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Taking an Optimized Approach to Inventory Management

Sometimes we forget the basics when thinking about inventory optimization, but as AMR Research and others have noted, organizations hold inventory for three basic reasons. First, because it takes time to make and move products, inventory is needed as work-in-process and in-transit material. Second, safety stocks protect companies against changes in demand, production yield and forecast errors. Third, inventory can, at times, protect companies against price increases and provide other economic advantages.

But even these reasons give inventory short shrift in today's competitive markets. It is true that when managed poorly, inventory can drive up costs, waste and customer dissatisfaction. But when optimized through the application of better technology and advanced processes, well-managed inventory can help drive down costs, open market opportunities and improve customer loyalty.

Some companies have acquired the tools needed to compare actual performance to service and inventory targets.

In today's marketplace, inventory optimization is defined as the discipline of continuously managing inventory policies to optimize supply chain performance against business objectives, changing market conditions and supply chain constraints. These policies include what, where, when and how to carry inventories across the procurement, manufacturing and distribution networks of the enterprise.

Here, we'll address some of the key actions that are critical to inventory optimization, including:

- Establishing clear, inventory-related objectives
- Leveraging continuous learning to close the loop between targets and performance
- Understanding and using affinities for greater efficiency
- Planning for uncertainty
- Seeing beyond cost

Establish clear, inventory-related objectives

What is the secret ingredient that separates the top performers from less successful competitors? To discover

that recipe, companies must first ask themselves a number of important, inventory-related questions:

- Has our company established clear, inventory-related objectives (many organizations do not, but the best do), and have we aligned metrics and incentives to those inventory goals?
- How often and how quickly can our organization adjust its manufacturing and distribution model to meet changing customer or market demand?
- Do we understand, measure and consider not just the cost of inventory, but also the service-level, market-share and profit benefits of optimized inventory?
- Are we comparing targeted customer-service levels to actual performance achievements?
- How often do we review and revise our inventory targets and policies?
- How often do we review our inventory strategy and its alignment with corporate objectives?

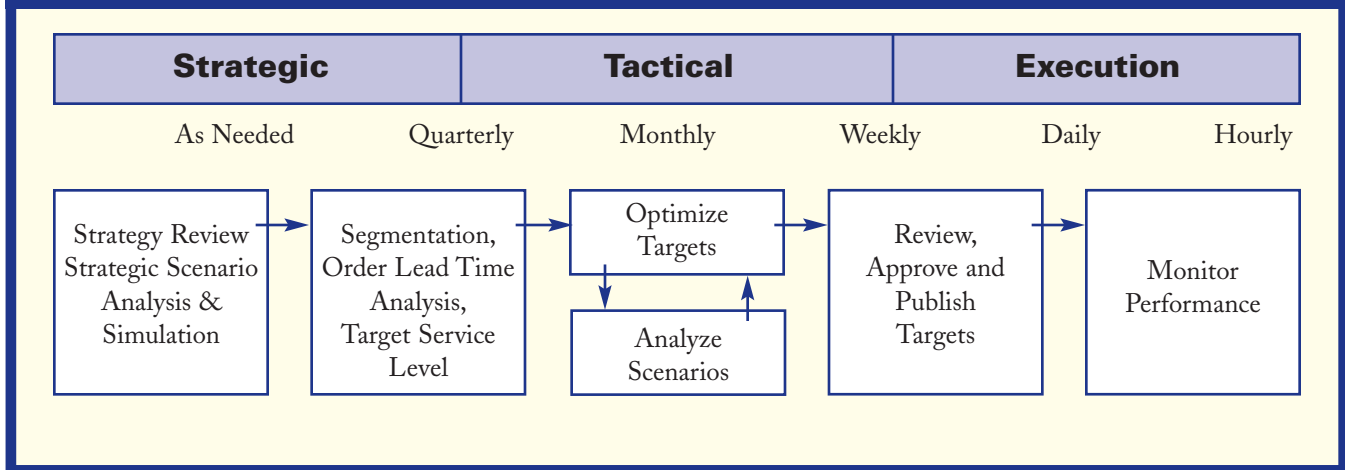
By answering those questions, high-performing companies are transforming inventory from a cost into a very real service opportunity. Successful companies have acquired the tools needed to compare actual performance to service and inventory targets. Additionally, they have implemented the systematic processes needed to continuously tune their inventory-optimization model based on what they learn from real-world performance.

Leverage continuous learning to close the loop between targets and performance

Inventory management has naturally evolved toward greater efficiencies, from basic demand forecasting and inventory replenishment to more advanced planning and scheduling. More recently, companies are embracing new-generation strategies and tools for inventory optimization. Many inventory managers are now focused on continuous learning and process improvement to close the loop between setting inventory targets and reviewing actual, service-level performance.

Today's top-performing organizations have put in place the processes needed to measure inventory results against their stated performance objectives. This closed-loop approach is designed to optimize response buffers and segmentation and postponement strategies. A response buffer is a launch point for the delivery of materials used to

i2 Inventory Optimization Cycles



fulfill a customer order. Segmentation is the stratification of products based on common inventory characteristics and similar response-buffer strategies. Postponement relates to where a class of inventory is held—such as at a procurement, production or distribution node—in the supply chain.

This closed-loop approach requires inventory managers to focus more on the processes and uncertainties that drive inventory and less on reacting to inventory itself. It enables them to truly understand the basic assumptions behind an inventory plan.

In one example, a successful electronics manufacturer reviewed its inventory plan, supply data and inventory targets on an ongoing basis. It identified root causes for deviations and developed action plans to eliminate or mitigate them. Within weeks, the company saw measurable improvements in customer-service levels.

Mastering the effectiveness of establishing the “what, where and how much” of inventory allows companies to continuously optimize the position and level of inventories at every stage of the supply chain.

Use affinities for greater efficiency

Inventory-focused companies can also optimize their supply chains by carefully correlating product demand characteristics. To do this, suppliers must first analyze the demand-driver characteristics that various products have in common. Those characteristics might include geographic considerations, seasonal demand fluctuations, positive and negative product associations, and other variables.

By grouping products based on common demand drivers and characteristics, companies can more effectively decide “what goes with what” and then apply those affinities throughout their supply chain. This approach also helps

companies associate risks and identify the contingencies intended to guard against them.

General merchandisers in retail are the most aggressive users of the affinities concept. Knowing that when customers come in to buy milk they also buy “product X” 20 percent of the time and “product Y” 40 percent of the time helps these retailers determine how products should be placed in stores. It also helps them to plan for replenishment of associated products based on sales of primary products. Of course, these kinds of product segmentations affect more than just inventory management and should be formulated in the context of a company’s broader supply chain and business objectives.

Plan for uncertainty

Today’s dynamic marketplace is putting powerful new demands on inventory management. The consumer market itself is far more complex, with localization requiring that suppliers cater to demographic micro-segments of consumer preferences, while mass customization (see article, page 9) generates a proliferation of SKUs.

Retail customers demand greater inventory visibility, shorter lead times and higher service levels. Suppliers must deal with volatile demand, a surge in inventory-related data and a wealth of sourcing and channel options in an increasingly globalized and complex supply chain.

A number of red flags may suggest serious supply chain problems: excessive mark-downs and write-offs; frequent stock-outs despite excess inventory; and a loss of market share due to poor availability. Market-leading companies respond to these uncertainties by adopting a proactive, planned and optimized approach to inventory management.

OPTIMIZATION **CONTINUED** on Next Page . . .

Vendor-managed inventory (VMI) is a powerful tool, but it should not be seen as simply a way to reduce a company's risk by passing the buck to the supplier. The arrangement must be set up as a win-win for all parties, usually requiring more open sharing of information.

In one example, a leading manufacturer discovered through close monitoring of forecast error that its VMI partners enjoyed superior forecast accuracies compared to others. The manufacturer realized it had been overestimating the forecast error for these partners and underestimating the forecast error for the others. So it replaced its prior practice of using a single-forecast-error estimate to drive inventory calculations with separate estimates for its VMI partners and the others. When it combined the right-sizing of forecast-error estimates with segmentation of inventory policies by product velocity, life-cycle stage and strategic importance, the company was able to maintain current service levels while measurably reducing inventory costs.

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Such multi-echelon strategies enable companies to maximize postponement opportunities and to create multiple response buffers throughout their production and distribution networks, as well as to reduce risk through demand pooling. Many organizations can move to more flexible and efficient, hybrid, build-to-stock and make-to-order business models. By adopting a holistic approach to the entire supply chain network, they can achieve an optimal balance between cost and service.

See beyond cost

Viewing inventory mainly as a cost problem can lead to inventory-related initiatives that myopically focus on cost reduction alone. Certainly, improved inventory management can streamline the supply chain and reduce carrying costs. And cost will always be an element of any inventory-oriented business. Yet, if companies manage inventory to enhance service, and drive sales as a result, cost is typically a manageable element of that gain.

Besides improving service and availability, inventory can also help companies boost customer satisfaction and capture market share. Astute companies understand that differing market channels have unique buying patterns, lead-time expectations and delivery requirements. In the past, the sheer volume and complexity of data precluded companies from being able to analyze and comprehend patterns of customer behavior on a consistent and repeatable basis. But recently developed technologies now enable analysis of historical data to develop buying-behavior

profiles, allowing companies to match offered lead times with customer expectations and market demand.

One world-class manufacturer sought to maximize its market share while minimizing inventory-related costs. Company planners adjusted inventory levels at various points in the supply chain to respond more precisely to required service levels. By formulating a segmentation strategy that linked inventory to both service levels and cost, this original equipment manufacturer optimized production postponement, reduced inventory by 14 percent and maintained its current service levels.

The best suppliers analyze products for demand volumes and patterns, product attributes and life cycles, service criticality, lead times and competitive response. They can then formulate an optimized production and distribution strategy to fit any combination of models—build-to-stock, assemble-to-stock or build-to-order—while balancing inventory and service levels in a single- or multi-echelon environment.

Reap the benefits

Virtually any inventory-oriented company can benefit by deploying the tools and strategies of optimization. Of course, to scale to the levels needed in today's marketplace, many of these practices must be supported by advanced tools and technologies. i2 offers a comprehensive suite of inventory optimization solutions for monitoring customer buying behavior, "ABC" segmentation, postponement, optimized inventory policies, and continuous learning and process improvement.

Inventory optimization has been used to improve customer-service levels by up to 25 percent and customer-request-date performance by up to 30 points. Companies have been able to reduce inventories by up to 40 percent while increasing inventory turns and reducing expediting, thus lowering overall logistics costs by up to 15 percent.

By prioritizing a company's most profitable products and customers, optimization can drive higher margins. And by bringing efficiency and responsiveness into the supply chain, companies can leverage optimization to capture new customers and higher market share.

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