



## CASE STUDY

# Forecast Driven Operations Models

The Pienomial team was discussing key operations pain points with a large food processing company in the mid-Atlantic region. A key need, they said, was understanding what they could or could not do to respond to changing demand. What risks were present, for example, when they committed to an opportunity for a large spike in demand?

While volatile demands have been a signature of COVID-19, the cost of meeting changing demands and the longer-term risks of these commitments seem to be in the minds of leadership of most organizations – not just the head of manufacturing. What, for example, would be the cost of

- 10% down-turn in short term demand? What is the impact as the size of the downturn grows?
- 30% increase in demand? What if the increase is only for 2-3 months? What if the increase does not materialize?
- 30% sustained increase in demand?
- Increase in lead times or cost of certain raw materials?
- Shutdown of an equipment or a line for a short time? A day? A week?
- Adding another shift to certain operations? (Do we see higher variability or a different failure mode, for example?)

What are the operations or components of operations that are most sensitive to increases or decreases? What is impacted? Cost of manufacturing? Quality? Other costs?

While we were specifically building a solution for this organization, we began to realize that this is not an issue specific only to this company, or this industry. It is a problem that is of concern to every member of a company's leadership team in almost every industry. And yet, the tools available to analyze this consists primarily of spreadsheets and someone's gut.

Figure 1 is the schematic of the Pienomial Model for Performance and Risk Assessment. Built on the operations flow, it takes operational parameters (such as turn around time, cost or raw materials, process yield, etc) and demand forecast as the input to first generate a forecast driven operations model

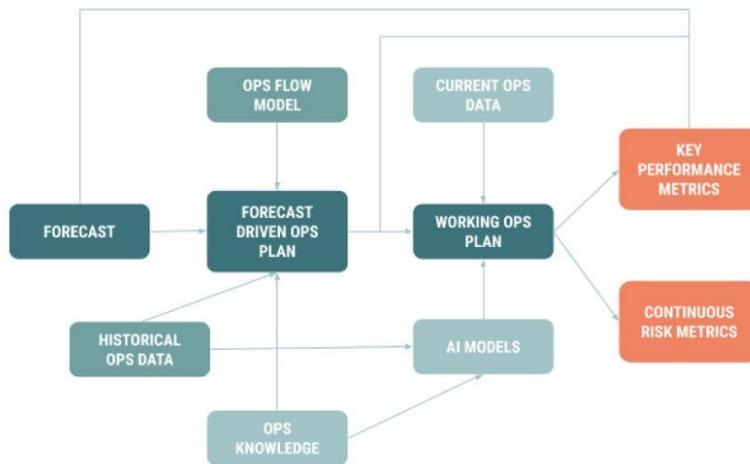
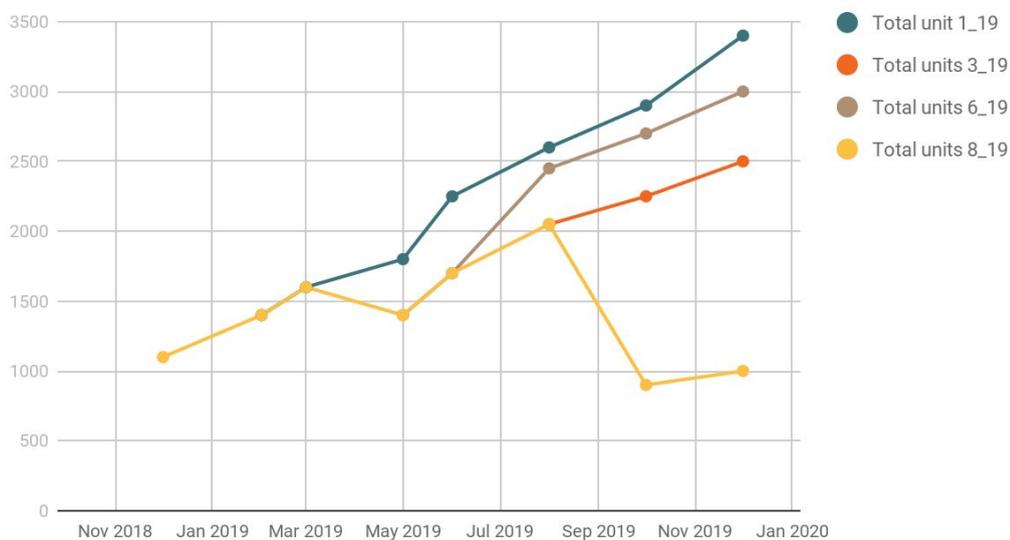
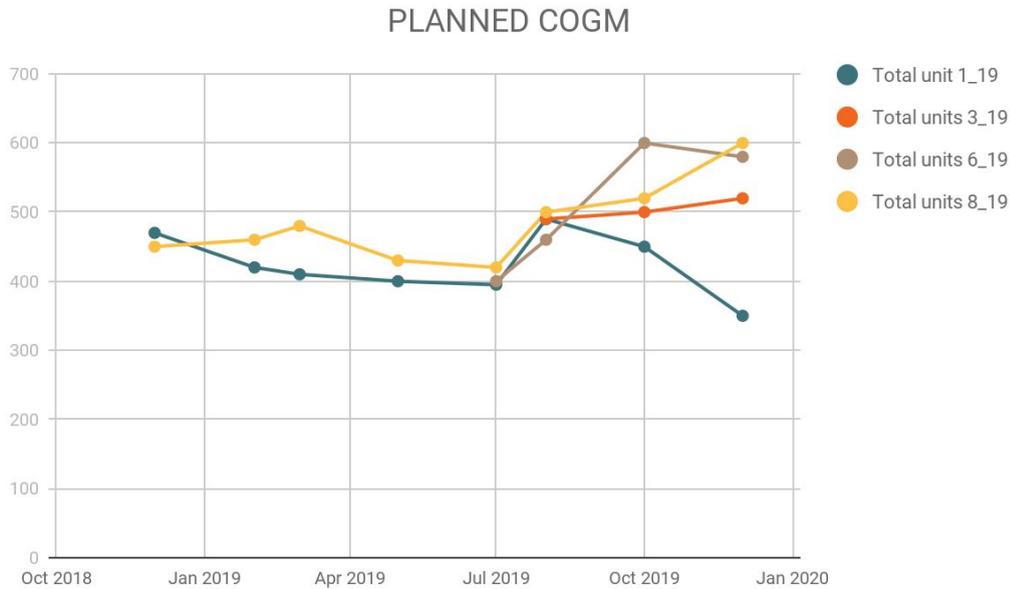


Figure 1 : Schematic of a Performance and Risk Assessment Model for Changing Forecasts and Ops Conditions (give it a more interesting name)

### FORECAST OVER THE YEAR





**Figure 2 :** An example of changing demand forecast and the associated changing per unit manufacturing cost.

It generates operations plans and projected manufacturing costs based on forecasts. It also uses AI based models to leverage historic data on throughput, yields, and process variability to predict inventory scrap, expiry, rework, additional production volumes and the cost associated owing to these changing demands.

It then continuously tracks operations data to assess alignment between ongoing operations, forecasted demands and risks of cost and throughput deviations.

Finally, it also provides an ability to simulate scenarios – of increasing capacity, second source suppliers, changing supply chain, or changing demand forecast – to assess upside or risks in implementing them.

We learned from our clients that such a toolset was of immense value in planning for changing scenarios and making data driven decisions knowing the risk associated with those decisions. For senior leadership, such a tool to improve risk visibility of decisions, was of immense value.