of them change their minds because of something they see, learn or do in the store—for example, packaging, placement, or interactions with salespeople.

The answer for many market-leading organizations is a tightly integrated collaborative effort focused intently on the retail shelf. Shelf-centered collaboration analyzes shelf-level data to drive product availability and joint marketing programs. It utilizes customized assortments based on customer demographics, store types, events and periodicity, and leverages a wider variety of supply chain fulfillment modes. By leveraging analytics and alerts, shelf-centered collaboration supports a faster and more effective supply chain response. Also, by analyzing fast-changing consumer trends, branded manufacturers are able to provide a rapid product response.

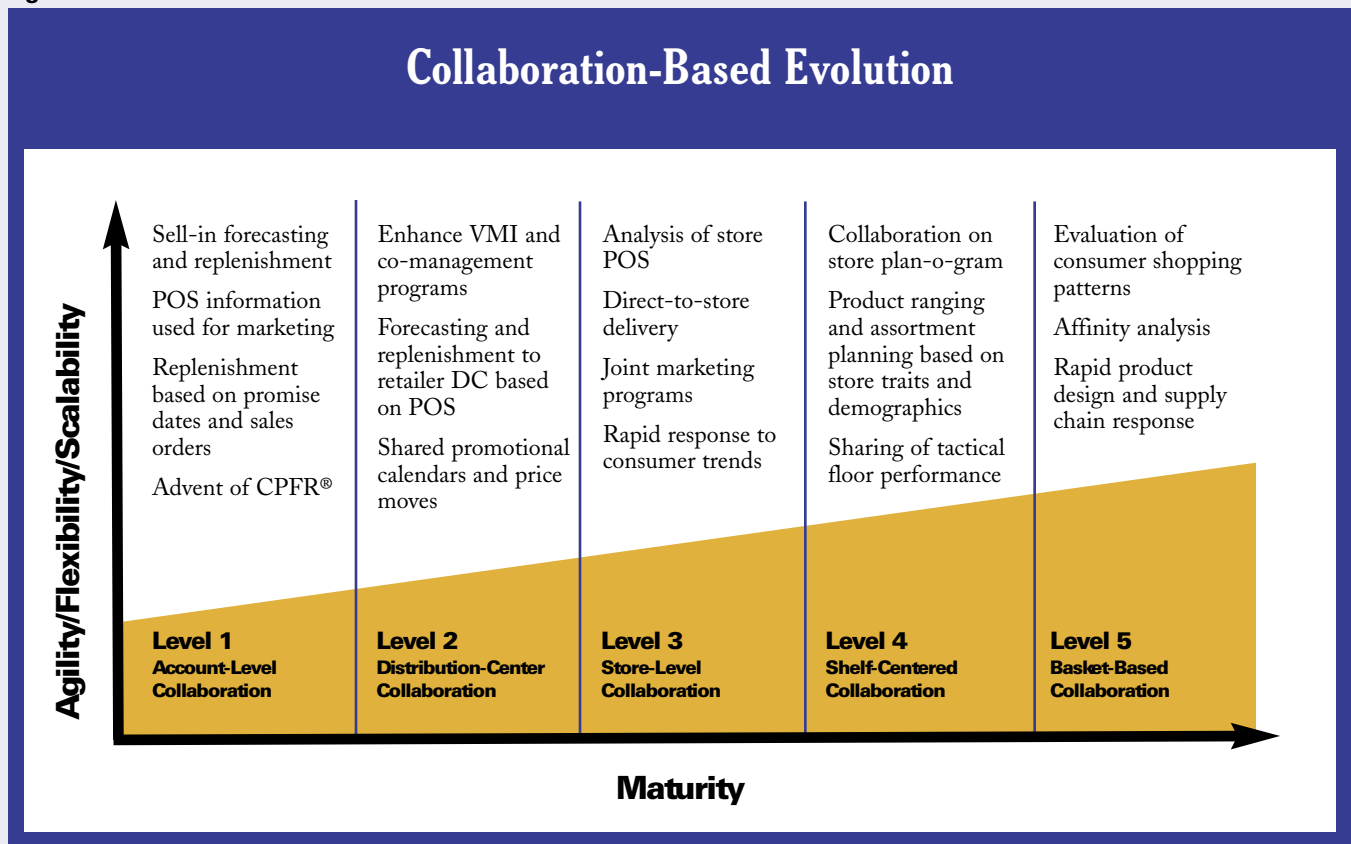
This closer and more collaborative shelf-level approach enables branded manufacturers and retailers to improve their performance, ensuring they produce and deliver the right product at the right place, price and time.

Collaboration-based evolution

Shelf-centered collaboration represents a logical next step in the evolution of supply chain integration. Driven by consumer expectations and business requirements, the collaborative partnership between manufacturers and retailers has advanced through successive levels of maturity, with each of those progressive advances yielding more granular and integrated performance.

SHELF-CENTERED **CONTINUED** on Next Page . . .

Figure 1



A review of this collaboration-based evolution underscores the need for and requirements of shelf-centered collaboration (see Figure 1).

Account-Level Collaboration. Manufacturers first began collaborating with retailers at the account level, where sell-in data (into the retailer’s enterprise) was used for forecasting and replenishment. At the request of vendors, some retailers started sharing aggregated sales data for refining the forecast. Account-level collaboration spurred the advent of Collaborative Planning, Forecasting and Replenishment (CPFR®), a concept that supports a joint system of shared information among retailers and suppliers.

Distribution-Center Collaboration. Having more tightly integrated at the account level, the industry next focused on closer collaboration at the retail distribution-center level. DC-level collaboration leveraged point-of-sale (POS) data for forecasting and replenishment and shared promotional calendars and price moves. This approach took collaborative efficiencies an important step closer to the consumer by enhancing vendor-managed inventory (VMI) and co-managed inventory practices at the retail distribution center.

Store-Level Collaboration. Since retailers were now freely sharing store-level POS data, the next logical step was to leverage this information to drive an optimal replenishment plan and in many cases, “direct-to-store” delivery. In addition to store POS data, analysis such as store grading, wave planning, presentation stock planning

and product ranging would influence this collaboration.

Shelf-Centered Collaboration. The next and currently emerging stage of retail supply chain integration is shelf-centered collaboration. As its name suggests, this approach extends the power and efficiencies of supply chain collaboration to the retail shelf. This process starts at the pre-season stage—before the product even makes it to the shelf. Using demographics, store traits (e.g., square footage, location, shelf space) and product attributes, the vendor will work with the retailer to customize the nationwide portfolio of products specifically for that store (i.e., the store plan-o-gram) and also determine the quantity of presentation units to hold at that store. Once in-season, ideally, store displays and shelf mixes would change during the week to accommodate the varying schedules of commuters, stay-at-home parents, young adults and weekend shoppers.

At a minimum, product profitability should be constantly monitored and, in the event of unsatisfactory trends, the product must be de-ranged from the selected stores. Presentation stock information (in addition to information on back-stock) should be regularly shared with the vendor to ensure that key products are replenished as quickly as possible. Forward-looking retailers and branded manufacturers are now beginning to use shelf-centered collaboration to improve supply chain performance, to respond more quickly to consumer trends and to open new revenue and profit opportunities.

Basket-Based Collaboration. Looking into the future, the next logical step in retail integration will focus on collaboration at the level of the consumer basket, or the shopping cart. Basket-based collaboration will require the capture and analysis of data from consumer loyalty programs, which collect information on consumer shopping patterns. A collaborative approach based on basket information can enable retailers to more quickly and accurately identify and understand consumer shopping patterns, and to accordingly adjust store layouts, product assortments, store marketing programs and supply chain distribution activities in conjunction with branded manufacturers.

Enabling shelf-centered collaboration

Retail organizations and branded manufacturers can now deploy a range of proven tools to build and support a shelf-centered collaboration program. Figure 2 highlights the shelf-centered collaboration capabilities that are required to successfully manage a product through its lifecycle in the retail channel.

Store monitoring and exception reporting systems can give manufacturers and their retail partners precise and highly granular analysis of their shelf-focused collaborative efforts. Those tracking and reporting tools provide insights into item and store segmentations, inventory policies and rebalancing, in-stock exceptions, weeks of supply at the store and root causes.

On-demand analytics can provide both high-level roll-up and granular drill-down capabilities for POS inventory and sell-through, as well as retailer forecasting. Supply and demand analytics can provide business-specific insights, including reports on POS activity and error rates, seasonality, forecasting, promotions effectiveness, purchase planning, inventory positions, fill rates and collaborative replenishment. Syndicated data for category sales, price positions and demographics can help fine-tune ranging and pricing.

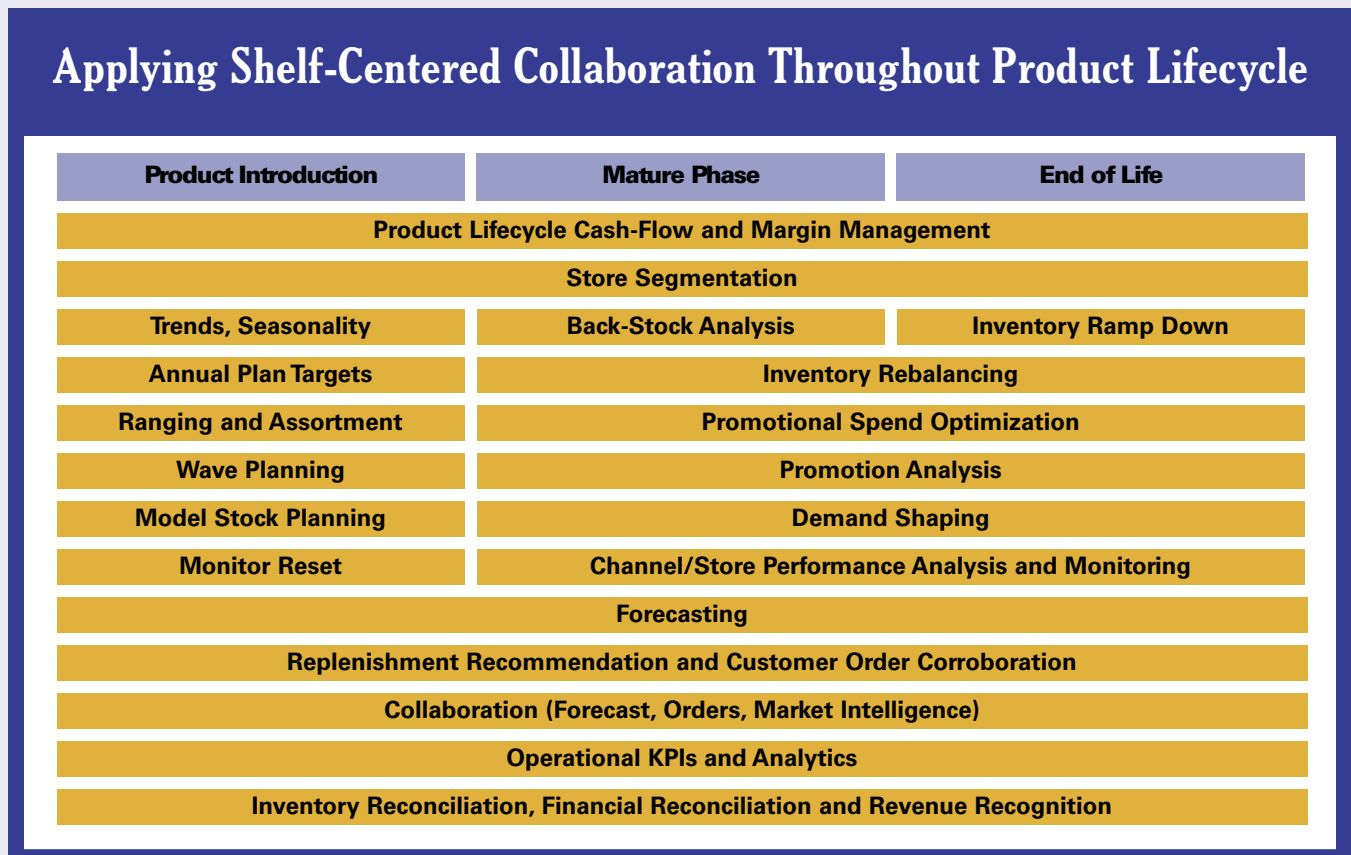
Of course, the ability of organizations to collaborate at the shelf level depends heavily on the timeliness, granularity and quality of available data. In many situations, POS and inventory data represent the best information available on the status and flow of products across a given shelf.

While POS and inventory data are by definition store-level information, retailers and vendors are using high-level analytics, alerts and other methods to deduce shelf-level realities. Based on those POS-based insights, retail partners are able to formulate more precise shelf-level collaborative strategies and tactics.

Studies show that today some 25 percent of fast-moving consumer goods are delivered to retail shelves via the direct store delivery (DSD) mode. Under the DSD approach, retailers assign specific shelf space to a vendor, who is

SHELF-CENTERED **CONTINUED** on Next Page . . .

Figure 2



responsible for monitoring and replenishing those shelves as needed. The vendor sends personnel to the store on a regular basis to gather shelf-level data on the movement and sale of those products.

In a DSD model, a technology partner might provide forecasting, distribution management and other support at a distribution center (DC) or a mixing center. In a variation on traditional VMI, the vendor then manages the heavy manual aspects of gathering shelf-level data, formulating specific promotional plans and handling replenishment in a DSD model.

Strategic dashboards enable organizations to compare various metrics, such as POS by category or retailer, product performance versus forecast or other key performance indicators. A robust solution will allow any and all of these reports to be exported into Microsoft Excel, PDF, HTML and other formats for convenient offline viewing.

Cross-industry implications

Shelf-centered collaboration delivers capabilities, for both vendors and retailers across key retail segments, to help alleviate the financial impact of industry-specific challenges. Figure 3 highlights the relative magnitude of some common challenges by industry. Companies facing key challenges that are at undesirable levels can achieve measurable benefits with shelf-centered collaboration.

Branded manufacturers and retailers can leverage shelf-centered collaboration to more efficiently manage

replenishment at the store level, to segment stores for more logical assortment grouping and to shape demand at and below the store level. Retailers can use shelf-centered collaboration to better manage seasonal products and promotions. Retail organizations can use it to identify appropriate product bundles, to link service levels to appropriate product types and to manage store and shelf layouts and cross-vendor promotions.

Retailers and their suppliers can use the shelf-centered collaboration approach to manage inventories and to analyze the rate of sale during product launches and end-of-life activities. It also allows organizations in these industry sectors to utilize the most effective mode of replenishment, including DSD, VMI and sell-in.

What's next?

As previously noted, successful retailers constantly seek more refined and effective ways to manage their supply chains, stores and shelves. The next logical step in that progression is market-basket collaboration, and best-in-class companies are now working to understand and position themselves to utilize this emerging approach.

Market-basket analysis uses a number of sophisticated tools that enable retailers and their partners to better predict consumer demand. Affinity analysis can be used to better understand the impact of market promotions. By identifying driver items, fast-moving consumer goods companies and other retailers can categorize items for

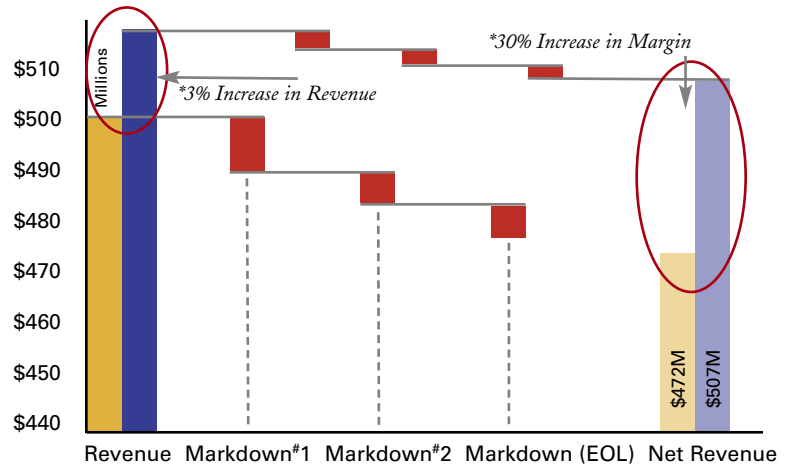
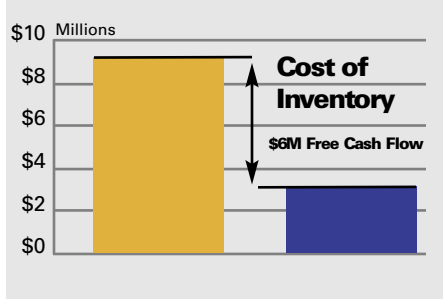
Figure 3

Relative Financial Impact of Common Challenges by Industry			
Challenges/Industry	Consumer Electronics	Apparel and Footwear	Fast-Moving Consumer Goods
Product Lifecycle Length (LONG is desirable)	SHORT	MEDIUM	LONG
Price Erosion (NORMAL is desirable)	SEVERE	NORMAL	NORMAL
Product Proliferation (LOW is desirable)	MEDIUM	HIGH	HIGH
Competition from Private Label (LOW is desirable)	MEDIUM	LOW	HIGH
Brand Loyalty (HIGH is desirable)	LOW	HIGH	MEDIUM
Reliance on Promotions (LOW is desirable)	HIGH	LOW	MEDIUM

Figure 4

The Financial Impact of Shelf-Centered Collaboration

	Before	After
In-Stock	85%	95%
Inventory (WOS)	12	4
EOL Inventory (WOS)	8	2



Shelf-centered collaboration can directly impact revenue, margin and free cash flow, as seen here in Figure 4, which is based on a customer case study. Consider a manufacturer selling a \$1,000 product with annual sales of 500,000 units. The product lifecycle is associated with two price drops of 10 percent each and an end-of-life markdown of 15 percent. The cost of capital is 8 percent. Shelf-centered collaboration increased in-stock availability from 85 percent to 95 percent and drove down the inventory needed in the channel from 12 weeks to 4 weeks. The impact of price drops is significantly lower due to a focus on understanding shelf-level demand.

higher service levels and formulate and analyze localized marketing campaigns.

Retailers can use market basket analysis to design better replenishment strategies, including ones that indicate when to stock particular items, especially those with short shelf lives. Market-basket analysis can also be used to design more intelligent store assortments and plan-o-grams, using affinity analysis to more closely group logical items within the store, and using store-to-store basket-level comparisons to create store-appropriate assortments.

While shelf-centered collaboration tends to be reactive in nature and uses shelf-level data, analytics and alerts, retailers can wield market basket collaboration to take a more proactive approach to shaping future sales—maximizing the impact of marketing spend and more quickly and effectively meeting consumer demand.

Leveraging shelf-centered collaboration

Organizations across the retail spectrum can benefit from shelf-centered collaboration.

By applying advanced analytics at the point of sale, shelf-centered collaboration increases in-stocks,

thus improving customer satisfaction and brand image. Retailers can leverage this approach to shape demand, generating consumer interest, enthusiasm and willingness to spend.

Shelf-centered collaboration enables retailers to optimize product mix, thereby reducing the need for markdowns and price protection. Better monitoring reduces the opportunity for lost sales, supporting stronger growth in both market share and revenue. A streamlined inventory distribution system improves cash flow and profit margins.

Shelf-centered collaboration forces retailers, manufacturers and their supply chain partners to focus on the critical nexus between buyer and seller—the retail shelf. Companies should think of shelf-centered collaboration as a prescription for getting closer to consumers. In today’s tough business environment, it may be just what the doctor ordered.

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Shippers are collaborating to create a more environmentally

Driven by economic, social and regulatory pressures, shippers around the world are seeking more cost-effective and sustainable ways to move product from source to shelves. Shippers have worked for decades to streamline and strengthen their own transportation networks, and in recent years, environmentally-conscious organizations have expanded those efforts to include suppliers, partners and customers.

Today, to further reduce their costs and carbon footprints, enlightened shippers are pursuing efficiencies and sustainability beyond the borders of their traditional transportation ecosystem. A higher form of sustainable cooperation has emerged—called multi-shipper collaboration—that leverages cross-shipper visibility, powerful analytics, and an innovative transaction-based exchange that encourages shippers to share and optimize excess and available trucking capacity.

By collaborating in this new and effective way, shippers are significantly reducing costs, waste and their collective carbon footprint.

Pursuing sustainable transportation

A number of powerful trends are reshaping the transportation sector. Higher-value, lower-weight products, such as electronics and pharmaceuticals, now represent a more substantial and growing percentage of total freight volumes and are increasingly shipped by truck, rather than by rail. At the same time, truck freight transport costs have decreased relative to other shipping modes, due in part to competition resulting from the deregulation of trucking nearly 30 years ago.

Both manufacturers and retailers are working to reduce costly on-site inventory through the use of just-in-time inventory systems that typically require trucks for smaller, more frequent and more reliable deliveries. Meanwhile, many warehousing and manufacturing facilities have been relocated to suburban or rural areas, where cheaper land and labor are available, but which are often inaccessible by rail and require longer hauls by truck carriers.

While these trends have driven an upsurge in demand for over-the-road transport services, other powerful

Getting Greener Together

By Fabrizio Brasca and Hal Feuchtwanger

friendly future for transportation management

forces—including economic pressures and more stringent environmental regulations—are spurring organizations across the supply chain to seek more efficient and sustainable transportation solutions.

An Environmental Protection Agency (EPA) program being phased in through 2010 regulates heavy-duty vehicles and fuel, requiring high-efficiency catalytic emission controls and reducing the allowable sulfur content for both diesel fuel and gasoline. Once fully implemented, these tighter environmental controls are projected to reduce the emission of nitrogen oxide by 2.6 million tons a year and to reduce the emission of soot or particulate matter by about 110,000 tons annually. Those changes alone are expected to yield many positive results, preventing an estimated 1.5 million lost work days, 7,100 hospital visits and 360,000 asthma attacks in children each year.

That progress, however, comes with a cost. The American Petroleum Institute estimates that to comply with new ultra-low sulfur diesel (ULSD) regulations, the domestic refining industry has already spent \$8 billion.

The U.S. government also estimates an ongoing \$0.05 to \$0.25 per gallon increase in the price of ULSD fuel.

Given these powerful trends, how can organizations develop a workable program of greener transportation?

Specialists in sustainable transport now recommend a three-stage approach designed to reduce transportation-related emissions, while also helping companies control costs and improve the efficiency of truck-based shipping.

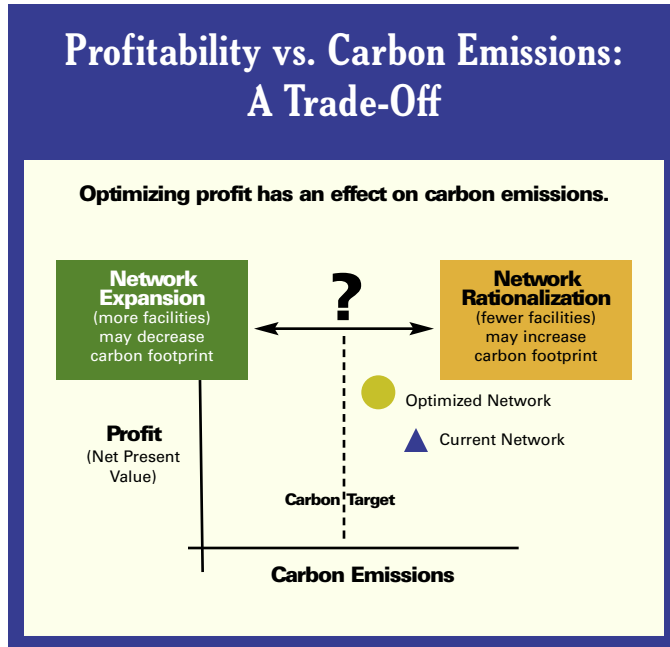
The first step is to measure and report on emissions-related activities. Manufacturers, shippers and third-party logistics providers (3PLs) can do this by developing an ongoing capability to monitor and document the organization's carbon footprint.

Next, transportation firms should design and plan for sustainability. They should create and evaluate network changes that will contribute to greater sustainability, while always considering the financial and efficiency implications of any change.

GREENER **CONTINUED** on Next Page . . .

Finally, companies must learn to collaborate with partners and to comply with increasingly stringent sustainability requirements. By working within a consortium-based business model, shippers and others can identify collaborative opportunities to reduce waste, cost and carbon emissions.

Figure 1



A green evolution

Like many high-level objectives, sustainability requires a long-term commitment to making incremental gains in transportation performance. Most organizations progress through the following natural stages of transportation sustainability. Experience teaches us that as they move through the increasingly sophisticated and collaborative stages of this evolution, companies gain both hard cost and productivity benefits—as well as the social and business benefits of improved sustainability.

Internal network optimization. The most obvious and logical place to begin the search for greater transportation efficiency and sustainability is within an organization's own internal transport network. Most shipping-dependent companies began this process years ago by working to identify internal opportunities to reduce costs and waste, and to streamline the enterprise supply chain.

Internal network optimization can and should yield measurable returns, in part because organizations are most familiar with their own operations and because they have the control and ownership needed to affect rapid and effective change. Fixing your own network, however, is often just the “low-hanging fruit” of transport optimization. To affect broader transportation enhancements, and to move toward a greener corporate position, companies must look beyond the borders of their own enterprise.

An expanded ecosystem. Most large retail and manufacturing organizations rely on diverse and complex supply chains. Once they have wrung measurable new efficiencies out of their own network, the next logical place to seek transportation optimization is with suppliers, partners and customers.

Many transport-dependent organizations have at least begun the process of working with their vendors and partners to seek savings in costs, trips and emissions. By expanding the breadth of an optimization effort to include their entire transportation ecosystem, organizations can leverage today's sophisticated supply chain design and management systems to drive cost savings, improve performance, and create sustainability up and down their supply chains.

Multi-shipper collaboration. Those shippers that aggressively pursue improvements in their internal networks and their extended transportation ecosystem often make the obvious network and operational adjustments capable of having a meaningful impact on transportation efficiency and sustainability. To make further gains, they must look beyond those established networks and relationships to seek optimization opportunities by creating farther-reaching collaborative relationships with other shippers.

By evaluating transportation flows across multiple shipper networks, this collaborative approach promises to reduce unproductive miles and their associated carbon emissions, most notably for private and dedicated trucking fleets. While there have been some previous attempts to identify and leverage collective opportunities across shippers, those efforts have typically been informal, non-binding and frequently less than successful.

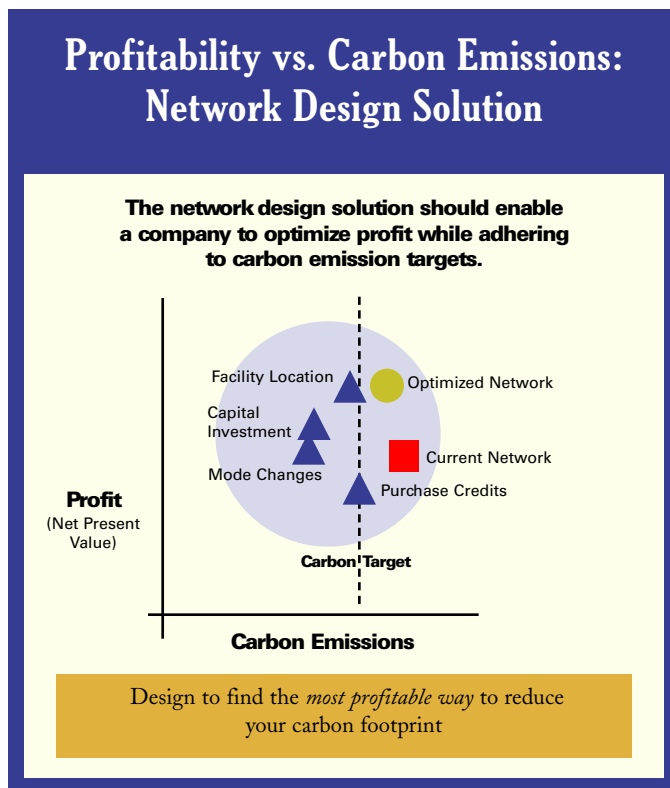
To fill this void, a new and more refined approach to multi-shipper collaboration has now emerged. This new approach begins with a comprehensive effort to identify truly synergistic, shipper-to-shipper transport opportunities. It requires a more holistic and structured process, and utilizes constraint-based techniques to identify, analyze and pursue optimization opportunities.

This third-generation of collaboration represents a more socially responsible approach to shipping—one that satisfies practical cost- and efficiency-driven business requirements while also creating a greener, more sustainable transportation model. In fact, by evaluating collaboration as a logical element in a larger sustainability effort, shippers can realize both immediate transactional benefits and long-term social and business advantages.

Making collaboration work. By focusing on “unproductive” miles, this collaborative cross-shipper approach makes otherwise unusable freight capacity available to shippers and 3PLs. Effective multi-shipper collaboration is best formulated using a two-step process.

In the first step, consistent freight flows that can be

Figure 2



matched with consistent equipment capacity are leveraged across multiple shippers as part of a logical transport planning process. This process begins with the creation of a comprehensive network overlay for two or more shippers. By examining those networks in comprehensive detail, managers can identify natural synergies and opportunities for routine freight solutions. When routine, repeatable opportunities are found, they are transitioned into the standardized transportation plans of the respective shipper networks.

This search for consistent strategic transport opportunities requires sophisticated analytic capabilities, and the good news is shippers can now utilize best-in-class tools to make more informed and successful transport decisions. At the strategic/tactical level, this consortium-based approach to collaboration should address the consistency of freight flows and equipment capacity, and involve direct shipper-to-shipper negotiations, lane and rate commitments, and commitments based on volume and timing.

A strategic supply chain application, for example, can be used to capture and evaluate detailed historical information from multiple independent sources. That information can then be used to develop shipper-specific perspectives on transportation-related costs, capacity usage and emissions output. By allowing organizations to consider a wide range of shipping alternatives—including truckloads, rail, intermodal carriage, cost-optimized less-than-load shipments, multiple-stop truckloads and EPA SmartWaySM certified carriers—shippers can control marginal costs while improving

both transport and emission-control performance.

A transportation-oriented modeling solution can then be used to monitor, evaluate and report on all key transport-related activities, including network strategies, modes, carriers and other transport variables. Today's most advanced tools employ sophisticated data and optimization techniques, allow "what-if" analysis, and are specifically designed to compare merge-in-transit, co-mingling, multi-leg, multi-drop, dynamic hub and other transport strategies. Shippers can deploy an advanced transportation modeling tool to maximize asset utilization, to improve on-time delivery and customer satisfaction, and to achieve an optimized freight balance that will reduce transport-related costs and emissions.

Once organizations have addressed these strategic and tactical opportunities, they can leverage an even higher level of collaboration to tackle the operational challenges of remaining excess freight. In this second step, uncommitted or incremental freight that cannot be matched with consistent equipment capacity should then be considered as part of an "exchange-based" operational or transactional planning process. At the operational/transactional level, this consortium-oriented model is ideally suited to address inconsistent or incremental freight flows and equipment capacity, spot lanes and rates, and situations that provide little or no volume or time-based commitments.

To meet this need, a new transportation capacity exchange (TCE) concept has emerged. Industry experts say a TCE would leverage detailed overlays and analysis of multiple shipper networks, with a hosted web-based portal where excess capacity opportunities would be posted, matched and contracted for resolution. In the emerging TCE model, shippers and 3PLs offer unused capacity, other organizations acquire that capacity at a competitive rate, and the collaborative partners share the resulting reductions in costs and carbon emissions.

To better understand how this cooperative approach can support more sustainable transportation networks, let's take a closer look at the TCE model.

A transportation collaboration exchange

As currently envisioned, a transportation capacity exchange would serve as a syndicate of trusted partners who would use the TCE to share incremental freight and excess transport capacity, thus improving the efficiency and sustainability of their transportation operations.

This transaction-based exchange could be implemented in a number of ways: by a shipper that does not currently use integrated load planning across various internal divisions; by a 3PL to serve different customers; or, in what may be the most promising formulation, among non-affiliate

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shipping companies that work with a trusted partner to form a consortium network-based TCE.

To deliver measurable benefits, a workable transportation capacity exchange should perform two basic functions. One, it should support the qualification and matching process, including both the initial search to identify the appropriate consortium relationship for a participant, as well as qualification and matching for individual load requests. Two, a TCE should function as a communications portal to support the management of transactions through the operational lifecycle.

To accomplish those two key requirements, a TCE will ideally be supported by a competent solution and service provider. That trusted partner must be capable of supporting the identification of opportunities across participant transportation networks. The solution provider should also provide the platform needed to match capacity with transportation requests and to facilitate the crucial communications process.

For shippers striving to be green, a TCE can be a powerful part of the sustainability tool kit.

Benefits of the TCE

The transportation collaboration exchange holds significant promise for shippers in virtually every transport sector.

A TCE:

- Enables shippers to identify, offer and sell otherwise unused capacity
- Ensures excess capacity is available to other shippers at economic rates
- Creates visibility into available capacity across participating shipper networks
- Allows for both manual and automatic matching of load requirements and available capacity

- Provides comprehensive transaction support
- Spreads shared cost savings among collaborative partners
- Reduces both shipper-specific and aggregate carbon emissions

The future of transportation networks

Shippers face intense pressure to improve the performance, cost efficiency and sustainability of their transportation networks. Having wrung cost and inefficiencies out of their internal transport networks and their extended partner-based supply chains, forward-thinking shippers are now exploring cooperative relationships that reach far beyond their traditional networks. By working together, smart shippers are getting greener.

Multi-shipper collaboration represents a logical next step in the evolution of sustainable transport networks. This approach uses advanced data and analytic capabilities to identify and exploit mutually beneficial opportunities to optimize trucking across shipping organizations. An innovative new transportation collaboration exchange—supported by a trusted service provider and populated by interested shippers—will enable shippers to post, match and share marginal load and capacity offers.

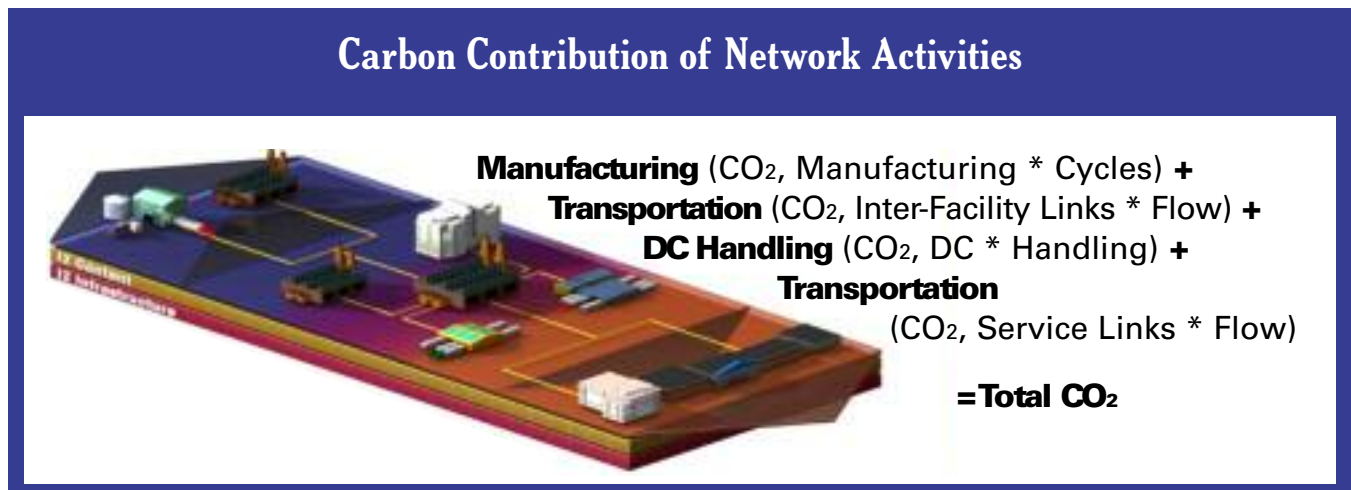
In today's challenging transportation environment, shippers can adopt this broader collaborative approach to control transport costs, to improve customer service and to tread more lightly on the global environment.

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Figure 3





Customer-Centric Strategies for Assortment Management

by Gurdip Singh and Ijaz Parpia

Long before Main Street was eclipsed by Wall Street, proprietors of mom-and-pop stores had achieved the “customer-centric” shopping experience that’s now coveted by retailers nationwide. It was a simpler time for inventory management: the owners knew their customers well, what products they needed and how much they would be willing to pay for them. If a customer requested something the store did not carry, it was simply added to the next purchase order. Today, the shopping experience looks much different. The proliferation of department stores, grocery store chains and big-box stores during the past two decades has ushered in dramatic changes to the retail landscape—rendering customer-centricity an increasingly elusive goal.

This has resulted in the merchandise planning process becoming more centralized with the majority of decisions taking place at the retailer’s national headquarters. The store manager—who continues to have the most frequent contact with customers—has little control over selecting products that will best meet those customers’ needs. While a centralized planning process enables retailers to achieve substantial cost savings, it has slowly eroded their ability to connect with customers and meet their specific market needs.

Retailing is rocket science!

Meeting local market needs is just one of many factors contributing to the increasingly complex task of inventory management. How do retailers balance changing market conditions, financial risks, and global sourcing and manufacturing opportunities, all while accommodating fast-changing trends? How do retailers accurately forecast inventory positions when previous buying patterns don’t hold true in the current economic environment? And how can retailers ensure that their merchandise forecasts and plans are actually achievable?

To add to the retailer’s woes, recessionary consumer spending continues to affect sales. While October 2009 retail sales declined compared to the previous year, categories like apparel, sporting goods, books, music and personal care improved, offering retailers with some hope for the 2009 holiday season (“October Retail Sales A Mixed Bag As Holiday Season Approaches,” www.nrf.com, November 16, 2009).

Achieving customer-centricity through right brain/left brain synchronicity

Regardless of whether economic recovery is imminent or months away, retailers that embrace customer-centricity will be better prepared to manage the complexity of

CUSTOMER **CONTINUED** on Next Page . . .

inventory management and maximize sales in the short term. To create a customer-centric shopping experience, it is critical for retailers to make smarter decisions about product selection and assortment breadth and depth.

By employing buying and assortment management strategies, retailers can define and understand how to target their desired customer segments (see Figure 1). They can then integrate that information with their internal planning and execution processes with a level of expediency that meets customers' expectations and outperforms the competition. The crux of this process hinges on retailers knowing exactly what products interest their desired customer base, so they can be confident customers will continue to shop at their stores—regardless of how the economy is performing.

The retailers that are surviving—and in some cases even thriving—in the economic downturn are investing in a customer-centric approach to buying and assortment management. By implementing the following winning strategies, these retailers continue to achieve top-of-mind status among their key customers.

Strategy #1: Narrow assortment based on local needs

Successful retailers are intelligently narrowing their assortments to address local market needs. This involves tailoring assortments to key customers by employing

microsegmentation—accomplished by analyzing forward-looking buying patterns of those preferred customers—which enables retailers to then stock for and target such shoppers directly. This strategic approach shifts retailers' assortment management strategies from the national level to the store level.

This means consumer goods companies will fight for shelf space, especially as large retailers take the lead in reducing inventory assortment. These types of shelf constraints are common with European retailers, as their stores are typically smaller than those in the United States. With this new approach, retailers will need an assortment tool that features space-constraint planning to ensure they are achieving maximum value with their shelves and fixtures.

Strategy #2: Improve inventory flow

Retailers that refresh their product mix on a regular basis can expect to see greater foot traffic through their stores. More dynamic floor-sets and the resulting shorter product lifecycles create the urgency of buying now—and result in less inventory overall. Store managers are able to tell customers when new inventory is coming in, so returning customers are not just those reconsidering a purchase.

Strategy #3: Simplify the customer shopping experience

Today's hurried, budget-conscious and eco-friendly

Figure 1

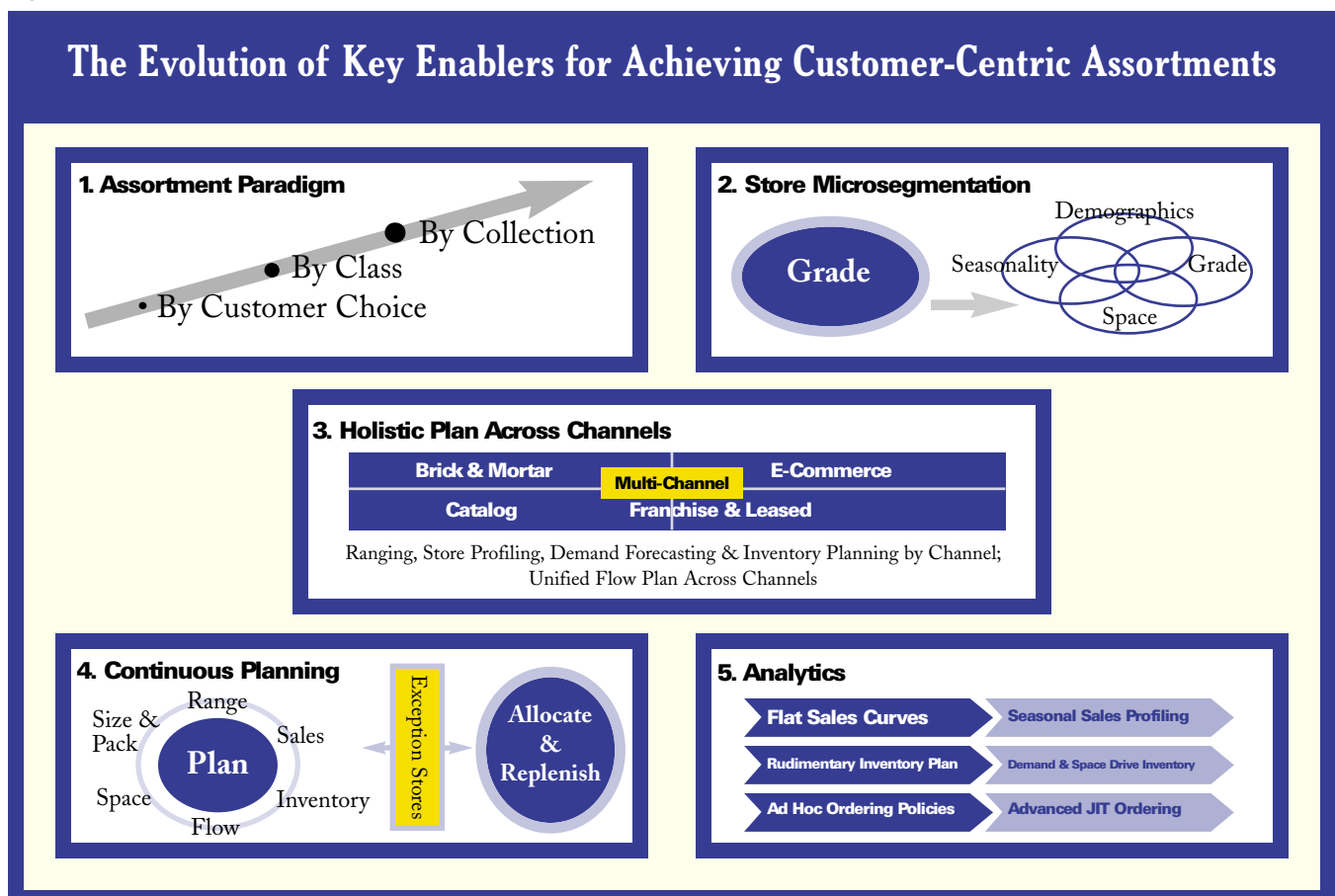
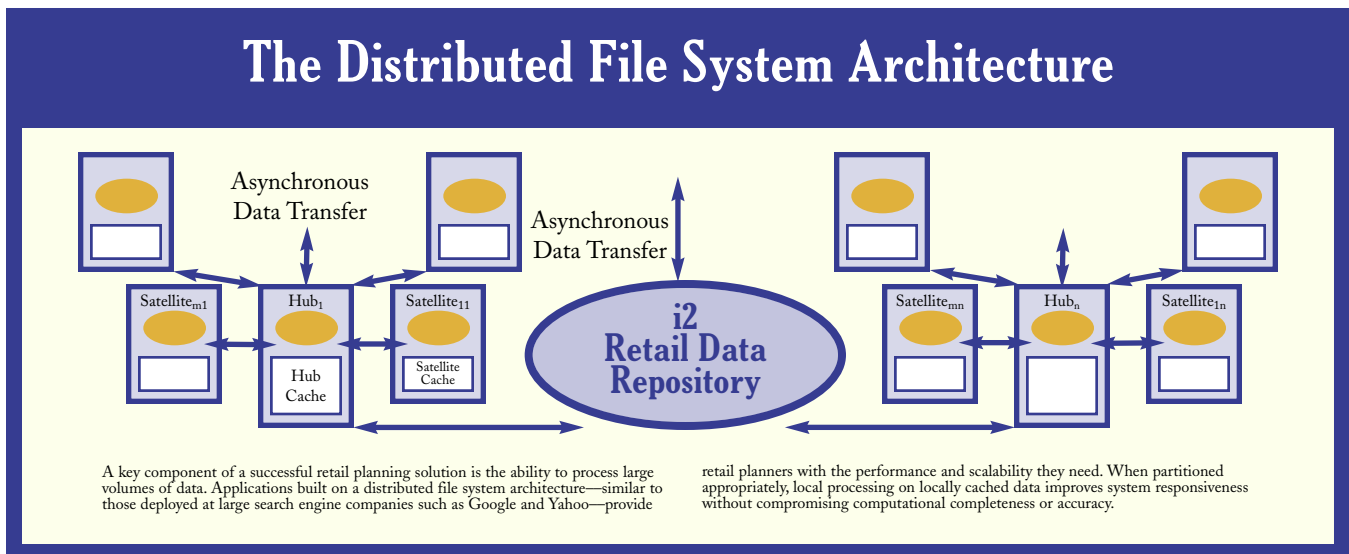


Figure 2



shoppers are interested in getting all their shopping done in one trip in order to save time, money and gasoline. Winning retailers not only carry the right products, but also strategically place assortments of market baskets, collections or ensembles together in a way that simplifies the shopping experience for the consumer (See “Shelf-Centered Collaboration,” page 12).

For example, fashion retailers that arrange an entire look—such as the blouse, skirt, shoes and accessories—in one display reduce the likelihood that a customer will need to go to different departments (or worse, other stores) to locate the right shoes or purse to match an outfit. Not only does this create a simpler, stress-free experience for time-crunched consumers, but it also increases the chance that the customers will buy more in a single visit.

This represents a dramatic shift in thinking for retailers; they now must focus on how their customers want to buy products instead of on how they source and purchase products. This change in priority can affect the entire buying and assortment process for a variety of the store’s products. For instance, if a retailer decides to carry 15 styles of boots, but half of them can only be worn with skinny jeans that are not being stocked this season, the likelihood of meeting sales targets is poor.

Industry executives and analysts say some of the largest retailers are expected to slice the product assortments in their stores by at least 15 percent in the next year or so. Walmart disclosed plans to cut the variety of its microwave popcorn by 25 percent, and Rite Aid Corporation revealed plans to reduce the variety of its pain-relief products by 14 percent (“Retailers Cut Back on Variety, Once the Spice of Marketing,” *The Wall Street Journal*, June 26, 2009).

Strategy #4: Anticipate and react quickly to changes in consumer needs

The current economic environment makes it harder to forecast demand because previous buying patterns are not

a good predictor of future trends. As retailers see changes in demand, they need an iterative, interactive process with suppliers so that rapid decision making can be implemented at the store level.

Many retailers collect point-of-sale data, but do not have the capabilities to quickly act on the demand signals from that data. In fact, while 67 percent of retailers are using consumer analysis and insights to drive chain-wide marketing and merchandising decisions, only 47 percent indicate that they are using consumer insight to inform activities such as demand planning and forecasting, according to a May 2009 Precima report entitled “Winning at Consumer Centricity: 10 tips for Retailers and Manufacturers.”

Retailers not only need the ability to re-forecast target segments based on demand signals, they also need to account for inventory and supplier constraints, integrate assortment decisions with price and promotion decisions, and view how those changes will affect future sales. Once retailers integrate these processes, they must then be able to execute the re-forecasted changes at a pace that meets—or even exceeds—customers’ expectations. With this type of continuous planning, reconciliation with the financial merchandise plan is even easier for retailers.

While speculation is mixed on how quickly the U.S. economy will recover, retailers focused on integrating customer-centric buying and assortment management strategies into their operations will be well positioned to ride out the current economic pressures—and emerge from this recession stronger than ever.

Gurdip Singh is vice president for i2’s retail and consumer industries sector. **Ijaz Parpia** is vice president, retail solutions for i2. For more information, **contact** supply_chain_leader@i2.com.

LG Sets Its Sights

LG Electronics, Inc., a multi-billion-dollar technology leader in home appliances, consumer electronics, mobile communications, business solutions and air conditioning, looks to not only become the top company in its industry, but also one of the best supply chain organizations in the world. Learn how LG plans to have one goal help enable the other.

As chief supply chain officer for LG Electronics, Didier Chenneveau has global responsibility for the company's supply chain management. He is based at LG's headquarters in Seoul, Korea. In this September 2009 interview, conducted by Kelly Thomas, i2's senior vice president, product strategy and planning, Chenneveau discusses LG's strategy to create and maintain a world-class supply chain organization, and how these efforts will help the electronics company achieve its overall business goals.



Didier, your title is chief supply chain officer. There are a lot of companies out there struggling to create a supply chain organization that drives maximum value to the company. Can you explain your role at LG, and how you're organized for success?

My role is, in a sense, quite simple. I try to coordinate all of the supply chain activities throughout the corporation. When we had a new CEO coming in about a year and a half ago, we realized that it was of great strategic importance to ensure our supply chain was a core competency for the company. We really wanted to elevate this function to a "C" level from a staff level. Prior to that, it had been fairly decentralized among the five big businesses that we have.

We wanted to bring a truly world-class professionalism to that position. So I think that it's a good way to organize. Obviously, we have a central function, which I head, but we also have supply chain leaders in each of our businesses who focus specifically on their respective business. Then we also have a regional organization where we have supply chain executives at the vice president and senior vice president levels running our regions.

In your previous positions, you worked in finance and operations. How has the finance experience helped you in your current role, and what is the intersection between finance and supply chain? How do you see those two working together?

It's been quite helpful. I worked for many years at HP, and I actually started in treasury as a currency trader, but then fairly quickly moved into more classical finance. Especially at HP, and I think at many corporations, there's a lot of movement between finance and operations, because it really helps to have a good understanding of the cost structures and the cost drivers. So, I think it's critical for operations people to have a financial background.

Today, in the role I play, finance is of the utmost importance, of course. We constantly look at the numbers.

on Number One

We have a lot of key performance indicators. We have metrics in a lot of areas, so my financial background helps me in this regard.

On the metrics front, we've seen that many other supply chain leaders are maniacal about measurement. They have good linkages from top to bottom. Is this true at LG? Can you roll up and roll down metrics?

We're trying really hard in that respect. Traditionally, I've seen that things were cut in very small buckets, and very often optimized into very small buckets, and not always optimized completely. One of the biggest challenges has been to create this end-to-end visibility. We always measured cost in fairly small pieces. We tend to optimize only for those small pieces and not the overall end-to-end supply chain cost. I've been constantly reminding people that being the cheapest outbound with a factory in China may not mean being the cheapest once the product has landed in Europe or North America.

That's certainly a challenge, and we see that in quite a few situations. So you're looking for the best global answer when making decisions?

Yes, and the metrics have to incorporate the total landed cost at the customer's warehouse or picking point. It cannot just be the best warehousing cost in China, or the best transportation from China to Europe, because the sum of those bests may not be the optimum. We are still struggling to have this type of good visibility, but it's getting better. Obviously the IT systems are helping a great deal.

LG has a goal of ranking among the top three electronics, information and telecommunications companies. What role does supply chain management play in the strategic goals of LG?

It's a critical one. I always say it is one thing to have the greatest design and the greatest product, but you must be able to deliver it to the customer. We're traditionally a very manufacturing-focused company. We're trying to transform more into a customer-driven and product-driven company, but the supply chain still plays a critical role. That's what's going to link a great R&D and a great product development effort to customer delivery. All of

the supply/demand matching processes, all of the logistics processes, all of the transportation processes and all of the order management processes need to be absolutely world-class. Otherwise, we will never achieve that number one status, which we really strive for.

In that area, what do you see your customers pushing for in terms of delivery? What are some of the trends that your customers are driving?

We see more and more requests for direct delivery, so we're trying to bypass the node. Obviously, the more nodes in the supply chain, the more risk we have of having excess inventory, and the wrong type of inventory. So a direct shipment from our factories to some of our customers is definitely something we are trying to implement. With North America, for example, we manufacture TVs in Mexico. For many customers, we are trying to deliver directly to the warehouse.

Can you do that with international sources of supply, or do you have to do that with regional sources of supply?

No, you could use international sources in the case of cell phones. It's quasi-direct, so your cell phone would come from either Korea or China to a Chicago hub, for example, and then we would distribute those directly to the operators.

In the past you've talked about a focus on process, people and partners. How do you see that concentration interweaving with the supply chain? What's the role of technology in that mix?

I settled on these three—what I call the three Ps—to send a very clear message to the organization about what we needed to focus on. It is kind of a rallying cry, and it has been the center of my internal communication. I keep reminding people that we need to focus on having the best processes, the best people and the best partners to achieve our objective, which is to be one of the top 10 best supply chain companies in the world. The role of technology incorporates these three pieces.

INTERVIEW **CONTINUED** on Next Page . . .

With process, obviously, IT systems need to be there to support us. So we have very fluid supply/demand matching processes. By definition, all of the processes need to be supported by the system in a \$50 billion dollar corporation. When it comes to the people side, our team needs to be able to master technology, to understand how to operate the software and to have the skills that enable us to execute. The partner side is also very important. I want to work with partners that can master technology, because that will make them more efficient for us. We really need to have that quality of partner, and that will reduce their cost structure as well.

Do you do supply/demand matching on a global basis?

No, we currently do not. We have five major businesses, and we have essentially five supply/demand matching engines, but we're looking at consolidating those. What we are definitely doing globally in all of our marketing subsidiaries around the world is defining the processes. We know exactly how it must be run, and we're trying to do it only one time, not 82 different ways, times five different businesses, which would be a nightmare.

The supply/demand matching process, and how we go about doing the demand forecast, have been defined and standardized around the world. We're actually evaluating each and every marketing subsidiary on their compliance with the process, so we have a fairly sophisticated capability index. We look at whether the subsidiaries are following the process as it has been defined.

And then the direct interaction with the retailer or the customer is done by the marketing subsidiary in that process?

Yes, absolutely. We basically moved from a monthly planning process to a weekly process. We are trying to do weekly collaboration with retailers as much as possible. In many instances, with the most advanced retailers, we are doing collaborative planning, forecasting and replenishment thought processes, and that's done country by country, by what we call our marketing subsidiaries.

What kind of benefits have you seen by moving to a faster cycle, from monthly to weekly?

It's much easier to plan your business when you do it 52 times a year, than when you do it 12 times a year. So, sales forecast accuracy obviously goes up, which is one of the key measures we have. We measure it at 4 weeks, 8 weeks and 12 weeks. It is relatively low. About 12–18 months ago, our 4-week forecast accuracy was in the



mid-20 percent range. By standardizing the process using some of the i2 software, we've been able to increase this dramatically. We're probably around 35–40 percent now. I think to be a world-class company, we probably need to reach 50 or 60 percent, so we still have a ways to go, but it's at the core of our supply chain process. You can't have an efficient supply chain if you don't do supply/demand matching well.

With distributed marketing subsidiaries, obviously people play a critical role in the standardization of processes. How do you train the team to drive a single process across multiple marketing subsidiaries around the globe?

It is challenging. I have a team of excellent people in Korea and around the world helping us do this. We have a program that we call our Change Acceleration Program,

and we send 2 or 3 people from headquarters to the subsidiary to spend four to five weeks with the folks in the country going through the process.

So, it's not just 3 consultants coming for 2 days, telling you how to do things and leaving. We actually integrate them with the team so they can go through the process multiple times during a 4- or 5-week period to ensure they really understand how to do it. It's been quite successful. Since we've done this, we've seen the sales forecast accuracy go up quite dramatically.

When considering rolling out to emerging markets, do you see any challenges related to infrastructure, driving these standardized processes, and so on?

Actually, no. It's quite interesting. If you look at a market like China, for example, we've been quite successful with planning based on sell-out rather than sell-in. The structure of retail in China allows for a lot of promoters to be actually in the store. So we get fairly accurate data on sell-through and inventory from the promoters on an almost daily basis. There are some markets in which the information is not being received in traditional ways like it is in the United States, but we achieve a similar type of result just because of the structure of the retail market.

Some of the markets are a little bit more challenging, mainly because it's hard to recruit supply chain talent, such as in Eastern Europe, for example. There's truly a shortage of supply chain talent, so it is a little more difficult to find the skill set we need. But in general, it has been fairly level across the world.

Particularly in the last few years, we've seen companies driving a lot of efficiencies and reduced cost in the area of transportation. What has LG done in the area of transportation, particularly as it relates to i2?

We've basically done two things. We have really improved our global bidding processes—the way we go about procuring transportation on a global basis. We've put a better bidding system in place. We've analyzed the marketplace. We've tried to be more efficient in our use of transportation.

The i2 tool has helped us in the transportation management piece, which we've implemented in a certain region of the world. It's optimizing the routing, optimizing the network and trying to optimize the loading of the truck. We still have a ways to go. I have plans to roll out the transportation management system around the world. It's not complete, but it is definitely on the roadmap.

Currently we are working with i2 in Europe to see

how we can achieve more good results. It's been quite successful in North America. We've done it in the United States, Mexico and Canada. We've done it in Korea, so now it's time for expansion.

With a global, multi-tier supply chain such as yours, how can you optimize service levels while positioning the minimum amount of inventory? What kind of risks does a global supply chain present?

This was obviously a big opportunity for LG. Traditionally, the safety stock setting had been done in a fairly uniform way, so we had set up safety stock at 2 weeks, 10 days, 15 days, without much regard for the variability of the demand, or the variability of lead time. We started a pilot program about 8 or 9 months ago, looking at our refrigerator business in Europe. We quickly came to the conclusion that we could maintain service levels or even improve service levels while reducing the safety stock and the total amount of inventory we had in the chain. We had countries where we had safety stock of about 20–21 days, and we found we could achieve the same service level with 7 days of safety stock.

So, that's what we are in the process of doing. Product by product, country by country, we are reviewing what our safety stock and optimum inventory levels need to be, and increasing it when necessary. People always tell me, "Oh, Didier, you only want to reduce inventory." I say, "No I want to reduce inventory when I think there's excess, and when the mathematics tell us there's excess. We will increase it where it makes sense." There have been a couple of countries in which we've actually increased inventory levels to improve availability.

What role do your customers play in that area? Are they pressuring you for greater amounts of inventory?

Not so much. I won't say that the pressure comes from retailers. Of course they want availability, and they want reliability. I think that's the most important thing. We were tying up a lot of cash in inventory that was not necessarily efficient, either because it was not in the right position, or because it was not being used. Some of it was aging. We had fairly severe aging issues.

The expectation is that, through this exercise, we are going to be able to continue to reduce our days of inventory. Approximately 12–18 months ago, we had about 59–60 days of inventory on a global basis. We're running at about 47 days now, and I think world-class is probably about 40 days, so we have about another 6–7 days to go.

INTERVIEW **CONTINUED** on Next Page . . .

For many of the companies that we've seen, inventories on an absolute basis have come down, but sales have come down even faster than inventory. How have you fared so well with inventory in the economic situation you've dealt with in the last 12 months?

As I just said, our days of inventory have dropped, and our sales have held well across the world. I think we anticipated the recession quite well. We created a war room focused on making sure we could succeed during a recession. We've made the necessary adjustments, and I think the brand is getting stronger, so I think that's helping.

We deal with many multi-billion-dollar companies that have distributed divisions. They have central organizations and divisional organizations that have supply chain leaders, and they are challenged with how to best drive process uniformity. As the global leader of supply chain, what's the interaction like between you and the divisional or subsidiary supply chain leaders?

It takes place at several levels. First, we have a monthly review of our performance with our businesses in our region. So every month we get together, and we go through the discussion business by business, and region by region. We don't do the seven regions every month, but we rotate through the major regions, and we definitely do the business every month. We look at all our key performance indicators for supply chain management, and we also discuss some high-level strategic issues.

We have a supply chain council, which is made up of leaders from the various businesses and some of our key regions, and we meet two times a year to set high-level strategic direction. Then I meet with the business leaders, including the president of our five businesses, twice a year to review the major objectives for our supply chain, and we get consensus about what needs to be achieved.

I think that it's a fairly nice model. It certainly can be improved; there's always this issue within a matrix organization. Who really is the final decision maker? But I think we found our mark. Should it evolve over time? I should say so, but for now it's working pretty well.

What's your take on supply chain complexity and where we're headed in 2010 and beyond?



We're headed toward more complexity, because things are only going to get more sophisticated. That's why I believe a good process definition and great systems to support them are critical. I keep walking around the company and saying that we cannot run a \$50 billion dollar corporation on 20,000 Microsoft Excel spreadsheets. That just doesn't work. So we have to make sure that our systems are solid. And we're making a very substantial investment in system upgrades working with i2 and others to ensure that we have one single version of the truth. Everybody knows where to get the information, and there's only one way to get it. We want to ensure that people understand the system, and that they have visibility into both performance and execution.

Let's talk for a moment about the interaction with customers. There has been a lot of discussion about point-of-sale data, looking at store-level assortments, getting greater insight into demand, using those insights to drive replenishments and so on. What's your take on where things are headed with the channel relationship?

I think that point-of-sale data, for example, will help us better identify and respond to out-of-stock situations more efficiently than we do today. We have definitely moved from a sell-in forecasting model to a sell-out forecasting model. We are training all of our subsidiaries to focus on this and base their planning and forecasting on true sell-out to the customer, not sell-in to the retailer. We want to capture this information on a weekly basis. We want to know inventory levels at each and every retailer. We're not necessarily at the store level today, but I think we are going to reach that level of sophistication.

What is LG's position on green supply chain initiatives, and where do you see these sorts of endeavors going in the future?

Like any responsible corporation around the world, we pay a lot of attention to our environmental impact. I'm currently running a global study to determine our carbon footprint and carbon emissions based on our transportation and supply chain activity. Once I receive the final report, I'm going to make some decisions about optimizing our transportation and logistics to reduce the footprint over the next few years. This is critical. Every responsible company has a stake in this. LG, like the rest of Korea as a matter of fact, will play an active role in making sure that we're doing the right thing.

Do you see that becoming systematized and actually part of a monthly or weekly process?

I'd love to. Right now doing the measurement itself is still quite complex, so it's taking us a few months to make sure that we have the proper methodology, and that it's the methodology that's accepted by the worldwide community. We want to ensure that we're not just doing something to look good, but that we are following a rigorous process. Eventually, maybe not every month, but I hope that at least two or three times a year we are able to assess the footprint and the measures that we are taking.

You've had operating executive roles in all regions of the world, and you've been with LG for at least 18 months now. Any surprises in your tenure so far?

It's been a very, very interesting journey. There is obviously a totally different management style than what you find in Western companies, but that is what I wanted. There have been great learning experiences. Asian and Korean companies are undergoing great transformation, and I think they are learning very fast. They are becoming global very quickly.

How have your experiences in other parts of the world helped you in the Asian region?

As a leader, you want to be able to communicate a clear vision and try to rally people around it. I don't think there's one single recipe, but over the years, I've learned to communicate in different environments and try to have people get behind the vision. Our vision is relatively simple. I tell folks that what we're doing is not rocket science. It's about having simple, clear processes that are repeatable and supported by systems. It's about having good skills around supply chain, and clear communication about what we're trying to achieve. We're not trying to put a man on the moon. We are trying to run an efficient, modern supply chain of a global corporation. So with good vision, good intelligence and good metrics, I think we will be one of the top 10 supply chain companies in the world. That's what will enable us to become number one in our industry. Being in the top three was the objective for the past two or three years, but obviously our objective now, which has been clearly stated by our CEO and the management team, is to become the number one consumer electronics company in the world. I think that's what motivates our people, and that's what drives our success.

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Proactive Planning for Demand Uncertainty

Risk management is an emerging area of supply chain management. To address the risks facing companies today, i2—together with its visionary customers—has been developing innovative solutions such as i2 Sales and Operations Management, i2 Scenario Manager and i2 Inventory Optimization. Here, Stanford University's Blake Johnson offers his perspective on this important issue.

The current economic environment has made all of us aware of the risks and market uncertainty that surround our organizations. The question many businesses are asking is, “How can we make managing these risks part of our daily operations?”

At the root of the problem: uncertainty in supply and demand is undeniable; however most core planning processes today are deterministic—a legacy from a more predictable era.

This disconnect is visible in operational performance on a day-to-day basis—in excess inventory, late deliveries, missed market opportunities and under-utilized assets—and in the financial performance this operational performance drives (see Figure 1). The toll on supply chain teams is enormous. Changes in the plan typically mean long hours of firefighting, debates over accountability and strained relationships.

While the consequences of failing to proactively manage supply chain uncertainty are not new, the magnitude of their impact over the last 12 months has led many companies to conclude that now is the time for change in core planning processes. To make these changes, companies must not just identify risks, but understand how to quantify them.

If you can't measure it, you can't manage it

Most companies know what their key risk factors are, and also know the levers that drive their exposure to them. For many companies, sourcing and outsourcing relationships are among these risk factors. For asset-intensive companies, capacity and tooling decisions are often critical. And for nearly all companies, demand uncertainty is a key risk factor—whether it arises from short product lifecycles, market and economic uncertainty, changing technologies or increased competition.

Figure 1

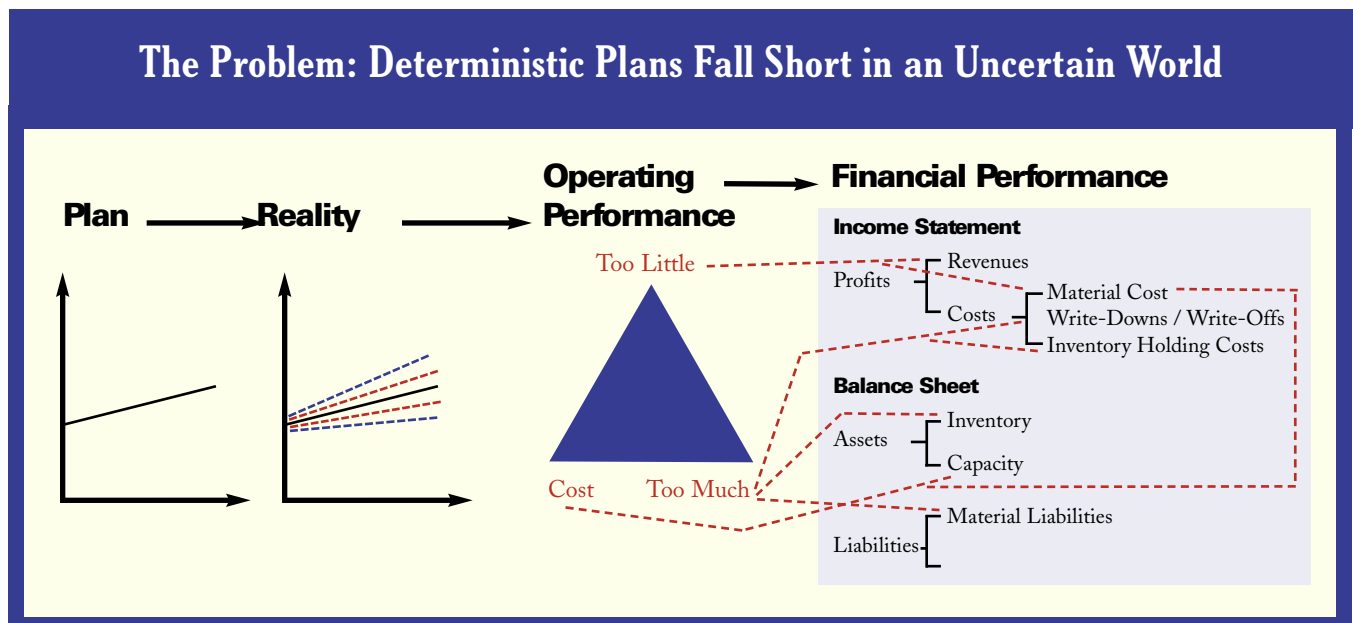
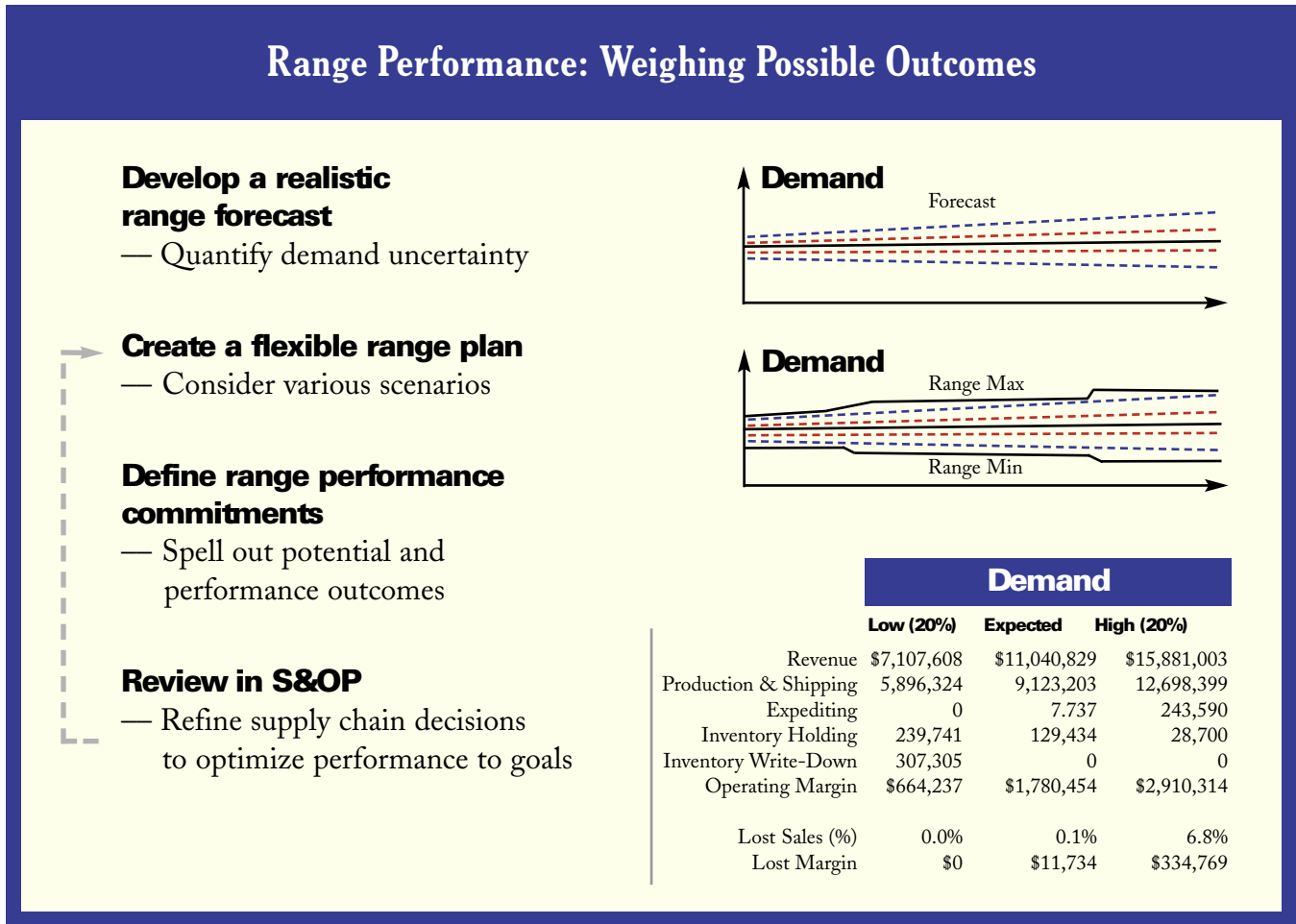


Figure 2



Even if these risks are acknowledged, businesses face two key challenges when managing these risks:

- **Inability to quantify risks.** Few companies have processes to quantify their key risks. While short-term demand variability is analyzed to set inventory buffers, the key planning decisions with the big dollar impact—the sourcing and capacity decisions identified previously—are based on best-guess forecasts, extending months and quarters into an uncertain future.

- **Inability to quantify the financial impact of supply chain decisions.** Most companies lack the ability to calculate the financial risk of their supply chain planning decisions. And if you can't measure it, you can't manage it. This gap is the number one factor companies cite as limiting their ability to identify and implement the supply chain decisions that would best position them for an uncertain future.

Range planning makes it possible to measure—and manage—risk

The good news is that range planning processes that overcome these obstacles are now available. They rely on

these key capabilities (see Figure 2):

- Range forecasts that quantify supply and demand uncertainty over the planning horizon
- Range plans that prepare for the variety of possible outcomes captured with range forecasts
- Range performance that quantifies the operational and financial performance and risk of range plans

Range planning is focused on a simple idea: identify the set of things that could happen, and plan proactively so that you can perform as well as possible across any of these potential outcomes.

We follow these same common-sense steps in our everyday lives. For example, if there is a chance of rain, we perform a quick range calculation to decide whether to carry an umbrella. If the chance of rain is 90 percent, we'll definitely bring one. On the other hand, if the chance is only 10 percent, we may balance the burden of carrying the umbrella with the low risk of getting wet. The role of range forecasts in the range planning process is quantifying the "odds" of key supply chain risks in a similar way.

OPINION **CONTINUED** on Next Page . . .

But the stakes matter as well as the odds. For instance, if we are going to an important job interview or are getting married, we might opt to bring an umbrella even if the chance of rain is only 10 percent, because getting wet would have a significant negative impact. Range performance enables the quantification of the stakes. In business, for example, a 5 percent stock-out risk might be acceptable, or even too low, for a very low-margin product—but extremely costly for a high-margin product.

In businesses that use range planning, range performance is the key output that the supply chain organization delivers to the rest of the company. Range performance specifies, for each possible demand outcome in the range forecast, “If this specific demand level occurs, this is the performance we will deliver.” This makes clear accountability possible, even in the face of uncertainty. As a result, cross-functional and cross-organizational alignment on risk become possible in key processes such as sales and operations planning, as well as the management of customer, supplier and partner relationships.

Range forecasting, range planning and range performance require these key process steps:

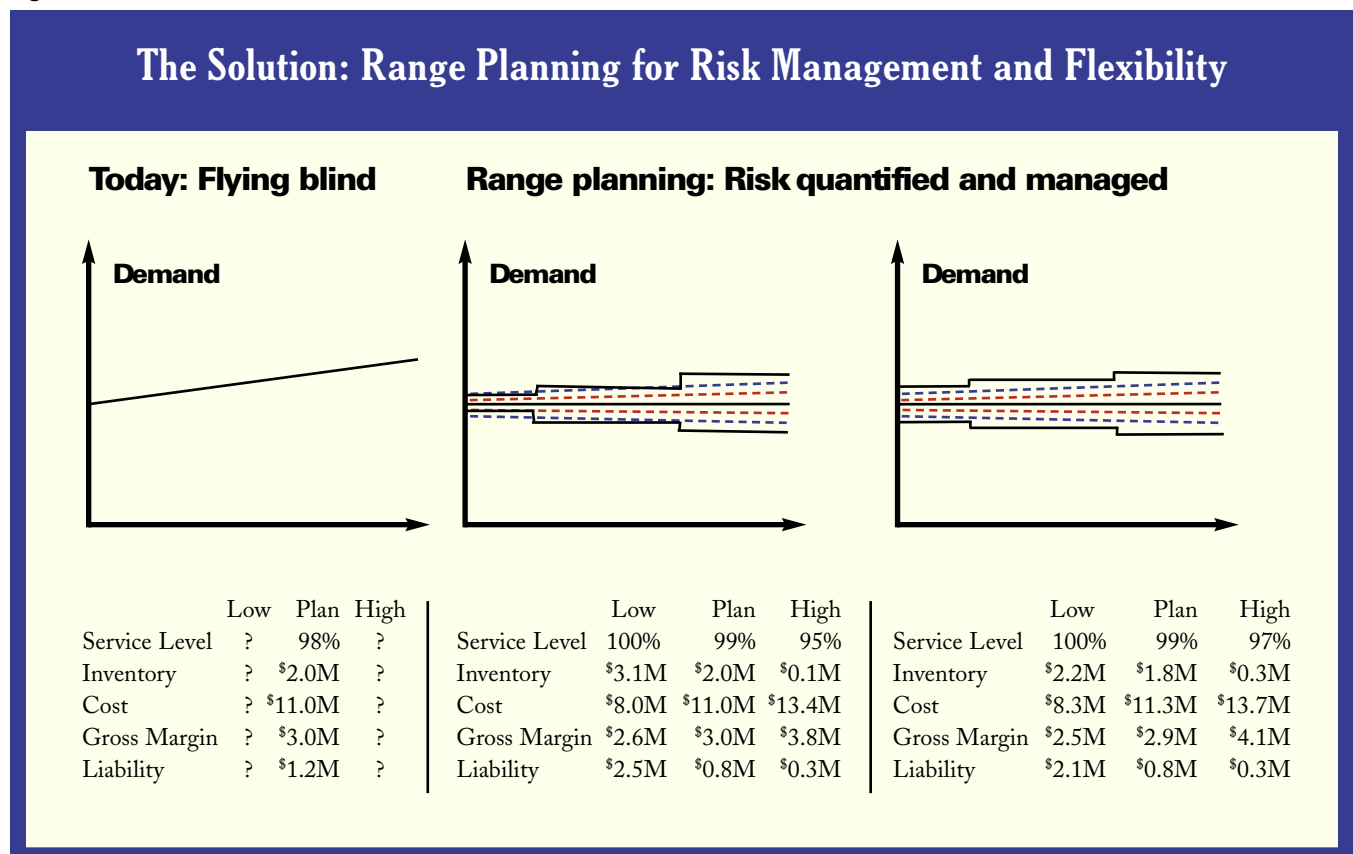
Range forecasting: What’s the longer-term weather outlook?

We all recognize that insight into short-term uncertainty—e.g., daily or weekly demand variability—is essential to making near-term decisions, such as setting the right inventory targets. To proactively manage risk over the planning time frame, uncertainty over future months and quarters must be quantified. It’s not enough to predict the weather today; the role of range forecasting is to predict what weather is coming.

The key range forecast input is data about the accuracy of a company’s current point forecasts—including error, bias and volatility by forecast horizon. This data quantifies the uncertainty, or predictability, of future demand over the planning horizon, and enables product-level range forecasts to be generated on an automated, scalable basis.

Range forecast accuracy can be further refined by slicing and dicing forecast error data by product line, stage of product lifecycle, past market or economic conditions, and other key drivers of forecast performance. For new, highly differentiated products or markets, expert judgment from marketing and sales may also be important.

Figure 3



Range planning: Should we bring an umbrella? Or sunscreen?

The role of range plans is to proactively plan for the future uncertainty captured by range forecasts. Range plans prepare the business by matching planning decisions to the level of confidence an organization has about different possible levels of future demand.

For example, the worst-case scenario defined by the low end of a range forecast represents a level of demand that the company has a high degree of confidence in. This confidence creates an opportunity to save costs. For example, plans for this level of demand can leverage lowest cost and long lead-time sourcing, as well as production and transportation strategies such as low-cost country versus domestic, ocean versus air, volume purchases, large batch sizes and full truckloads. These cost savings go straight to the bottom line.

On the other hand, the potential demand between the low and the high end of the range forecast requires flexibility. Because range forecasts quantify the amount of flexibility required by lead time, companies can create range plans that deliver this flexibility at the lowest cost, including postponing commitments to leverage better information as it arrives over time.

Range performance: Stepping out with confidence

The final step is selecting the range plan that best meets business goals. Range performance makes this possible by quantifying the operational and financial results of implementing a range plan under each possible supply and demand outcome captured by range forecasts. Since traditional planning processes are deterministic in nature, they only provide visibility into the future performance that will occur if demand actually matches the forecast—which it almost never does. (It would be like meteorologists always giving their weather forecasts with 100 percent probability—and being correct.) Because companies have no insight into future results under other potential demand outcomes, they must “fly blind” as they attempt to manage off-plan performance risks. Because these risks can’t be seen or anticipated, they often provide unpleasant surprises.

In contrast, range performance provides a complete, up-front view of future performance and risk across potential outcomes when that risk can be evaluated and proactively managed. Supply chain organizations that use range planning typically provide a “menu” of range performance options for management to choose from

(see Figure 3). For example, the range performance option shown in the middle of the graphic provides lower costs but less flexibility—and more risk—than the option on the right.

Supply chain teams that present these kinds of range performance options to key stakeholders in general management, finance, and sales and marketing almost always get a very positive response. A typical comment is, “This is what we’ve always wanted from the supply chain—future performance options we can count on, with risk exposures and performance trade-offs we can see.” All parties leave with clear alignment on the cost and risk trade-offs that have been identified as best for the business. Whether or not they choose to carry an “umbrella,” they can step out confidently, knowing they have made the decision that best balances all key costs and risks.

Making it happen: Supply chain leadership is critical

The key to successfully institutionalizing supply chain risk management is organizational change. Making the management of uncertainty part of core operational planning processes requires changes in demand and supply modeling, supply chain planning, and performance measurement and reward systems. Because the supply chain organization owns the planning decisions that drive operational performance, only the supply chain organization can facilitate this transition.

The ability to proactively manage uncertainty in supply and demand—a critical success factor in today’s economy—positions the supply chain organization in a leadership role and makes it essential to its counterparts in general management, finance, and sales and marketing, as well as to the future success of the company.

Blaine Johnson is a consulting professor of Management Science and Engineering at Stanford University. He regularly works with leading companies on risk management and other pressing business challenges.

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Asian Paints enables growth

When Asian Paints needed a competitive edge in the challenging Indian marketplace, the company found a clear advantage in establishing a leaner, more agile and cost-efficient supply chain.

Asian Paints is India's largest paint company and is ranked among the top 10 decorative coatings companies in the world. The company provides innovative solutions for decorative home improvement, industrial and automotive painting requirements. Asian Paints sells through some 25,000 local retailers, who resell its products to home users, contractors and painters. The company also sells paints and colors to original equipment manufacturers (OEM) and to large contractors serving the OEM marketplace.

To serve those demanding market segments, Asian Paints produces more than 1,200 standard paint product SKUs and many made-to-order formulations, and operates about 80 sales offices.

"We manufacture products at five production locations owned by the company, and at several contract manufacturers who make specialty or low-end finishes for us," says Manish Choksi, chief of corporate strategy and chief information officer for Asian Paints. "It's critical to integrate those manufacturing sites into a cohesive entity that delivers products to our customers without holding a large amount of inventory, while managing our cash cycle."

This dynamic marketing and production environment requires a sophisticated and robust supply chain. In its search for a true competitive edge, Asian Paints' executives set two key objectives for its supply chain. First, they sought to deliver product efficiently to customers without holding a large amount of inventory. Second, they wanted to manage their cash cycle to free up funding for an aggressive growth-by-acquisition strategy.

Building a strategic supply chain

Starting a decade ago, Asian Paints began leveraging advanced i2 solutions for supply chain master planning, materials and distribution planning, production scheduling, and change management.

Asian Paints implemented key solutions from i2's advanced planning solutions to cover the processes from sales forecasting, master production planning, raw material planning, distribution planning and shop floor scheduling.

Asian Paints applies advanced master planning tech-

nologies to decide which products should be produced at which manufacturing plants, incorporating variables such as cost and demand volume, capacity, current inventory levels, environmental requirements and other factors, optimizing across multiple objective levels like capacity, demand satisfaction, safety stock requirements, inventory optimization and transportation costs.

The paint company sources raw materials from domestic suppliers and international vendors, and the company uses a sophisticated materials planning system to manage those crucial supplies. Given that raw materials comprise 60 percent of its value chain, Asian Paints constantly improvises its bill of materials, routings and alternate parts. This leads to a complex alternate materials scenario during the procurement planning process. To ensure optimum raw materials selection, Asian Paints uses i2's factory planning software to manage a wide range of variables, such as the inflow and use of raw materials among multiple possible alternates across multiple alternate vendors and possible production routes. i2's advanced scheduling software is used to set weekly timing requirements on a plant, unit and machine-by-machine basis.

The company typically experiences a "hockey stick" variation in monthly demand for its products and also sees an annual upsurge in demand during festival seasons in various parts of India. Asian Paints utilizes a sophisticated distribution planning system from i2 to address this variable demand and to move product smoothly to this complicated and dynamic marketplace.

To ensure a smooth evolution to this re-engineered solution, Asian Paints enlisted i2 to support deployment, change management and continuous improvement. The company also relied on i2 for help in streamlining process workflows, reducing the planning cycle and in formulating overall solution architectures.

"We have used our advantages in inventory management and the supply chain to build an organization that is much stronger," says Choksi. "It has really allowed us to leverage our skills and strengths in the marketplace."

Savings, service and growth

A decade after the i2 supply chain opportunity assessment demonstrated that i2 solutions would pay for themselves after one year of use, Asian Paints has dramatically improved its debt-to-asset ratio. The company has become

through improved planning

essentially debt free, and has leveraged its supply chain efficiencies to pursue an aggressive growth strategy.

In 1999, the company operated with an average of 56 days of finished goods inventory. During the initial implementation phase, the company reduced that to an average of 40 days of finished goods inventory on hand, and in recent years has further reduced that figure to 30 days of finished inventory. This leaner inventory stance was a key factor in the company's improved cash flow position and its ability to invest in growth-oriented acquisitions.

The company has also used i2 solutions to move from an end-service-level metric to a more proactive and precise order-fill method of analysis. After fully implementing various i2 solutions, Asian Paints now achieves 87–90 percent service levels for SKU sales at the location level, which puts the company well ahead of competing firms in the marketplace.

The company's enhanced master planning system enables Asian Paints to optimize the kinds and size of inventory it holds, and to deal more effectively with fluctuations in the volatile paints marketplace. A better materials planning system allows the company to create more complex paint formulas, and to select the best vendor and manufacturing method for any given situation.

Modern distribution planning enables Asian Paints to plan deployment on a weekly basis, and to quickly and easily adjust those distribution plans as needed. By adopting a robust approach to change management, the company can now adapt more nimbly to shifts in market demand, to new manufacturing processes, and to changing regulatory pressures or business requirements.

In terms of market performance, improved supply chain planning and execution systems have allowed the company to grow—it is now four times the size it was 10 years ago—while dramatically reducing the on-hand inventory needed to serve its customers.

To further optimize the execution of the supply chain processes in conjunction with the planning solution, and to provide a seamless plan-do-check-act framework to the supply chain executives, Asian Paints deployed the i2 platform. This has provided Asian Paints with the ability to build highly customized planning and execution workflows to further improve supply chain efficiencies.

“The Asian Paints brand stands for the quality of our products, but I think our brand also stands for on-time performance and good service,” says Choksi. “The supply

chain is viewed as a very critical function. Our ability to deliver the right product on time at the right place has clearly differentiated us from the competition, and allows us to retain a large share of the business. Clearly, the i2 solution has met our ever-changing requirements over the decade we have used it.”

—Jon Kemp

At a Glance

Company name: Asian Paints

Global headquarters: Mumbai, India

Products: Asian Paints is India's largest paint company and has three main business divisions—decorative paints, industrial paints and international business.

Annual sales: \$916.9 Million*

Employees: More than 4,000

Global operations:

Asian Paints operates in 18 countries and has 26 paint manufacturing facilities, servicing more than 65 countries.

Objectives:

- Ensure optimum raw materials selection across complex, multi-site manufacturing operations
- Address variable demand and to move product smoothly
- Determine which products should be produced at which manufacturing plants

Key solutions:

- i2 Demand Fulfillment
- i2 Demand Manager
- i2 Factory Planner
- i2 Supply Chain Planner
- i2 Platform

Results:

- Reduced finished goods inventory from 56 days to 30 days
- Achieved 87–90 percent service levels for SKU sales at the location level
- Dramatically improved debt-to-asset ratio

*Indian rupee to U.S. dollar conversion as of December 2009.

Improving supply chain

The high tech supply chain is one of the most complex in business today. Its rapid but variable growth, short product lifecycles, and demands for mass customization present challenges to high tech businesses to maintain growth while keeping customer service high and costs down.

Altera Corporation, a leader in innovative custom logic semiconductor solutions, recognized the challenges inherent in its industry. As Altera's reputation in the semiconductor industry grew, so did its business. While management was pleased with Altera's double-digit growth, executives were concerned about the company's supply chain responsiveness.

A more nimble supply chain

Executives decided to target improvements in demand and supply planning processes to keep Altera's competitive edge. The fabless semiconductor company had been generating weekly execution plans and monthly long-range forecasts using Microsoft Excel spreadsheets. This manual process was extremely time-intensive, with a monthly forecast taking nearly a month to produce.

"We needed a much faster supply chain response when changes in demand occurred," says Ron Kantorik, Altera's senior manager, demand management. "We needed to be more nimble in sensing, responding and driving the change through our supply chain quickly with the right product mix."

Ensuring the proper mix is critical to Altera's goal to meet service-level commitments and achieve profitability, and the company needed an intelligent system in which it could input its production mix and drive the signal back to its manufacturing partners.

"It's easy to simply cut orders when business takes a turn downward, but downturns are never completely across the board," says Kantorik. "We have approximately 150 different types of wafers that we build, and sometimes downturns are for older products, and sometimes more mature products do better than newer ones. We needed to be able to tell the factory which product to curtail, and at what levels. Our disconnected technology was preventing us from doing that."

After a thorough evaluation process involving solution testing in various scenarios, Altera's executives chose i2 solutions.

"i2 solutions were the only solutions that were able to meet our requirements," says Kantorik. "And i2's semiconductor template made our implementation much easier. We already had a track record with i2 using i2 Demand

Planner, and i2 provided the best demand and supply chain connective solution. We chose to implement i2 Demand Manager and i2 Supply Chain Planner, which bolt right into each other."

Linking customer activity to data

Altera implemented Supply Chain Planner and Demand Manager using the template developed especially for the semiconductor industry.

Using data from an enterprise resource planning (ERP) system and a work-in-process (WIP) inventory tracking system, the solution generates daily execution plans, guiding off-shore facilities what to assemble and test. i2 solutions also output long-range capacity and purchasing forecasts.

"Before our implementation of i2 solutions, we had no connection between our data and actual customer activity," says Kantorik. "We were doing everything by trend and future thought—as the saying goes, driving forward by looking in the rear-view mirror. i2 solutions have given us the connectivity between demand and supply. In times of change, it gives us a cohesive system to address market cycle variations. We can select the proper mix in both upturns and downturns, and we get the information we need in near real time."



responsiveness at Altera



Enabling agility in planning and forecasting

With i2 solutions adding velocity to its business processes, Altera has achieved increased customer satisfaction with substantial cost savings.

“We have significantly improved responsiveness to market segments in both downturns and upturns,” says Kantorik.

Using its old spreadsheet system, Altera’s planners at the wafer fabrication level would not see an unplanned order for up to 10 days. i2 solutions have cut that time down to one day, allowing planners around the world to base their calculations on the same numbers.

“i2 solutions have made the Altera planners’ lives easier by enabling them to quickly see supply and demand mismatches,” says Winston Ho, Altera’s senior programmer analyst. “Every morning, the planners get a list of new orders that have long lead times. They determine if there are any die supply issues and place additional wafer starts to the foundry as needed.”

That fast response time enables Altera to have its semiconductors to the market precisely when customers require the product. In addition, the time required to generate the company’s long-term forecast has decreased from 3.5 weeks to 1 week because the data is already loaded into i2 solutions. Using Altera’s old system, planners spent 70 percent of their time simply gathering data. Now, planners can spend more time analyzing their data and less time gathering it.

“i2 is the heart of our planning and forecasting process at Altera,” says David Logan, director of supply chain management at Altera. “i2 continues to provide Altera with an increased ability to quickly identify the impact of demand changes to inventories and availability. Required changes can be made daily, if needed, to adjust builds and communicate order fulfillment issues early to our distributors and end customers. Planners are able to review each level of our manufacturing process from wafer starts to finished goods in order to make timely and accurate decisions affecting production builds.”

— Lauren Bossers

At a Glance

Company name: Altera Corporation

Headquarters: San Jose, California

Products/Services:

Altera Corporation provides programmable logic solutions to system and semiconductor companies. Altera offers FPGAs, CPLDs, and HardCopy® ASICs in combination with software tools, intellectual property, and customer support to provide high-value programmable solutions to more than 13,000 customers worldwide.

Annual sales: \$1.37 billion

Employees: Approximately 2,700

Operations:

Altera has R&D facilities in North America, the U.K. and Malaysia, and sales offices throughout North America, Europe, Asia-Pacific and Japan.

Objectives:

- Enable faster response to demand changes
- Ensure proper product mix
- Improve ability to meet service-level commitments
- Increase profitability

Key solutions:

- i2 Demand Manager
- i2 Supply Chain Planner

Results:

- Increased customer satisfaction with substantial cost savings
- Improved responsiveness to market segments in both downturns and upturns
- Enabled planners to see unplanned orders in 1 day, as opposed to up to 10 days previously
- Decreased time required to generate long-term forecast from 3.5 weeks to 1 week

Incitec Pivot Fertilisers adds speed and

Today's agricultural products marketplace is tougher than ever.

Large fluctuations in seasonal orders and costs driven by global supply and demand require agricultural supply firms to run leaner, smarter and more responsive organizations. That is why, in an ongoing effort to improve business efficiency and service performance, Incitec Pivot Fertilisers relies on i2 solutions to support crucial supply chain planning activities.

An agricultural leader

Incitec Pivot Fertilisers, a business of Incitec Pivot Limited, is a trusted name in Australian agriculture. Incitec Pivot Fertilisers specializes in the marketing and distribution of fertilizers, and is the number one source of fertilizers in the Australian marketplace. It sells primarily to a network of distribution customers who, in turn, supply growers.

Incitec Pivot Fertilisers distinguishes itself by offering focused customer solutions, which include important add-on capabilities such as soil analysis, agronomic support and financing packages. Australian fertilizer seasons tend to be compressed and farmers often need fertilizers delivered at short notice to take advantage of favorable conditions. Incitec Pivot Fertilisers has built a responsive supply chain capable of meeting these unique needs.

"We differentiate ourselves primarily through customer service, with our add-on services and the reliability of our delivery capabilities," says Brian Clatworthy, business analyst with Incitec Pivot Fertilisers. "Our goal is to deliver the product where and when the customer wants it, particularly because the season for fertilizer can be very compressed. Once it rains in Australia, everybody wants to fertilize as soon as possible, so we must be able to handle those sorts of swings in the market."

Advanced planning and management

How does a company position itself to meet those requirements? For Incitec Pivot Fertilisers, the answer was to create a more visible, responsive and cost-effective supply chain. Company managers established some clear objectives in retooling their supply chain systems. They hoped to reduce their working capital requirements and to optimize fertilizer inventory during the peak Australian growing seasons. The company wanted to control both incoming and outgoing freight costs, to balance domestic and international material and product supplies, and to better manage its network of production facilities and primary and secondary distribution centers.

The company also hoped to reduce the time required to complete the important sales and operational planning process, and to fine-tune production volumes to achieve peak efficiencies at the company's manufacturing plants.

Like many organizations, this agricultural supplier had previously relied on a mixture of software systems, spreadsheets and human talent to plan and manage material supplies, production, distribution and other key activities. After considering supply chain management solutions from several major vendors—a process that included a rigorous evaluation of the stability of the available systems, an evaluation of the key optimizer element within the solutions, and discussions with companies that were using each solution in real-world supply chain environments—Incitec Pivot Fertilisers implemented i2 Demand Manager in the late 1990s and i2 Supply Chain Planner approximately one year later.

"We were looking for a solution that could do demand planning and supply chain planning," explains Clatworthy. "We also wanted a system to handle material availability and to manage the higher-level distribution activity. i2 emerged as the preferred vendor for a variety of factors, including overall cost, Supply Chain Planner's representation of business rules and objectives, as well as the i2 team's extensive understanding of supply chain process issues."

Organizational challenges

In the years following the successful implementation of i2 solutions, the company pursued a growth strategy through the acquisition of Southern Cross Fertilisers in 2006 and of Dyno Nobel Limited in 2008. That growth strategy has delivered significant results, but it also created some significant supply and distribution-related challenges. Throughout this period, the company has strived to realize synergies in the consolidated organization, and to integrate previously diverse supply chain systems and technologies.

"There were significant drivers pushing us to improve supply chain management, from reducing our inventory and related working capital requirements, minimizing stock outs, and better managing inbound and outbound freight costs," says Clatworthy. "But while we needed to streamline our supply chain, we did not want customer service to suffer. We decided to re-implement Supply Chain Planner to ensure we were receiving the maximum benefits from the solution."

The company now uses i2 Demand Planner to generate monthly forecasts, and the results of those analyses are uploaded to the company's SAP R3 Enterprise Resource Planning system.

accuracy to supply chain planning

i2 Supply Chain Planner is used to formulate weekly and monthly sales, production procurement, and distribution plans and to manage the long-term balance between domestic and imported product supplies. Incitec Pivot also uses Supply Chain Planner to run ad hoc analysis and various “what-if” business queries.

Harvesting SCM benefits

By leveraging i2 solutions as part of a robust supply chain management effort, Incitec Pivot Fertilisers has gained real competitive advantages in the Australian agricultural marketplace.

“Overall, this project has allowed us to more rapidly deliver a supply chain plan of a higher quality with less effort from the planners,” says Clatworthy. “That gives our business greater confidence in our master supply chain plan. It also allows us to evaluate more readily and effectively any subsequent changes in supply or demand, as well as the impact of any response we take to address those changes.”

Since the reimplementation of i2 Supply Chain Planner, the time required to complete Incitec Pivot’s crucial monthly sales and operational planning cycle was reduced from as much as seven to nine days to as little as three days. Meanwhile, the weekly planning cycle, which used to take one or two days, can now be run many times in a single day.

Incitec Pivot has significantly reduced incidents or errors, constraint violations and shorted demands related to its critical supply chain planning activities, and planners now better understand the cause and effect of issues when they do occur.

As a result of these and other related efforts, Incitec Pivot has achieved significant reductions in both inventory levels and land freight costs. According to Clatworthy, the combination of the powerful statistical capabilities of Demand Planner and the advanced optimizer of Supply Chain Planner enable the company to better predict and respond to substantial shifts in demand for its core agricultural products.

“I attribute the success of this project to the efforts put into the pre-planning and design phases, to the subsequent control of scope creep, and to the excellent interaction among the technical and business team members throughout the implementation,” says Clatworthy. “The quality of the i2 people assigned to the project was outstanding.”

—Jon Kemp

At a Glance

Company name: Incitec Pivot Limited

Headquarters: Southbank, Australia

Products/Services:

Incitec Pivot Limited is a leading global chemicals company with nitrogen-based manufacturing at its core. The company is the number one supplier of fertilizers in Australia; the number one supplier of explosives products and services in North America; and the number two supplier of explosives products and services in Australia.

Annual sales: \$3.11 billion*

Employees: Approximately 4,500

Operations:

Extensive operations throughout the United States, Canada, Mexico and Australia, including more than 20 manufacturing plants, multiple distribution centers and well-established channels to market.

Objectives:

- Reduce working capital requirements
- Optimize fertilizer inventory during the peak Australian growing seasons
- Control both incoming and outgoing freight costs
- Balance domestic and international material and product supplies
- Better manage network of production facilities and primary and secondary distribution centers

Key solutions:

- i2 Demand Manager
- i2 Demand Planner
- i2 Supply Chain Planner

Results:

- Decreased inventory levels and land freight costs
- Reduced monthly S&OP cycle from 7-9 days to 3 days
- Established ability to run weekly planning cycle multiple times per day, as opposed to once every 1-2 days
- Reduced incidents or errors, constraint violations and shorted demands

*Australian dollar to U.S. dollar conversion as of December 2009.

i2 and the i2 User Group Announce Ken Sharma Award of Excellence Winners

i2 and the i2 User Group have named the global winners of the Ken Sharma Award of Excellence, which recognizes companies that have made outstanding advancements in supply chain management through deployments of i2 solutions. Essar Steel, one of the world's fastest-growing global steel companies, won the award in the category of Supply Chain Depth and Breadth. Fairchild Semiconductor, a global leader in delivering energy-efficient power analog and power discrete solutions, received the award for Supply Chain Innovation. Kimberly-Clark, a leading global health and hygiene company, won the award in the Supply Chain Return on Investment category.

"In times of economic uncertainty, excellence in supply chain management is critical to a company's success. These Ken Sharma Award winners have made supply chain improvements that have delivered real value," says Hiten Varia, executive vice president, Global Customer Operations and chief customer officer, i2.

Co-sponsored by i2 and the i2 User Group, the annual award pays tribute to i2's late co-founder Ken Sharma and is open to hundreds of i2 customers. An independent panel of analysts from AMR Research judged each nominee in the categories of innovation, return on investment, and depth and breadth.

"A focus on supply chain innovation and operations can help companies better manage increasing complexity, volatile demand and shrinking global markets. This year's Ken Sharma Award winners have a good grasp of what it takes to compete in this environment, using supply chain management to help give them a competitive advantage," says Noha Tohamy, research director at AMR Research.

Essar Steel: Supply Chain Depth and Breadth

One of the world's fastest-growing global steel companies, Essar Steel NV and has a goal of becoming one of the top 10 global steel producers by 2015. To do this, the company needed world-class supply chain management capabilities to grow profitability, strengthen customer relationships, reduce inventories and increase throughput. Working with i2, Essar Steel created a new supply chain management organization reporting directly to the CEO. Since implementing a variety of i2 solutions to address advanced order planning and sales and operations planning, Essar Steel has increased forecast accuracy for domestic

contract customers by nearly 30 percent. The company has reduced work-in-process inventory and order leads times, in addition to reducing response time for customer inquiries from two to three hours to six seconds.

Fairchild Semiconductor: Supply Chain Innovation

Fairchild Semiconductor is a global leader in delivering energy-efficient power analog and power discrete solutions for consumer, communications, industrial, mobile, computing and automotive systems.

Fairchild's overall business driver was to achieve "perfect order delivery performance." With i2 solutions implemented across the entire their entire supply chain, Fairchild has been able to improve asset utilization and capital deployment, reduce inventories and associated costs, improve gross margins, increase market share and better align its systems with its overall business model. Additionally, Fairchild is able to optimize capacities, inventories and customer commitments across all product lines while using one set of standard business rules. The company estimates it will save \$20 million during the next four years based on published industry research. Fairchild has also improved its perfect order rate by two full percentage points.

Kimberly-Clark: Supply Chain Return on Investment

In an effort to build competitive strength, Kimberly-Clark, a leading global health and hygiene company, sought to implement a new transportation management system along with a business process redesign to reduce its transportation spend. With operations heavily focused in North America and Europe, the company gathered business leaders from those regions to identify synergies that would support more strategic operations and enable cost reductions. Using those findings, i2 worked with Kimberly-Clark to implement a common transportation tool and business processes.

By implementing i2 transportation solutions, and by leveraging optimization capabilities to achieve rate reductions, Kimberly-Clark saved US\$8.77 million in North America at the time of its Ken Sharma Award application. During that same time frame, the company also saved US\$1.6 million as a result of its implementation in Europe.

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