

## Demand Forecasting



For manufacturers and distributors, almost every decision involves trying to forecast something. As an example of how universal the problem is, the Clarity in AI team worked with a large publicly traded agricultural fertilizer company who needed a more accurate way to forecast the demand for its products - specifically how much and what type of fertilizer will be needed in what location and at what time. See if this sounds familiar – “If we knew how much of x was going to be needed and knew before it was actually needed, we could...”

- ensure optimal inventory levels and peak usage of manufacturing capacity
- streamline outgoing distribution efforts
- cut unnecessary product costs
- reduce overstocking of raw materials and/or finished products
- improve customer satisfaction by better adhering to delivery commitments

Because fertilizer demand depends on a variety of agro-economic factors it is not stable nor easy to predict. If actual fertilizer demand is less than the fertilizer produced, heavy financing costs and product losses will be the result. Considering that fertilizer manufactured but not sold may have to be kept for a year before it finds a buyer and that storage for a year can cause high quantity and quality losses, the consequences can be significant. If the actual demand is larger than forecast, this obviously leads to less revenue and profit but also potentially lower agricultural production.

Using 30 years of historical data on sales, weather, market prices, farm gate prices, etc. this effort created an AI based prediction model which resulted in an 85% forecast accuracy, which was a substantial improvement over the previous methods of calculating demand.