Supply chain planning and inventory management | Healthcare / Pharmaceuticals | Supply network connectivity / performance | Network analysis

Digital Supply Chain Connectivity and Capacity Analysis for Strategic Production Planning

BUSINESS PROBLEM

Ethicon, a subsidiary of J&J that designs, manufactures and distributes medical devices used by surgeons around the world to conduct surgery safely and effectively, is experiencing increased demand within its Oxidized Regenerative Cellulose (ORC) product line. Data related to the ORC production value stream is generated across both internal and external suppliers within J&J's global supply chain; as a result, the digital data thread is disjointed across multiple ERP systems and various teams. Consequently, planning activities that support strategic investment decisions are increasingly burdensome and require a significant level of effort.

APPROACH

A process flow analysis of the ORC finished goods facility will be performed to develop a dynamic capacity model that supports identification of critical bottlenecks for strategic investment opportunities and improvements. Furthermore, a characterization of the ERP systems across J&J's supply chain will be used to roadmap a plan for connecting the information flow throughout the value stream.

DATA SOURCES

This research primarily used data from various teams within the ORC value stream. Demand information, planning sheets, and forecasts were aggregated across these various teams. Additionally, process and manufacturing data were gathered from various MES/ERP systems used by Ethicon in ORC production.

Data Types and Format

Planning, demand, and forecast data in shared Excel spreadsheets. Manufacturing and process data from various MES/ERP systems.

Author: Justin Jiang

IMPACT

Successful implementation allows Ethicon's ORC product line team to effectively and efficiently manage its finished goods facility throughout its planning cycles as well as identify and execute on strategic investment opportunities for future demand profiles.

DRIVERS

A major driver of this project was the growth in ORC product demand and the need to understand and identify tactical and strategic operational improvements in the ORC value stream to meet that demand.

BARRIERS

Availability and access to some subject matter experts and data sources due to production schedule focus. Size of scope (raw materials node, finished goods node, digital strategy) and limited time detracted from depth in any particular area.

ENABLERS

The strong support from the leadership team and the company culture enabled the results of this project. The site visits were also instrumental in understanding the dynamics of the manufacturing process and gathering valuable information from the operators.

ACTIONS

Accessed educational resources within Ethicon to understand the ORC product line and history. Met with subject matter experts across the organization (enabled by the site visits) to become familiar with ORC production. Feedback from leadership teams on what visualizations would be beneficial to the teams.

INNOVATION

The use of digital tools (PowerBI) to automate data capture and aggregation. This up-to-date data aggregation is then used by the optimization algorithm to suggest an optimal product mix to maximize revenue (and minimize shortfall) given product demand profiles and current manufacturing capacity constraints.

IMPROVEMENT

Capacity models that provide dynamic updates on capacity utilization at different process steps based on tunable input parameters (demand, product mix, operational efficiency, etc). Optimized product mix that provided a minimized revenue shortfall of 0.5% on simulated demand and capacity constraints.

BEST PRACTICES

Build relationships with the manufacturing leadership all the way to the operators as they are the closest to the product and have highest fidelity data for how the product is made.

OTHER APPLICATIONS

This approach can be applied to other product value streams within the Ethicon and greater J&J product portfolio.