CASE STUDY

When Data Silos Cost Millions: How Real-Time Capacity Planning Transformed Global Operations

Client

Global manufacturer of high-performance materials used primarily in healthcare, pharmaceutical, food, and consumer product packaging.

Challenge

Disconnected ERP systems across three global sites left the manufacturer blind to true capacity, driving poor forecasting, costly last-minute shipments, and manual scheduling inefficiencies.

Solution

TBM integrated fragmented data into a unified warehouse, built a live Power BI–based capacity model, established a formal S&OP process, and automated scheduling — transforming the company from reactive to proactive.

Results

- $1M+ in shipping costs avoided through real-time capacity visibility
- 6 hours per day saved by automating manual scheduling at the Illinois facility
- 3 sites integrated into unified forecasting and capacity model

Data Silos Were Costing Millions

With 11 global sites, this manufacturer faced a critical operational blind spot: three of its key facilities – in Illinois, Belgium, and Italy – each ran on their own unique ERP systems. The result was a patchwork quilt of disconnected data that was preventing the firm from ever seeing the full operational picture.

Capacity planners, sales teams, and customer service groups were essentially working on islands, rarely sharing insights or flagging changes in a timely way. Without a cohesive view of demand and supply, the company had no reliable way to forecast production needs, identify capacity constraints, or reallocate work and resources across sites when necessary.

This fragmentation ultimately proved to be very costly. In one instance, the company was forced to absorb more than $2 million in expedited air freight charges to Europe – a direct consequence of not being able to react to capacity constraints quickly enough. The Illinois facility compounded the problem by having a scheduling process so manually intensive that it consumed up to six hours daily across two or three team members, allowing little time for proactive thinking.

A Three-Pronged Approach

After conducting an extensive initial assessment, we advised the client to structure its engagement around three interconnected priorities: building real-time capacity planning and forecasting capability, integrating the company's fragmented systems, and eliminating any and all waste from manual-intensive processes.

WORKSTREAM #1

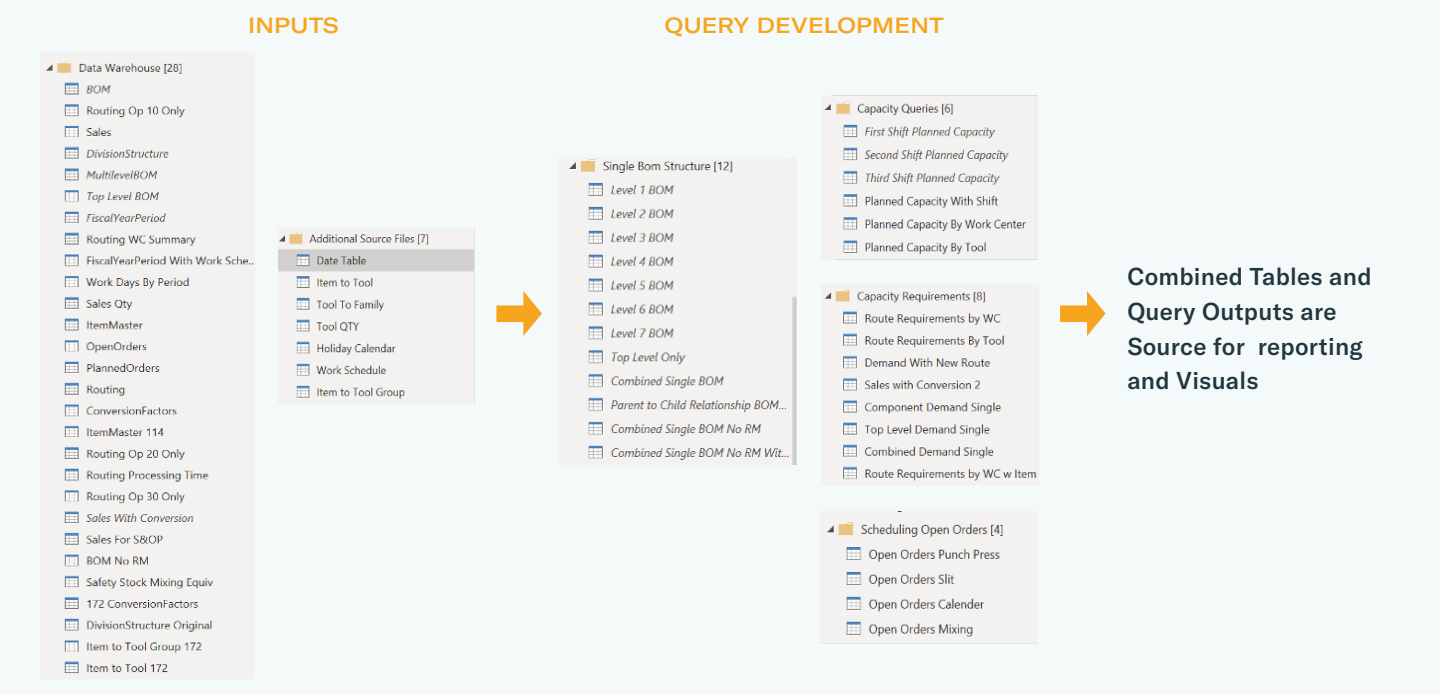
Building a Unified Data Foundation

The company had already begun developing a central data warehouse, a significant head start which we were able to leverage and help accelerate. The warehouse was designed to ingest data from three different ERP systems as well as other platforms, to create a single source of information across sites.

The issue, however, was that the Belgium and Italy facility data had not been incorporated. We worked with the client to immediately prioritise closing this gap – by extracting data from both sites, validating its structure and integrity, and aligning it with the Illinois dataset. One layer of complexity – the European facilities used different materials nomenclature and routing structures. This placed extra emphasis on careful mapping and reconciliation work before the data could be considered ready for use.

With all three sites feeding into the warehouse, TBM connected the data pipeline to Power BI, enabling live dashboards with real-time visibility into orders, forecasts, budgets, and capacity utilisation across every machine centre, shift, and work centre.

Table Structure



WORKSTREAM #2

Designed a Formal S&OP Process

Beyond connecting the technology, we also recognised that the company lacked the organisational process necessary to actually use forecasting and capacity data effectively. To solve this, we worked with the in-house team to design a structured Sales & Operations Planning (S&OP) process built around a monthly cycle — supported by real-time visibility through an integrated Power BI platform.

By consolidating global operational data into a single, dynamic model, Power BI provided the live capacity, demand, and utilisation insights required to make the S&OP process actionable rather than theoretical. Under the new framework, the recommended process flows as follows:

1. **The demand plan is developed** based on booked orders and sales input, with a rolling 12-month forecast that reflects current market conditions. This demand data feeds directly into the Power BI model to provide immediate visibility into future requirements.

2. **The demand plan is then handed off to supply planning,** where the Power BI capacity model calculates requirements — including machine centre needs, staffing levels, and raw material requirements — across multiple global sites in real time.

3. **Cross-functional strategic meetings** bring capacity planners, sales, and operations together to collectively surface and resolve risks and constraints, supported by live dashboards that highlight potential capacity gaps, utilisation trends, and production trade-offs.

4. **As the final step, an executive review session** presents risks and decisions requiring leadership support — such as proactively shifting production volume between sites based on forward-looking capacity insights.

TBM coached the client team through both the process design and the practical use of the Power BI tools that enabled it, helping them build the capability to run S&OP independently. Since this engagement, the company has assigned dedicated ownership and is progressing on its own, with TBM positioned to support a second phase of expansion as the model scales across additional sites.

WORKSTREAM #3

Automating the Illinois Scheduling Process

For the Illinois facility, TBM tackled the scheduling bottleneck head-on. The site's production process spans several key steps – mixing rubber materials into batches, running them through a "calendaring" process to create larger rubber sheets, cutting and slitting those sheets, and finally punch-pressing the finished gaskets.

Each step had its own specific requirements, including batch amounts, tool sizes, lead times, safety stock levels, and on-hand inventory. Previously, the company's schedulers were manually calculating and compiling all of this information – a process that ultimately consumed hours each day and left significant room for error. Two big strikes.

TBM helped the client avoid the third strike by automating its end-to-end scheduling workflow using a Power BI–based planning model. The TBM Client Manager leading the project built an integrated solution that pulls live operational data into a centralised model, links sales orders directly to production steps, calculates batch requirements, cheques on-hand inventory, accounts for safety stock, and generates a sequenced schedule showing exactly when each step must begin to meet customer ship dates.

By embedding scheduling logic within Power BI, the system now continuously updates as demand and production data change, transforming what had been a labour-intensive, error-prone, multi-person daily effort into a dynamic, real-time process completed with the click of a button.

From Reactive to Proactive

The shift from fragmented, manual processes to an integrated, real-time platform transformed the company's ability to manage its operations. Where leadership once had no reliable view of global capacity, they can now see utilisation by site, by machine centre, by shift — updated in real time and query-able through AI-assisted Power BI dashboards.

Capacity constraints that previously would have gone undetected until they became costly surprises are now surfaced weeks in advance. The model flags where utilisation is projected to exceed safe thresholds, giving teams time to build inventory ahead of peak demand or shift production to a site with open capacity — exactly the kind of decision that would have prevented the $2 million freight incident.

The outcome of this work underscores the business case for integrated data and structured planning. **The highlights included:**

- $1M+ in potential freight cost avoidance, gained by having real-time visibility into cross-site capacity constraints before they become shipping emergencies.
- Hours reclaimed daily at the Illinois facility, where automated scheduling eliminated a manual process that previously consumed approximately six or more person-hours per day/ $3,000 per month.
- A scalable capacity model now covering the three focus sites (Illinois, Belgium, Italy) and providing a blueprint for expanding to all global locations.
- A functioning S&OP process, now operating independently within the client's organisation, enabling monthly demand and supply alignment across the full network.
- Real-time dashboards with AI functionality, providing decision-makers with immediate access to orders, forecasts, utilisation rates, and risk indicators.

A Future Road Map

At the end of the day, our pride came in helping this client build something durable – not just a tool but an operating model. The data warehouse, S&OP process, Power BI infrastructure, and automated scheduling are all owned by the client and designed for their use. As new sites are added to the network, the architecture is built to easily absorb them.

The work also surfaced a broader truth we believe is relevant to any complex manufacturing organisation: the single greatest obstacle to effective capacity planning is not a lack of data – it's a lack of connected data. When systems are isolated, even the best planners are guessing. When they are integrated, decisions that once took days and cost lots of money can be made instantly and with a higher degree of confidence.

> "We can help set up a model that is real-time — giving you visibility to any potential risk so you can be proactive versus reactive. That's the hardest part of S&OP: getting a truly reliable view of capacity."
>
> —TBM Client Manager

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