

Global Active Pharmaceutical Ingredient (API) Supply Chain Analysis

Vertical

Manufacturing **Pharmaceutical** Healthcare Portfolio Logistics Financial Government Business

Genre

Case Study **Project Review:** White Paper Technology Overview

Client

A leading global pharmaceutical firm

Situation

The pharmaceutical firm's cost of outsourcing the production of its API (Active Pharmaceutical Ingredient) requirements, already millions of dollars annually, has been increasing dramatically and was expected to rise in the future. Therefore, management had requested that Clinical Pharmacology reduce the cost of API production while maintaining the appropriate Clinical Trial supply service levels.

In an effort to meet management's request, the Clinical Pharmacology team needed to understand the true production capability and costs of its high-level supply chain over the next ten years. Additionally, the team was opening a new Kilo Lab to provide increased internal capacity.

ProModel was engaged to develop a simulation solution which would allow the firm to determine the optimal way to reduce API supply chain cost, while still maintaining the required service level.

Objectives

The overall client objective was to minimize the cost of the API supply chain, both now and in the future, while maintaining the appropriate Clinical Trial service levels.

Solution

The solution developed integrated the existing ProModel Portfolio Simulator application, which the company was already using for strategic portfolio planning, with a new API supply chain model. Some key features and capabilities included are as follows:

- A detailed API supply chain model was created that enabled the team to visualize current and projected production capacity given vessel configurations, staffing, and compound demand.
- Potential demand profiles for the next ten years of the Global Drug Development Pipeline were generated using the Portfolio Simulator application and used as an input to the API supply chain model.
- The drug development pipeline demand profiles were then used in the API supply chain model to analyze the potential improvement opportunity changes like; changing the outsourcing strategy, setting up more Kilo Labs, and others.
- Ability to experiment with limitless load sharing scenarios.
- Provided the capability to integrate the demand forecasts of the high level Global Drug Development Pipeline plans with the API supply chain solution.
- Help estimate the true API supply chain global capacity.
- Help determine the production capacity of individual API facilities.
- Help identify and determine the course of action to eliminate supply chain bottlenecks (process, FTE and facilities).
- Help define the global demand load sharing plan (region to region).
- Help determine the best way to reduce the API supply chain costs while still meeting defined service level requirements.

Results

- Helped determine how to reduce the number of outsourced batches by more than 90%, which saves the company millions of dollars annually.
- Helped identify how to increase the overall service level from 75% on-time deliveries to well above 90%.
- Provided a solution to continually predict the demand of the company's drug development pipeline on their API Supply Chain.
- Helped determine process capacity for each of the global API facilities.
- Helped identify and eliminate supply chain bottlenecks.
- Helped determine the optimal plan for global load sharing (region to region).

Results

Powerful output reports helps the team quickly compare the impact of different experiment scenarios on Key Performance Indicators. Below are the results of some initiative changes versus the original current operations base line.

