

## Complexity Management For Full-Line Industrial Goods Manufacturer: Developing Segmented Operations And Service Strategy

**The Challenge:** WidgetCo, a leading industrial goods manufacturer, was facing intense price competition from Chinese producers. To differentiate itself, WidgetCo had developed a full line of products, each catering to a specific customer segment. By incorporating product features that were relevant to specific customer niches, WidgetCo could charge a significant price premium. Products were manufactured by machining metal blanks and assembling the machined parts into sub-assemblies and assemblies at multiple assembly centers; WidgetCo offered each individual assembly, sub-assembly, and component as a service part to its customers. As a result, it had over 25,000 'saleable SKUs', many of which were low volume with sporadic demand patterns. WidgetCo's diverse product range and complex operations led to excess inventory for some SKUs and significant shipment delays for others. The CEO asked for Gotham's assistance in developing an approach to manage operational complexity to improve availability without building up excess inventory.

### The Partnership:

**Analysis:** WidgetCo's operations decisions were based on A/B/C classifications, driven by sales, and did not factor in demand frequency or variability — key determinants of customer service expectations. WidgetCo's high sales SKUs did not always have low variability or high frequency. To segment the operations and service strategy the joint Gotham/ WidgetCo team devised a statistical score using a weighted average of sales, sales volume, gross margin, demand variability, and demand frequency. The team also assigned weights to SKUs purchased by top customers and to complementary SKUs ordered along with the top-selling SKUs in the statistical score. **Strategy:** The team decided that fast-moving, low variability SKUs would be forecasted and kept in stock. Infrequently demanded SKUs would be not stocked; rather they would be manufactured after receiving an order, to minimize slow-moving inventory. We ensured that contractual obligations for SKUs were not violated e.g., keeping the SKU in stock. We classified the SKUs into two segments:

- **Manufacture-to-order SKUs** would be manufactured using an order-driven strategy, shipped from a warehouse which was co-located with the low-volume assembly facility, and not be stocked. The service objective was to ship 98% of the orders by the promised shipment date for these SKUs. We subdivided the manufacture-to-order SKUs into assemble-to-order (ATO) SKUs (which would be stocked at and assembled from the sub-assembly level) and make-to-order (MTO) SKUs (which would be manufactured from raw materials and purchased components) based on demand frequency.

- **Make-to-stock (MTS) SKUs** would be stocked and manufactured using a forecast-driven strategy at a high-volume assembly facility. The service objective for MTS SKUs was to ship 98% of orders within 24 hours of receiving an order. We further segmented MTS SKUs based on replenishment frequency based on demand frequency. The warehouse(s) where a particular MTS SKU would be stocked was determined by geographical demand distribution.

**Execution:** The joint Gotham/ WidgetCo team gathered SKU-level demand data and created and ran a customized Access model to calculate the scores and segment the SKUs. Then, working with the Planning Manager, we created and executed a detailed plan to transition inventory and production schedules to the new strategy.

**The Results:** The segmented operations and service strategy had dramatic results – delivery performance for MTS SKUs increased to 96% (from 68%) with simultaneous \$6MM reduction in inventory (on a base of \$24MM). With the segmented MTS replenishment approaches, forecast accuracy was significantly enhanced. Overall, the delivery system became more flexible, less asset intensive, and, most importantly, was able to meet the service expectations of WidgetCo's customers.

