



Adaptive Supply Chains (Part 2 of 3)

Inventory Management: How Incremental Improvements Drive Big Gains

By feeding social and mobile data into planning systems and overlaying analytics, manufacturers and retailers can reduce inventory waste and more precisely target customers.



Executive Summary

Inventory has been the subject of keen scrutiny since the dawn of commerce. Because items sitting on a store shelf or in a warehouse literally represent unrealized sales dollars, retailers have long experimented with ways to fine-tune their inventory practices. The eternal goal has always been to hold just enough inventory to satisfy demand.

These inventory basics still apply today, but what has changed is the dizzying pace of commerce, its global reach and heightened consumer expectations driven by social shopping, online review sites and comparison pricing on the Internet. There is little doubt that supply chain velocity has steadily increased in recent years, in terms of how fast goods move from production to consumption. One look at Amazon Prime's popular two-day delivery service (through which most of its orders are fulfilled), and it's easy to see that week-long delivery times for Internet orders are a thing of the past.¹

At the same time that these forces are buffeting retailers (and by extension their suppliers), technology is coming to their aid by helping them adapt to the new marketplace dynamics. The adoption of technologies such as global inventory management systems and advanced planning solutions – supported by business process change, where needed – are helping to grease the wheels of commerce and, therefore, the movement of inventory.

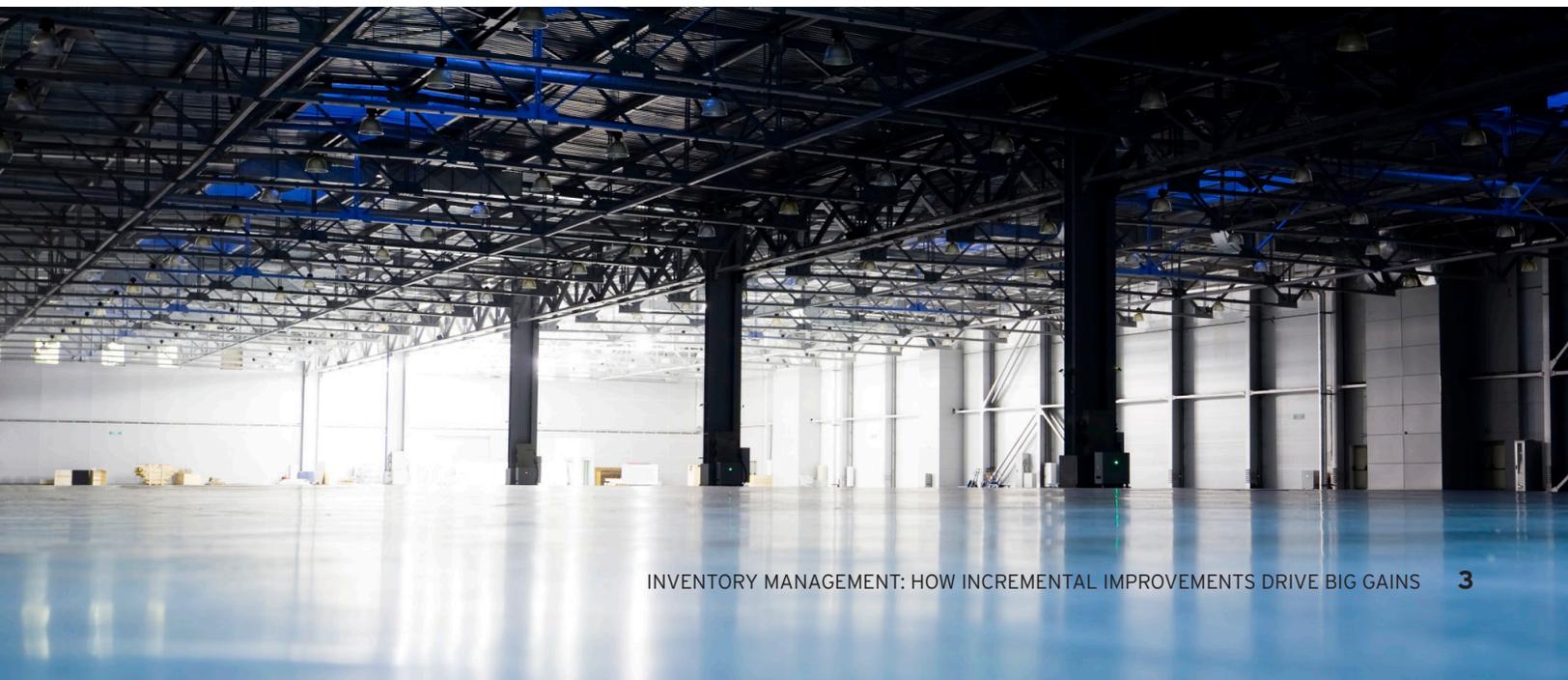
Savvy retailers are also trying out new inventory placement techniques, such as fulfilling orders from distribution centers or directly from manufacturers. Some are also pushing the task of inventory management back to manufacturers, with a return to vendor-managed inventory (VMI).

With such high stakes for positive consumer sentiment, retailers and manufacturers are striving to create the appearance of “ubiquitous” inventory, in which shoppers never

perceive a lack of what they want to buy, when they are trying to buy it. Enormous competitive advantage can be gained by companies that exhibit the greatest flexibility with inventory, as demonstrated by Gartner's list of the Top 25 Supply Chain companies, year after year.²

The impact of inventory reduction on profits is very direct, given that inventory cost is the largest component of working capital. And yet inventory cannot be reduced at the expense of customer expectations, so the balancing act remains. To cope, retailers and manufacturers need to rethink their inventory management strategies, reinvent their inventory management operations and rewire their inventory management systems.

This white paper, the second in our three-part Adaptive Supply Chain Series, discusses how manufacturers and retailers can use demand and supply planning technology and techniques to arrive at an optimal inventory plan. Part 1 of our series focused on supply chain strategy, revealing how companies need to adapt their strategies to simultaneously accelerate revenue growth and productivity while containing costs. Part 3 will cover supply chain execution.



New Technologies Rev Up Inventory Planning Processes

The question of how to manage inventory – what and how much to stock, where to place it and where to assemble or manufacture it – has never been more crucial. With oil prices near record highs, manufacturers are increasingly moving assembly closer to where goods are sold to avoid transportation costs, which is why heavy goods such as automobiles bound for the U.S. market are often not assembled in Asia anymore. Stocking the wrong product is another chronic issue that can contribute to manufacturers failing to meet service levels with customers and partners, with consequences that are arguably graver for the retailer. Increased supply chain velocity and variability add to the complexity. Inventory problems are the symptom of a dysfunctional, nonadaptive supply chain.

Inventory management grows even more pressing in times of economic stress. Virtually every company needs to gain better leverage from its working capital by improving inventory turns, in order to grow revenues, hold down costs and increase productivity. (For additional insights, read our first Adaptive Supply Chain white paper, "[Manufacturers, Retailers Look to Adaptive Supply Chains to Increase Revenue, Cap Costs, Boost Productivity.](#)")

World-class retailers and manufacturers today want to view inventory as one common object that can be tracked seamlessly from a command center of sorts, using the same type of identification, across the supply chain.

The good news is that emerging collaborative global inventory management systems are enabling manufacturers and retailers to attain full visibility into their global inventory. Used in many cases with inventory planning tools, global inventory management systems interact with ERP systems (both the organization's and its partners') to provide a near-real-time, end-to-end picture of inventory, wherever it resides.

With a global inventory visibility capability, multi-echelon inventory optimization solutions employ statistical algorithms and business rules to optimize inventory placement and order fulfillment. Many of these technologies have existed for years, but today they are being implemented to enable a complete, or "platform," view of inventory in the global supply chain by creating linkages between systems that were previously disparate islands. For instance, inventory is traditionally tracked in different ways, depending on whether it is being transported via sea, land or air, or is within the warehouse. But world-class retailers and manufacturers today want to view inventory as one common object that can be tracked seamlessly from a command center of sorts, using the same type of identification, across the supply chain. (See Figure 1 for an illustration of the connection points that make up a platform view of inventory for one retailer.)



Using Social Media to Generate Early Warning Alarms

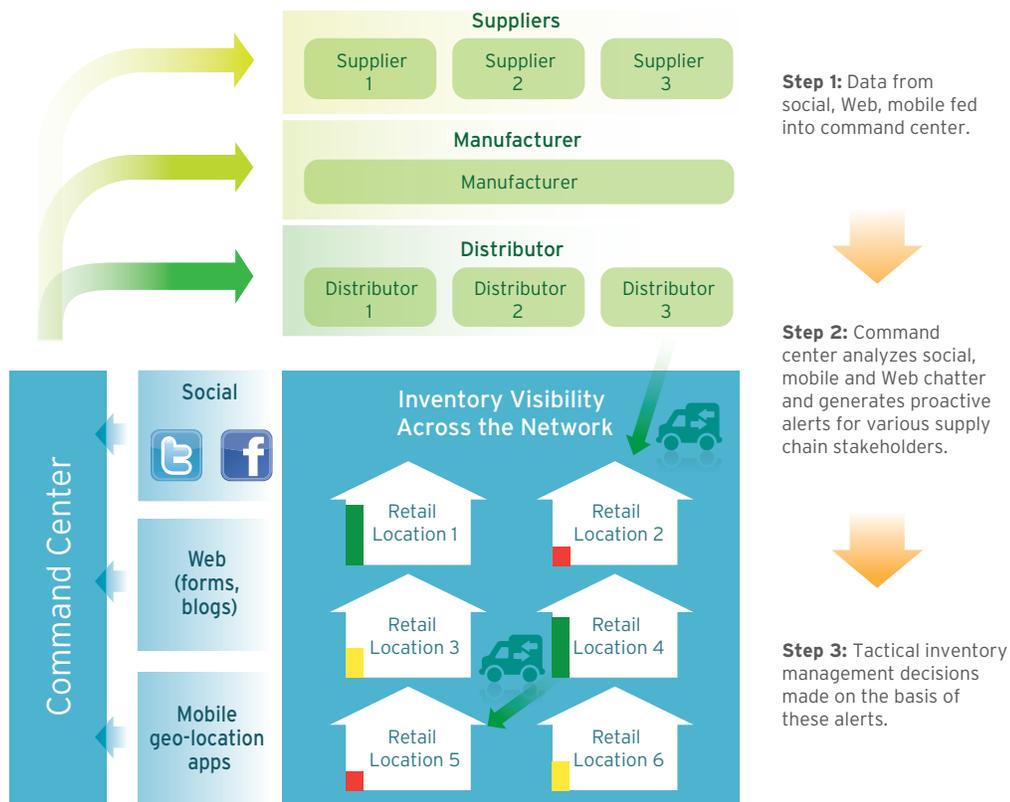


Figure 1

To generate a 360-degree view, manufacturers and retailers can follow a three-step process.

- **Step 1:** Data from social, Web and mobile sources is fed into a single repository and managed by planners within a centralized command center.
- **Step 2:** The command center analyzes the data and generates proactive alerts for various supply chain stakeholders.
- **Step 3:** Tactical inventory management decisions are made on the basis of these alerts.

Then there is data coming from social and mobile applications that can help surface business trends and confirm assumptions. The challenge is harnessing this unstructured data and connecting it to global inventory management systems to enable more timely and accurate inventory planning, overcoming an historical problem with unreliable and inflexible forecasting. By linking point-of-sale (POS) systems to these back-end systems, retailers can ensure that plans are made against actual data as opposed to anemic, meaningless projections.

Manufacturers and retailers that leverage technology to adjust business processes in an agile way can strike the right balance in their inventory practices, thereby boosting customer satisfaction, reducing waste and increasing speed. In many cases, companies need to first optimize their processes before implementing technology;

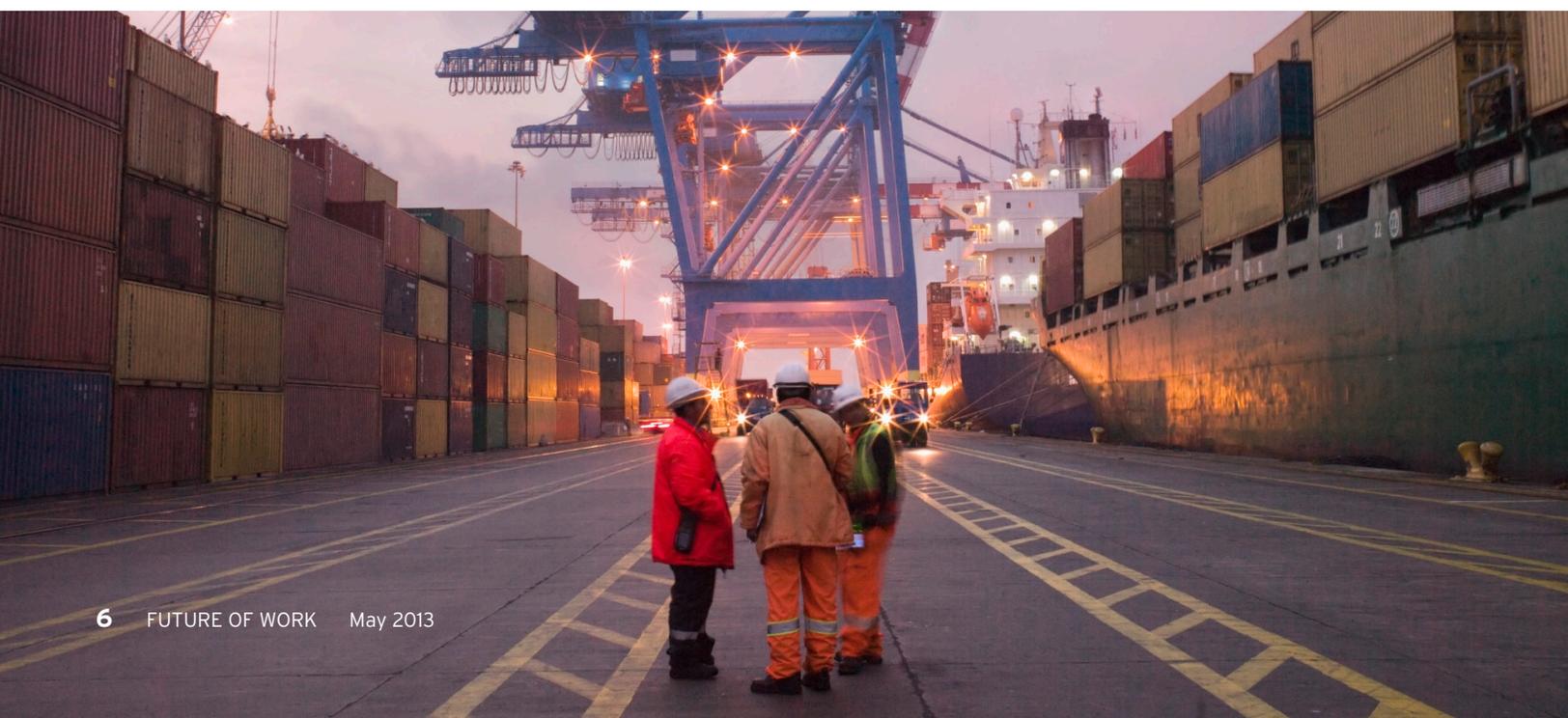
however, there are also cases in which the technology implementation allows for sweeping change in how things are done, and the process optimization follows.

For example, multichannel inventory management systems allow retailers to optimize their systems as a whole rather than working node-by-node, which has traditionally been the case. This offers the additional benefit of eliminating “local optimization,” where one location allocates resources more favorably for itself, to the detriment of others.

Other tools are coming to the aid of inventory management. For example, analytics gives companies the power to sort through vast amounts of data very quickly, yielding insights that lead to better inventory planning and execution. This can lead to a more attractive cash position for the organization, which in turn enables improved business agility.

We advise manufacturers and retailers to overhaul their inventory/planning function by doing the following:

- **Rethink inventory management strategies:** To accommodate reconfigured supply chains and multichannel fulfillment models, companies need to fundamentally rethink their inventory deployment strategies, answering questions such as, “How much inventory do I hold at the different nodes in my supply chain, given the changing demand patterns from the different channels?” “How do I adjust the safety stock policies, inventory reordering practices and return policies to cater to the changing customer demands?” These and other considerations are reshaping inventory policy and strategy management.
- **Reinvent inventory management operations:** Here, questions to ask include: “Should I change the mix of inventory placed at stores vs. inventory supplied from the distribution center?” “Should I revisit the placement of SKUs based on fulfillment methods?”
- **Rewire inventory management systems:** The circle of benefits realization is complete only with the successful rewiring of the IT applications that support inventory management planning and operations. Manufacturers and retailers need to address questions like, “Are my existing applications capable of supporting different inventory modeling options?” “Does my current suite of planning tools effectively enable rewired SIOP (sales, inventory and operations planning) processes?”



Rethink Inventory Management Strategies

For both manufacturers and retailers, inventory stakes have grown exponentially, along with customer expectations. Especially on the consumer side, the pace of commerce is breathtaking. Although not every supply chain moves at the speed of Amazon, all retailers are feeling the effects of the giant e-tailer's turbo-charged ways.

Amazon currently ships more of its orders via its two-day Prime offering than its free Super-Saver Shipping;³ today, however, the e-tailer is aiming even higher, looking to use inventory to further change the retail game. Now that it has given up the fight against collecting sales tax, the company plans to set up warehouses in large metropolitan areas.⁴ This will enable Amazon to more effectively offer same-day delivery to a broad swath of consumers. In addition to its previous investments, Amazon is putting billions of dollars into enabling ultimate inventory flexibility, which will power same-day delivery. For an ordinary retailer, the implications are grim.

At the same time, consumer expectations cannot get higher. Consumers can no longer tolerate a one-minute wait in line for an ATM, so why would they accept stock-outs on their favorite retailer's Web site or the need to return purchases via the channel they purchased them? Any retailer or other customer-facing company that gets this wrong risks an army of dissatisfied customers taking to social sites to express their views – loudly and with effortless reach.

Customers are not going to give you more time to get the right products to the channel in which they want to purchase them. So the pressure is on the supply chain, buttressed by advanced planning and inventory management capabilities, to pick up the slack while at the same time managing customer expectations.

To cope, retailers and distributors are increasingly choosing to have vendors or manufacturers hold inventory for them and fulfill customer orders directly. These choices should flow directly from the company's inventory management strategy, which should be set at high executive levels and revisited often.

Reinvent Inventory Management Operations

Traditionally, inventory management consisted of hedging against peaks and valleys in supply and demand. Today, the picture is much more complex. The ultimate goal is to create the appearance of "ubiquitous" inventory, or the impression of an unlimited supply of unlimited products at every fulfillment point. Traditionally, if a customer walked into a store and did not find the item on the shelf, it meant lost sales for the retailer/manufacturer and dissatisfaction for the customer. With multi-channel commerce in the picture, this is no longer true. Today, an in-store kiosk can allow consumers to place an order for items unavailable in the store, thereby avoiding a lost sale.

Alternatively, a quick look-up in the POS system can redirect the customer to another store in the area that has the item. Even better is the "shop-to-home" option, in which the item is dispatched quickly from a nearby distribution center. We recently worked with a large grocery retailer on a similar initiative, using our "Retail Without Boundaries" framework (see sidebar, page 8).

Rewire Inventory Management Systems

For retailers, the foundation of rewiring inventory management systems is to connect POS systems to back-end planning and order management systems. This linkage enhances decision-making, as inventory choices are based on actual data rather than nebulous forecasts.



RETHINK



REINVENT



REWIRE



For example, imagine a large retailer running a ladies' swimwear promotion in April. Due to friendlier weather patterns, the promotion was more successful in Florida and California than in the northeast and central parts of the country. If the retailer has a view of POS data and inventory across regions and SKUs, it can quickly identify that the promotion is faring better in warmer regions.

Armed with that knowledge, the retailer can shift stock from stores in northern climates to southern outposts to avoid running out of stock. Based on last year's early spring bathing suit promotion, the retailer might elect to retain slightly higher inventory in more affluent northern areas, where shoppers are likely to be planning vacations to resort areas.

Now, consider the example of a retailer without the requisite visibility into inventory. This store, a consumer electronics provider, sells all the latest and hottest gadgets. But if the midtown Manhattan branch runs out of iPad Minis, many customers are going to be disappointed. The situation gets worse if the consumer asks if another store has the product. Without visibility, the retailer can't tell the shopper where the item is located and must resort to a phone call. This throwback-style service is not good for a would-be hip retailer's image.

Expanding on this example, assume another shopper wants to buy a pricy flat-screen TV, but the unit is out of stock. Even if the retailer was able to locate the desired unit, that knowledge is not helpful if the shopper decides 20 miles is too far to drive to the next store. Offering free shipping or to sell the floor sample at a discount are the two best options, but from the consumer's point of view, these options fall far short of "ubiquitous inventory." Many retailers get tripped up at the "last mile" of fulfillment.

The consumer electronics retailer would be in a better position to respond to and even anticipate these scenarios if it had a system in place to automatically collect and sort social and mobile data. Such a system would give it a better understanding of which SKUs were the most popular among consumers, and in which locations,

Quick Take

Retail Without Boundaries

We recently helped a leading grocer upgrade its antiquated inventory management and planning systems, thereby improving the accuracy of its forecasts and saving more than \$2 million annually.

With diverse systems and processes in place, the grocer did not have a single view of inventory across the supply chain. Inaccurate inventory data hampered decision-making, and there was no way to quantify goods lost to "shrinkage." The company was relying on a contorted mix of manual workarounds to overcome inventory issues.

We identified key stakeholders and mapped out how to meet their current and future needs with a new inventory management system, as well as necessary process improvements. We advised implementation

of a new solution that combines input from multiple sources with advanced features and business rules to handle exceptions.

The grocer now has a single view of its inventory, accessible to users across its dozens of locations. Its single inventory calculation engine can process millions of transactions each day. The company has realized year-over-year cost savings in excess of \$2 million, thanks to better forecasting of its meat products, leading to reduced waste. It now has insight into inventory shrinkage, so it can begin addressing the problem. The retailer was able to migrate off several legacy systems and consolidate onto a single system.

allowing it to plan accordingly. Although much cleansing is typically required to prepare POS data for use by other systems, funneling such data into planning systems would also help minimize in-store shortages.

Even data from online forums and communities can be used to drive assortment and inventory planning in retail. For example, an online community of health-conscious people might talk about their experiences with the latest model of a popular sneaker. The retailer and manufacturer can mine that data for ideas on everything from inventory placement, to customer support, to research and development.

On the manufacturing side, consider the example of a tile manufacturer, one of our clients. Long accustomed to selling via dealers, this company wanted to create direct relationships with consumers. As part of this initiative, the company began to track the specific SKUs customers were inquiring about on its Web site or mobile app.

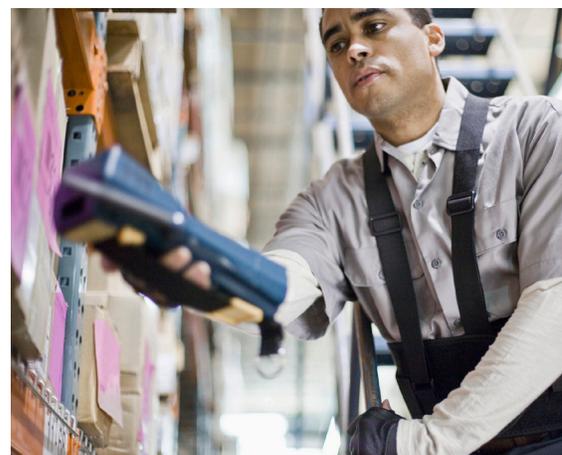
By tracking and analyzing this data, the manufacturer could identify the most popular SKUs and funnel this information back into its inventory planning systems to ensure the most in-demand products will always be in stock. For this manufacturer, culling product inquiry data from the social and mobile worlds and running analytics against it has yielded a more resilient, adaptive supply chain.

The manufacturer expects an increase in revenue of 20% when this pilot project goes into full implementation. The insights on specific SKU performance have raised visibility to the field sales force, broadening market penetration through more focused, targeted sales efforts.

Looking Ahead: Next Steps

When considering how your organization should overhaul its planning and inventory management practices, use these questions as a starting point:

- **How should we adapt our planning policies** (such as service, stocking and placement) and processes (such as movement of inventory from supply to customer) to the rapidly changing marketplace demands?
- **What new or enhanced capabilities are required in order to meet those changes?** Such capabilities might include social/mobile integration with planning to capture refined demand signals at the local level.
- **What are the catalysts required (in terms of people, process and technology) to drive adaptive inventory/planning processes?** Examples include new or retrained employees who can integrate social/mobile/analytics into planning processes; implementation of inventory planning software; and new analytics processes that aggregate and extract trends from social/mobile data.
- **How can we create a seemingly ubiquitous supply** to meet the increasing demands of today's exacting B2B and B2C customers?
- **What changes, if any, are required in our infrastructure, IT and otherwise?** For example, a company might need to create the capability to receive demand data from customers/retailers that aligns with consumer demand data from other sources. A company might also need to reorganize its distribution network (including adding intermediate warehouses) to better accommodate shorter replenishment times for restocking local retailers.
- **What is the best approach to accelerate the rethinking, reinventing and rewiring of inventory planning?** Hiring external experts may help speed the realization of expected benefits when internal staff is busy with day-to-day job responsibilities.



In the end, the journey to create an adaptive supply chain comes down to creating new channels for growth, deeper penetration of existing markets and different positioning of brand, products and processes that generate competitive advantage. Inventory management is a key component of this exercise.

This white paper is the second in our three-part Adaptive Supply Chain Series. Part 1 of our series focused on supply chain strategy, and Part 3 – coming soon – will cover supply chain execution.

Footnotes

- ¹ Peter Bradley, "Rapid Fulfillment on an Unprecedented Scale: Interview with Amazon.com's Dave Clark," DCVelocity, Dec. 17, 2012, <http://www.dcvelocity.com/articles/20121217-interview-with-amazons-dave-clark/>.
- ² Debra Hofman, "The Gartner Supply Chain Top 25 for 2012," Gartner, <http://www.gartner.com/technology/supply-chain/top25.jsp>.
- ³ Melodie Warner, "Amazon 'Prime' Shipping Outpaces Free 'Super Saver' Option," *Wall Street Journal Blogs*, Aug. 27, 2012, <http://blogs.wsj.com/digits/2012/08/27/amazon-prime-shipping-outpaces-free-super-saver-option/>.
- ⁴ Farhad Manjoo, "I Want It Today," *Slate*, July 11, 2012, http://www.slate.com/articles/business/small_business/2012/07/amazon_same_day_delivery_how_the_e-commerce_giant_will_destroy_local_retail.html.



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