

Award-Winning Responsiveness

The ASCM body of knowledge provides an essential foundation for supply chain transformation, at Mallinckrodt Pharmaceuticals positively affecting profitability and customer service.

Goals

- Reduce forecast bias
- Enhance agility
- Improve adherence to the supply plan

Approach

- Introduce the concept of mean absolute percentage error (MAPE) to help measure and improve accuracy
- Apply sales and operations planning to synchronize the financial and production cycles to one set of numbers
- Review chemical process changes, supplier negotiation, process mapping, waste identification and inventory usage to find areas to improve agility

Results

- 52% increase in average inventory turns
- 92% reduction in backorders
- 20% lead time improvement
- Master production schedule adherence improved 22% with all plants meeting or exceeding targets
- Increased internal alignment resulting in a superior customer service experience

Mallinckrodt Pharmaceuticals is a global specialty pharmaceutical company dedicated to managing complexity and improving lives. The company operates in two segments — specialty generics and specialty brands — offering a comprehensive portfolio of specialty generic controlled substances for pain management, substance abuse and attention deficit hyperactivity disorders, as well as a broad line of active pharmaceutical ingredients.

In recent years, the generic pharmaceutical industry has become intensely competitive. Historically, just three companies produced the majority of generic drugs; today, that number is in the double digits. To stay competitive, decision-makers at Mallinckrodt knew the specialty generics business required a meaningful transformation. They chose to focus on three key objectives:

1. Reduce forecast variance and bias.
2. Enhance agility.
3. Improve adherence to the supply plan.

The APICS body of knowledge was fundamental to the initiative, which ultimately earned Mallinckrodt the 2017 APICS Award of Excellence — Transformation.

Opening eyes

The shift began with a cultural change that was centered around the forecast. “As I reflect on what we have accomplished, the biggest challenge was this change of culture,” says David Widder, CPIM, senior director of supply chain planning. “It was easy to convince the operations team that better forecasts would lead to reduced costs, better service and lower inventory. It was easy to convince the commercial team that shorter lead times and more consistent manufacturing delivery would lead to improved customer service and increased sales. But it wasn’t so easy to convince the operations and commercial teams that they each had an opportunity to improve in their own areas.”

The strategy began with small changes and realistic, aligned goals. The concept of mean absolute percentage error (MAPE) was introduced to help employees measure and improve accuracy. The APICS Dictionary defines MAPE as “a measure of statistical variation in a forecast. Computed by dividing each absolute forecast error by the actual demand, multiplying that by 100 to get the absolute percentage error and computing the average.”

Recognizing the need for MAPE improvements, sales team leaders incentivized the sales organization to focus on the procedure. This was supported by synchronizing the financial and production cycles to one set of numbers with sales and operations planning. Through these efforts, Mallinckrodt reduced MAPE by 22 percentage points.

Next, to better respond to demand changes, decision-makers addressed agility from a number of angles, including chemical process changes, supplier negotiation, process mapping, waste identification and more strategic use of inventory. Results include the following:

- At the active pharmaceutical ingredient plant, chemical processes were overhauled for many of the molecules manufactured. This resulted in year-over-year lead time reductions of 29 percent across all products made at the facility.
- Suppliers to all plants in the network were contacted to confirm delivery lead times, and, in some cases, shorter lead times were negotiated. This process also uncovered a supplier to the finished dosage facility that would wait until a purchase order from Mallinckrodt was received before ordering a necessary raw material. An agreement was negotiated that required that supplier to hold inventory, contributing to a 20 percent lead time improvement.
- Reports were created to track lead times for each step, from ordering raw materials to release of finished goods. This information is periodically extracted to evaluate adherence to target and investigate abnormalities.
- The commercial team identified supply chain risks and the probability of their occurrence. This information was converted into units, and strategic safety stock was added to better position Mallinckrodt to absorb disruptions. The potential revenue from these disruptions represented a 1,333 percent return on the inventory investment.
- Adherence to plan was improved through a more effectual master production schedule. Previously, schedule attainment was measured weekly at the work-center level and unit fill rate was measured upon shipment of orders. Nothing existed between these two metrics. The implementation of master production schedule adherence brought about a consistent definition for the plants and centralized oversight through the supply chain team. As a result of these strategies, adherence was improved by 22 percent, with all plants meeting or exceeding targets.

- A master schedule change request process was introduced to ensure that proper cross-functional approval is obtained for changes to the master production schedule and to provide retrospective data analysis in order to understand the root cause of any changes.
- Further supporting agility improvements are weekly teleconferences with the supply and commercial teams, during which members review the master production schedule and discuss any deviations.

Built with wisdom

The ASCM body of knowledge and APICS certifications served as important baselines during the transformation.

“I encourage our employees to earn the appropriate certifications for their roles and the roles they want next to ensure shared understanding of terms and best practices,” Widder says. “If we focus on getting the basics right, higher-level key performance indicators naturally follow.”

In fact, when Widder first transitioned into a supply chain planning role, he didn’t have much experience in the field. His supervisor suggested that he pursue the APICS Certified in Production and Inventory Management (CPIM) designation. “This was an important step in my career because it gave me a foundational knowledge to build from,” Widder explains. “The common language facilitated communication.”

Dan Gorke, CPIM, CSCP, says attaining his CPIM designation shaped his career: “I was exposed to this material just a few months after joining Mallinckrodt through a temporary position. I was a recent college graduate and still didn’t know what I wanted to do. Almost immediately after being exposed to the basics of supply chain management curriculum, I set my sights on leading the supply chain function at my facility.”

He goes on to say that, in a vertically integrated supply chain such as Mallinckrodt’s, APICS education provides an essential foundation for planning processes and systems from site to site. While the various manufacturing capabilities and processes differ, the plan is derived from and centered on the same common understanding of supply chain management. For instance, members of Mallinckrodt’s information technology (IT) team who support supply chain systems have earned the CPIM designation, enabling them to more easily translate IT requirements into a language the supply chain team can use.

“When communication improved, so did our results,” says Dave Kloostra, demand manager. “The answers to common questions became more powerful.”

Kimberly Pape, CPIM, manager of supply chain development and optimization, agrees: “Having a common language and definition of terms across multiple manufacturing facilities — each facing their own unique challenges — helps ensure we’re supporting all the customer needs in the vertically integrated supply chain. It also helps to have a body of knowledge available for research purposes when trying to tackle a new issue. Reviewing feedback from other APICS members facing similar challenges and hearing what worked or was challenging for their organizations can help us avoid common pitfalls.”

Coming together

Mallinckrodt’s supply chain transformation has had a positive impact on both profitability and customer service. Quarterly average inventory turns rose 52 percent. In addition, unit fill rate grew by 14 percent, which led to a 92 percent reduction in backorders and a 97 percent reduction in maximum single-day backorders.

Pape says the demand and supply planning, agility and plant execution transformations also have enabled Mallinckrodt’s specialty generics segment to attain better internal alignment and provide superior customer service.

“The most valuable result has been the increase in supply reliability,” Gorke adds. “We not only noticed the improvement in our internal metrics, but also received numerous accolades from customers through both supplier scorecards and formal awards received for our consistent delivery performance.”

For Widder, the most important result is in how the team came together: “I’m extremely proud of our team for the performance improvements we’ve attained and sustained over the last few years. We are more aligned as a business team than we’ve ever been. ...Together, I am confident in our ability to meet any challenge.”

About ASCM

The Association for Supply Chain Management (ASCM) is the global leader in supply chain organizational transformation, innovation and leadership. As the largest non-profit association for supply chain, ASCM is an unbiased partner, connecting companies around the world to the newest thought leadership on all aspects of supply chain. ASCM is built on a foundation of APICS certification and training spanning 60 years. Now, ASCM is driving innovation in the industry with new products, services and partnerships that enable companies to further optimize their supply chains, secure their competitive advantage and positively impact their bottom lines. For more information, visit ascm.org.

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