

# Case Study — Adapting Demand Planning Post-Pandemic

By Cory Purkey CPF

**EXECUTIVE SUMMARY** | In 2017, Orchid Orthopedic Solutions rolled out a new IBP process. 2 years into this journey, COVID hit, requiring us to take our fledgling planning process and adapt it to manage unpredictable and unprecedented supply constraints. The challenges of demand planning didn't end as COVID eased however, as demand plans based on COVID sales data caused a backlog of orders as the market picked back up. In this article, I reveal how we responded to fluid demand in the post-pandemic environment by centering our demand planning around switching from constrained to unconstrained demand data for our forecast inputs, allowing us to provide a better demand signal to supply planning.



**CORY PURKEY** | Cory has spent 18 years working for Orchid Orthopedic Solutions, joining after graduation. He has held various roles as Continuous Improvement Manager, Production Management, Business Development and, for the last five years, Multisite Demand Planner/Analyst. In his current role, he helped implement and oversees the IBP demand process. Cory holds a degree in Computer Information Systems from Southern Arkansas University.

Orchid Orthopedic Solutions is a medical device partner with 11 facilities worldwide that provide products and services for orthopedic procedures. We provide end-to-end solutions to the orthopedic and medical device industry, including established Original Equipment Manufacturers. Orchid's IBP journey started five years ago. We started off slowly rolling out New

Product Introduction (NPI), Demand Planning, Supply Planning, and this year, Executive Review steps. We have a monthly cadence that starts with our Project Management Office providing NPI forecasts to our demand planning process. Demand planning consolidates all known demand information including NPI, customer forecasts, customer and sales team communications, market intelligence, and 15 months of sales

history including current open orders.

This consolidated information is fed into a demand planning software tool (developed in-house) where demand analysts create the demand forecast for the next 24-month period. A consensus meeting is held for each facility to gain alignment on the forecast being presented. Once aligned, the forecast is given to the Supply Planning team to use it to create capacity, headcount, and

material plans for the 24-month period. Finally, all the work is presented at the Executive Review where key decisions are made on the direction to take.

## HOW COVID IMPACTED OUR IBP PROCESS

The global pandemic changed everything for everyone, everywhere, and Orchid was not immune to its effects. While our process remained robust, the inevitable impact on downstream demand ultimately resulted in upstream demand fluctuations and unpredictable ordering patterns. Working closely with customers through these unprecedented swings in surgeries and inventories, we managed to chart a relatively steady course through these last two years. One thing Orchid impressed upon customers above all was the need to prepare for the recovery given the pressures on the supply chain and inventories that would ensue.

One inevitable knock-on effect of a market shock like COVID was lengthening lead times beyond industry standards. However, as we had anticipated, the market stabilized, and demand returned to normal. That is a relief for any business, but because our forecasts were based on constrained demand instead of a true reflection of demand, we found that as we emerged from the pandemic, the orderbook continued to grow. In short, our demand plans were based on outdated assumptions and hadn't prepared us to handle the difference in orders. We had more orders than the business could service and a backlog to work through. The business was missing out on significant revenue and that was a problem that required a demand planning-focused solution.

## THE SOLUTION WE IMPLEMENTED

The solution we settled on centered around improving lead times to best-in-class. This would speed up order fulfilment and ease the backlog. To do this, the site needed demand models to show unconstrained demand, not demand plans based on COVID-related constraints. This meant the orderbook needed to be adjusted in the model as if lead times were normal, allowing us to model future demand in a truly unconstrained form. This way we were able to know what real demand would be, giving supply chain a more accurate demand signal. The steps undertaken were as follows:

- 1. Evaluate Orderbook:** We asked ourselves whether a client would take an order sooner. If yes, we pulled it into a re-established lead time window. If not, it remained as planned.
- 2. Replan Orderbook:** Since we plan in monthly buckets, we left the current month alone. The remaining orders that would have been taken earlier were replanned and evenly distributed into the subsequent monthly buckets, based on best-in-class lead times. This resulted in a truly unconstrained demand model, enabling the supply team to see the immediate need for capacity, headcount and materials.
- 3. Evaluate Monthly Order Intake:** We determined the average trend that Orchid experienced over the last "x" number of months and the expected future annual demand based on that average. For example, the average trend states 1,000,000 widgets per month, therefore in 12 months our demand is 12,000,000 widgets. We then determined what the market rate for annual growth should be. For

example, Orthopedics grows at 4% year over year. Based on 12,000,000 widgets, the average order intake the next 12 months should be 12,480,000 widgets. This information is collated and then utilized in step 4.

- 4. Ongoing Unconstrained Demand Planning:** After completion of the traditional demand model update process, we evaluated how close the model volumes compare to the market trend information gathered in step 3. This evaluation is conducted using the model 12-month period range excluding step 2 periods used to replan orderbook. For example, demand in the 12-month model predicts 11,325,000 widgets and step 3 states 12,480,000 widgets, so we have a delta of 1,155,000 widgets. If demand in the 12-month model is lower than the expected demand from step 3, we will increase demand over the 12-month periods to match step 3. This is not a broad change. We isolate customers that should see an increase from those that we want to exclude which gives us a closer look at true future unconstrained demand in these periods and the ability to see capacity needs that will support this demand.

## THE CHALLENGES ENCOUNTERED SO FAR

As with any new idea or implementation, roadblocks will occur:

- 1. Bias:** Everyone has a bias that will need to be evaluated. My own bias was a roadblock because I am planning the unconstrained demand already. How could it be a constrained view not giving supply the proper signals to plan capacity? There is bias in regards to the approaches

being considered. Which one is right? Being open minded to out of the box thinking from the wider team is crucial to overcoming unusual or exceptional situations.

**2. System Limitations:** Challenges around creating a repeatable update to models meant we had to develop a means to identify which part of the orderbook will be replanned in our system. We had to develop a means to plan future demand once we had pulled in unconstrained demand and document and standardize the process so that we could repeat it each month.

**3. Hierarchy Planning Level:** What would be the optimal hierarchy level at which we could effectively manage this change and still be able to plan capacity accurately? It was determined that our business could handle a broad brushstroke adjustment at the customer level since our demand is planned at lower hierarchy levels. The high-level adjustments would cascade through the lower levels based on the distribution method already programmed into our system. This

would allow the changes to have the most beneficial planning impacts.

**4. Modifying Models Along The Road To Recovery:** The biggest question we all had was what would happen as backlogs are cleared, lead times reach best-in-class, and customer inventory levels are optimized? Would we see a massive dip in demand, (the 'cliff') a steady reduction (the 'soft landing'), no change at all, or steady increases in demand due to best-in-class performance? Even though we plan at a monthly level, we monitor order intake weekly. Once we see a consistent reduction of order intake, we will use this as a leading indicator that the facility is ready for additional opportunities either from NPI work or to capture more legacy business through increased share of market. As this happens, we will adjust the monthly order intake override to match near-term signals; drive two-way communication with our customers to understand their inventory positions and their short and longer-term demand; and

engage our commercial team to fill any gaps in capacity as required.

## CONCLUSION

Exceptional circumstances require exceptional solutions. To diagnose the problem correctly and prescribe a course of action that would return lead times to a full bill of health, a creative and self-reflective approach was required. We needed to make a high-level assessment of how applicable our standard demand planning process was to this situation. We had to take a long hard look at performance levels that were not meeting customer expectations, evaluate our backorders and long lead times, and examine what inputs were required to effectively plan the business today. It required a holistic approach that provided a better signal to supply planning, highlighting the urgent need for greater short- and medium-term capacity. The creativity needed to challenge the status quo in this case is attributable to one Orchid colleague in particular. Thank you, Ted!

— *Send comments to [JBF@ibf.org](mailto:JBF@ibf.org)*