How eAlchemy Helped Boost Plum Organics' Supplier Intelligence

HIGHLIGHTS

- Reduced planning cycle time by ~30%, and resource requirements by more than 35%
- Eliminated data errors and need for most manual overrides of plans
- Increased profit margin by minimizing costs, while reducing spoilage and lost sales
- Decreased time spent building reports
- Enabled "what-if" planning capability

> "This project fundamentally changed how we did our jobs, giving us the insight and confidence to make better decisions every day. Most importantly, the work eAlchemy did improved our bottom line.
>
> *Mary Tham, Director of Planning*
> *Plum Organics*

When Plum Organics came to eAlchemy, the leading producer of organic baby food had a painstakingly labor intensive production planning cycle. But that wasn't the biggest problem. The company's data — and the human process for untangling it — was unreliable.

"We had to double and triple check the data before we'd place an order with our co-manufacturers," says Mary Tham, director of planning at Plum Organics. "And even then, we were never quite sure we were making the right decisions. Often, we'd over-order to make sure we'd meet channel demand."

Previously, Plum was caught between the risks of losing sales or writing off expired inventory and ingredients — both scenarios eating into the company's profit margins.

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CHALLENGE

Managing a complex supplier network

Consumer packaged goods (CPG) companies often rely on a network of suppliers and manufacturers that help them get their products to distribution centers and store shelves at the precise time when their customers need them.

To fulfill demand, Plum Organics works with ingredient suppliers and different co-manufacturers ("coMans"). And with so many possible ingredient and coMan possibilities, taking all of the supply constraints into consideration while building plans to meet demand was often a big task.

Combine that with the production constraints — minimum run size, batch quantities, production costs, and balancing production qualification against capacity — and you have yourself one hefty problem. Determining how to fulfill demand, minimize costs, and maximize profits is, to say the least, challenging.

SOLUTION

Supplier intelligence tool

The goal of eAlchemy's project was to create an intelligent tool that would recommend the most cost effective and timely way to produce goods to meet channel demand. Previously, implementing an advanced planning and scheduling (APS) system wasn't an option.

To start, eAlchemy developed a suite of Excel spreadsheets that allowed Plum team members to input crucial supplier and coMan information — e.g. data like sales forecasts, inventory targets, BOMs (bill of materials), supplier qualification information, existing fixed schedules, and more. eAlchemy created a database for storage, and Plum team members were able to input the data using that familiar front-end Excel interface rather than learning a new one. At the time, there was no such system of record for this data and no place or logic established for how the team should share it.

eAlchemy determined that applying linear optimizations to Plum's data would generate the most cost-effective production plan. To do so, eAlchemy first had to help the Plum team characterize outcomes as a cost — including production, carrying cost, and potential spoilage or lost sales.

With all of this information at hand, eAlchemy wrote a complex program that could express the linear problem — then applied the commercial linear optimization algorithm Gurobi to solve it. All of this was automated to minimize the resource burden on the Plum team. Additionally, eAlchemy employed cloud computing resources on Amazon AWS to minimize licensing costs for the linear optimization software.

Based on rules entered into Excel by team members, the software would then churn out a recommended production plan in the form of an editable report.

What once took the team a week, now took mere hours. Previously laborious "what-if" planning became quick and easy. With a reliable, automated process in place, team members could spend their valuable time focused on solving business challenges rather than building reports from scratch.

RESULTS

Time and money saved

Like any good data analytics project, eAlchemy's work for Plum Organics unleashed new insights and gave the team the ability to make better business decisions. The project results included:

- Reduced planning cycle time by an estimated 30%, and resource requirements by more than 35%

- The time saved allowed the team to institute supply review as part of broader business planning initiative

- Established a system of record for production heuristics. Individual knowledge became documented and recorded institutional knowledge

- The project enabled precise "what-if" planning analysis

- It provided insight to maximize runs of single flavors, improving profit margins of those flavors

- It improved production planning and decreased the amount of costly write-offs caused by over-ordering

- More precise forecasting helped improve relationship with co-manufacturers