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Achieving High Performance in the Supply Chain: Inventory Optimization

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Even with thoughtfully established inventory policies, many companies continue to operate at the extremes, with excessive inventory for some items binding up cash flow while other items suffer from stock outs that lead to poor customer service and missed sales. These problems are only made worse by the increasingly multipolar world, a world characterized by multiple centers of economic might, with its growing interdependencies that can significantly and unexpectedly impact resource availability, delivery times and product demand.

Accenture's ongoing research into the characteristics of a high-performance business can help companies navigate the multipolar world. The research confirms that a relationship exists between supply chain mastery and superior financial performance. Indeed, our research has found that companies with strong supply chain performance were rewarded with a market cap compound annual growth rate (CAGR) premium of 7 to 26 percentage points above the industry average. For businesses seeking high performance in supply chain management, the path is clear: continually apply advanced planning and scheduling capabilities to establish and support more and more granular policies on just how much inventory to maintain and where to hold it.

Inventory planning: The status quo

A surprising number of companies continue to use the most basic of inventory policies—that is, maintaining the same level of inventory across all stock-keeping units (SKUs). Naturally, this leads to stock outs for faster moving items and overstock for slow moving items, compromising customer satisfaction and tying up working capital.

Many companies have advanced to the more sophisticated approach of segmenting products and setting policies according to velocity. This "ABCD" approach sets higher service targets and safety stock levels for fast-moving A items than for slower B, C and D items. However, it does not take into account ongoing fluctuations in material supply and product demand and- the myriad factors that can affect both.

Manufacturing resource planning (MRP) and distribution resource planning (DRP) applications support more advanced capabilities for keeping the investment in inventory low while ensuring adequate stock on hand to meet demand. Although these systems may lead toward just-in-time inventory, the vagaries throughout the supply chain—such as fluctuations in raw material costs, product availability and transit times—make some level of safety stock essential.

For all three of these approaches to inventory planning, success is determined by the accuracy and completeness of the data used to determine safety stock levels, the transparency of inventory levels throughout the supply chain and regular review of established replenishment parameters as conditions change.

Inventory optimization: Setting targets, pooling demand

Inventory optimization is an ongoing process of assessing opportunities to reduce inventory costs while meeting demand targets, with highly skilled planning experts using sophisticated tools to set safety stock levels and replenishment parameters.

Inventory optimization begins with the establishment of the minimal level at which stock needs to be replenished and the amount of stock to be ordered to stay within a cost-effective ordering frequency. This can be done at the local level, for a single production tier or distribution node, or proceed on to include every SKU within every production tier and distribution node. Either way, this first step of setting safety stock levels takes into account all the factors that affect inventory levels and inventory turn, including lead time, lead time variability, supply quantity variability, demand and demand variability.

The more advanced approach of optimizing inventory for every SKU at every location pools demand to reduce the risk of stock outs and overstock. Pooling demand takes both demand variability as well as supply side variability into account in determining where to keep specific inventory (centralized vs. decentralized) and in which form (raw material, work-in-process or finished goods) and at what levels over time.

With this visibility into inventory across the supply chain, an organization has the information needed to make strategic decisions about supply chain management:

Optimal replenishment parameters. What are the optimal shipment frequency and shipment size? This must strike a balance between keeping shipment size small to minimize investment and shipment frequency low to minimize shipping costs.

Optimal inventory placement. Where is the best vertical placement: raw materials, semi-finished or finished? Where is the push-pull boundary and what are the costs of operating under a push versus a pull model?

Indicators for inventory optimization

Several conditions indicate opportunities to raise service levels and control inventory costs through inventory optimization.

High stock outs with high inventory levels. Below-target service levels combined with above-target inventory levels are a sure sign of opportunities to gain from inventory optimization.

Highly complex supply chain network. Individual production or distribution levels within multi-tier networks lead to silos of information. Demand pooling by synchronizing and coordinating information flow across the tiers can help to reduce inventory buffers at each tier.

Long supply chains. Global sourcing often tempts companies to maintain higher safety stocks to protect against increased lead-time variability. Accurate accounting for lead time variability can help to keep safety stocks realistic and minimize the tendency to order large quantities even for slow moving items.

High number of products. The more products a company offers, the more slow moving products it is likely to have. Inventory optimization works at the SKU level, helping to minimize inventory of slow moving products while ensuring the availability of fast moving products.

Quantifiable benefits of inventory optimization

In Accenture's experience in inventory optimization, organizations can realize a wide range of quantifiable benefits that can lead to high performance in supply chain management.

Reduced inventory. Reduction in stock levels can be as much as 10 to 30 percent, releasing locked-up working capital and improving cash flow.

Reduced carrying cost. Reducing inventory reduces the extra costs associated with warehousing, obsolescence, insurance, damage, shrinkage and pilferage, administration and taxes. Carrying costs can be reduced by as much as 10 to 30 percent.

Improved asset utilization. Reducing inventory frees up assets such as warehouse space and handling equipment, which can be used for other purposes. Asset use can be improved by as much as 10 to 30 percent.

Improved customer service levels at lower total supply chain costs. Improvements in defined customer service levels can be in the range of 2 to 10 percent.

Reduced operating costs. Reducing warehousing, labor, and freight costs improves the bottom line.

Increased revenue and gross margin. Inventory optimization raises sales volume by reducing stock outs. Sales volumes are also positively affected by improvement in product mix enabled by optimally aligned service and cost to serve.

Improved workforce effectiveness and efficiency. Improved replenishment processes reduce expediting and fire fighting, in turn increasing workforce efficiency.

Fewer stock outs and expedited ordering have a long-term positive effective on business stakeholders, raising customer loyalty with reliable service and improving supplier relationships with smoother order flow and reduced noise in the supply chain.

Beverage company satisfies thirst for high performance with inventory optimization

A leading beverage manufacturer and bottler in Latin America was enjoying rapid growth, but at the same time straining to keep the supply chain bubbling along. With sales surpassing targets and the number of SKUs on the rise, production was set to continue to increase. To meet this demand, warehouse space at its six plants was being converted to production areas. However, a large number of its 45 warehouses were soon to exceed their capacities. Eager to ensure a steady supply of products while minimizing warehousing, lowering inventory holding costs and improving production capability, the company turned to Accenture for help optimizing its distribution network.

Using sophisticated network and inventory analysis tools, Accenture helped the client consider the service, cost, and inventory implications of a variety of network scenarios in order to plot the best path forward. With this information, Accenture and the client worked together to determine:

- The ideal number and location of distribution centers and cross docks
- The optimal product flow to warehouses and customers
- Target inventory levels for each facility

Accenture's analysis helped the company to avoid investing in a specific bottle line by revealing unused capacity and shift an important part of manufacturing from a high cost plant to a lower cost plant further from market. Overall, capital investments have been reduced by 25 percent, operating expenses have been reduced by $2 million per year and total inventory has been reduced by 22 percent. The client is now poised to achieve high performance in supply chain management along with an improved financial position.

Inventory optimization: From single node to multi-tier

Inventory Optimization Life Cycle

Inventory optimization can be conducted at any stage in the life cycle of an advanced planning and scheduling project. It may begin and end as a pilot study for a single distribution node or proceed on from this proof of concept to encompass all SKUs at all locations throughout the production and distribution network, as well as ongoing optimization to keep pace with changing variables.

Pilot. A pilot study focuses on setting targets for a small set of SKUs. The real value of this study is that it serves as a proof of concept. Extrapolating the inventory reductions and service improvements from the pilot set reveals the magnitude of the benefit of an end-to-end, cross supply chain inventory optimization.

Optimization study. An optimization study includes the setting of targets for a broader set of SKUs, as well as the identification of process improvements that can have an impact on stock levels, such as inventory hoarding, demand forecasting and supply reliability. The focus here is on identifying quick wins to remove working capital from the balance sheet and free up cash.

Value assessment. Inventory optimization can form part of a broader based study that identifies opportunities to capture value from across the supply chain. A supply chain value assessment is often used to provide guidance for the selection and implementation of a supply chain planning solution.

SCP system implementation. Replenishment parameters and safety stock targets must be set when implementing an ERP platform for supply chain planning (SCP) if they are not already in place. Inventory optimization provides the best way to determine the correct settings for the software.

Ongoing optimization service. Inventory optimization is also a continuous process that requires experienced talent using sophisticated tools to update the ERP system's target stock levels and replenishment parameters as variables in the network change, such as:

- The addition of new SKUs
- A change in demand pattern or forecast error
- A change in holding costs across locations
- The introduction of a new node, such as a new retail outlet, distribution center or a plant
- A significant change in transportation modes and costs
- A change in service level target

Achieving high performance with ongoing optimization

Inventory optimization that spans the entire supply chain can lead to high performance by minimizing inventory holding costs across the supply chain and ensuring that service level targets for end-customers are met. However, it is important to keep in mind that effective inventory optimization is an ongoing process. Supply chains continually evolve as business conditions change, and safety stock targets and replenishment targets should be reviewed regularly to adapt to these changes and sustain the benefits of inventory optimization.

Ongoing inventory optimization services delivered by experienced supply chain management consultants using sophisticated statistical analysis help maintain inventory at optimal levels for the organization intent on achieving high performance in supply chain management.

Do-it-yourself retailer finds high performance is in the details

One of the largest retailers of do-it-yourself home improvement tools and supplies, eager to optimize inventory levels, turned to Accenture for help identifying optimum parameters for inventory replenishment, as well as opportunities to improve the replenishment process and make better use of its SAP replenishment module.

Accenture ran three concurrent work streams to complete the analysis in just six weeks. An inventory analysis, which leveraged Accenture's global delivery capabilities to bring the right talent to bear on the work, simulated a range of parameters to reveal their impact on total inventory holding cost. With this insight, Accenture determined optimized stock levels and replenishment settings by SKU and by location. A process review and an SAP review identified key process improvement areas and untapped system functionality.

Overall, inventory modeling revealed short- to medium-term opportunities to reduce inventory at ports, distribution centers and stores for a total reduction in inventory of 21 percent, for a potential working capital reduction of $40 million. With Accenture's detailed roadmap for moving forward in hand, this client is prepared to move toward high performance in inventory and supply chain management.

About Accenture

Accenture is a global management consulting, technology services and outsourcing company. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. With more than 186,000 people serving clients in over 120 countries, the company generated net revenues of US$23.39 billion for the fiscal year ended August 31, 2008. Its home page is www.accenture.com.

About Accenture Supply Chain Management

The Accenture Supply Chain Management service line works with clients across a broad range of industries to develop and execute operational strategies that enable profitable growth in new and existing markets. Committed to helping clients achieve high performance through supply chain mastery, we combine global industry expertise and skills in supply chain strategy, sourcing and procurement, supply chain planning, manufacturing and design, fulfillment, and service management to help organizations transform their supply chain capabilities.

We collaborate with clients to implement innovative consulting and outsourcing solutions that align operating models to support business strategies, optimize global operations, enable profitable product launches, and enhance the skills and capabilities of the supply chain workforce. For more information, visit www.accenture.com/supplychain.

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