Inventory Optimization

WHY INVENTORY OPTIMIZATION FOR THE SERVICE SUPPLY CHAIN IS UNIQUE

As customers continue to look beyond the product to the service included with it, companies are placing added importance on their service operations. As field operations become more influential to customer retention and more impactful to operational expenditures, the need to optimize the Service Supply Chain (SSC) is more important than ever.

The SSC is distinct from the production supply chain in several ways. Service organizations bound to contractual obligations of rapid-response Service Level Agreements (SLAs) with penalties require a more agile supply chain.

Additionally, the aftermarket sector has the unique combination of low volume, high mix materials that adds another layer of complexity to part planning. Furthermore, SSC support complex networks consisting of distribution centers, fields sites, all the way down to a technician's trunk stock. These are just a few examples and there are many other factors distinguishing the service supply chain including multiple supply sources (new buys vs repairs), sporadic and intermittent demand, and reverse logistics to repair defective material.

Baxter Planning specializes in the Service Supply Chain, uniquely focusing on Total Cost Optimization to calculate target inventory levels at the best cost.

This is done by balancing inventory cost (the cost of positioning material) against stockout cost (the cost of a not having material available when and where demand occurs). BaxterProphet's target stock level (TSL) calculation determines the projected total cost for each potential stock level. Each additional item of inventory increases inventory costs while decreasing the probability of a stockout and associated stockout costs. The optimal stock level is the level at which inventory costs and stockout costs are the lowest.

THE IMPORTANCE OF INVENTORY COSTS AND STOCKOUT COSTS

The only way to truly optimize inventory is by modeling discrete parameters. Processes such as assigning service level by ABC categorization, no matter how many levels you elect to have, are not discrete enough. Consider a part that is an "A" part number, it may always be a critical part, but it's more critical to have that part available for customers with a High Availability SLA than it is for a customer only paying for time and material. When considering replenishment lead times, it may be costlier to have a stockout for that same part in a remote location than to have a stockout in a more urban location since quicker reaction times are typically possible in more populated areas.

When those stockouts do occur, the customer demand still must be satisfied. This often means inventory expedites with many hidden costs far beyond just priority or Next Flight Out (NFO) shipping.

BaxterProphet's configurability ensures that inventory and stockout costs are calculated accurately based on your business environment and goals. Parameters can be set at a broad company level or more narrowly at a product/material level or the customer/contract level.

When we bring all these parameters together – product categorization, customer importance, and contract criticality – a total cost optimized target stock level can be calculated for each part, at each stocking location. As these parameters provide the foundation for BaxterProphet's TSLs, modeling the parameters accurately and effectively is necessary to achieve high service level and inventory goals.

THE RISKS OF CONSTRAINED TARGET STOCK LEVELS

Inventory managers often believe that setting a minimum stocking levels for all materials will guarantee material availability and improve service levels but that may not always be the case.

Stocking one unit everywhere using overrides or minimum service level constraints is generally not an optimal strategy.

For example, setting a blanket service level of 95% will apply equally to all parts across all locations. That means that very expensive parts with a low failure probability will require stock at every location since a stockout would yield a 0% service level. However, taking a total cost optimization approach means that a planner may rather accept the risk of stockout since the cost to expedite once every 12 – 18 months may be lower than proliferation of expensive or bulky material. Conversely, parts with low cost and high volume, for which it would be unthinkable to have a stockout, may have their target stocking levels capped at the blanket 95% service level in locations where it would make more sense to stock 98% or higher.

In other cases, customers set safety stock rules to keep one unit at all locations supporting install base, but this discounts any differentiation based on customer, SLA, or location attributes. We may be able to achieve acceptable service level over a large group of install base with less inventory if the install base population is dense and the replenishment leadtime is short. Conversely, we may need to stock more parts for the same size of install base (resulting in a higher service part to install base ratio) in sparsely populated or geographically hard to reach areas.

Consider a situation where limited inventory is needed at several locations. For example, there is a shortage at two different sites but there is only one unit available for replenishment. A planning environment relying solely on minimum stocking level rules would assign that material arbitrarily. On the other hand, a planning environment taking a total cost optimization approach (one considering inventory and stockout costs) would assign the stock to whichever site provides the greater business benefit; it would assign the stock where it has the potential to offset the highest stockout cost.

Allowing BaxterProphet to calculate the optimized target stocking level rather than applying broad constraints and overrides is beneficial for many reasons. The BaxterProphet algorithm calculates the point at which adding additional inventory cost does not provide any incremental value (as it does not significantly decrease the likelihood of a stockout).

Ultimately, correctly configuring inventory cost and stockout cost parameters to determine optimal stock level enables your service supply chain to achieve the highest service level at the lowest total cost.

HOW TO MODEL INVENTORY COSTS AND STOCKOUT COSTS

Modeling inventory costs and stockout costs accurately is key to fully realizing the benefits of Total Cost Optimization.

As a best practice, Baxter Planning recommends that customers have at least 98% of their target stock levels unconstrained and calculated based on total cost optimization. If you'd like help achieving supply chain excellence, Baxter Planning offers Target Stock Level modeling consulting engagements for current BaxterProphet customers to review and discuss the TSL parameters appropriate to your business and your industry.

Some of our recent TSL modeling success stories include a telecommunications customer who saw a 7% increase in service level and has the potential to reduce inventory costs by $500 million. During another consulting engagement, a network customer received the recommendation to remove 9600 TSL overrides that would result in a 15% increase in service level.

ABOUT BAXTER PLANNING

Baxter Planning is a global leader in Service Supply Chain software, delivering a Service Experience Advantage to the world's most innovative enterprises for over 30 years. The end-to-end BaxterPredict platform empowers organizations to optimize service parts planning, execution, and resolution, driving superior customer experiences, fostering long-term loyalty, and fueling business growth.

By combining purpose-built technology, award-winning AI, decades of practitioner expertise, and a commitment to true partnership, Baxter Planning consistently delivers industry-leading outcomes for its clients.

The company is headquartered in Austin, Texas, United States, with offices around the globe.

For more information, visit www.baxterplanning.com.