Accurate production schedule predictions are crucial for planning and budgeting, especially for slow-moving items with long lead times and high costs.

**Client**
A global heavy machinery and equipment manufacturer

**Industry**
Industrial Goods

**Business Challenges**
The client’s existing product demand forecasting model had a variance outside acceptable control limits of +/- 20%. Near- and long-term management of the inventory of parts and finished products was thus very challenging.

**Evalueserve Solution**
Our experts identified the drivers for production and demand, by analyzing key factors, including sales, telematics and macroeconomic variables.  
After a successful model had been built and rigorously tested, an interactive dashboard was created to facilitate access to and analysis of the monthly demand forecasts. Our experts also ensured that the product managers were well trained in the use of the dashboard.

**Business Impact**
- A reduction in forecast variance to just +/- 4%, which is well within acceptable control limits
- Much better identification of the influence of various drivers on demand
- More efficient budgeting and planning
Forecasting product demand is crucial to the success of any business: too little product means missed sales opportunities and too much is a financial burden. This is particularly significant for heavy machinery and machine part manufacturers, who deal with long lead times, considerable upfront expenses, and demand driven by seasonal, macro-economic and usage factors.

**Business Challenge**

Our client, one of North America’s largest heavy machinery manufacturers, was seeing a forecast variance beyond the acceptable +/- 20% limit, meaning their near- and long-term planning and budgeting was inaccurate. Their existing data infrastructure was insufficient to deal with all of the variables.

**Evalueserve Solution**

Separate data marts for the US and Canada were created due to the national differences in macroeconomic factors. Data was collected for several hypothetical driver variables: historical and current sales; macro-economic variables (GDP per capita, housing starts, construction indices, mining activity and crop growth indices); telematics data (run time, fuel consumption and idle time); warranty claims; and dealer density.

"The supply chain and production teams report that the budgeting and planning is much more efficient, noting that the prediction has become even more accurate in the months since the solution was first used."

After treatment for outliers and missing values, these variables were used to build predictive models via the ARIMA and ARIMAX methods. Thorough testing was carried out, enabling the successful identification of driver variables that could be used to forecast future sales.

To ensure that the product managers had the easiest access to the data and modeling results, we also created an interactive dashboard and trained them in its use.

**Benefits Achieved**

The improvement was significant: the models have a month-to-month demand forecast accuracy of just +/- 4%.

The forecast variance is now well within the acceptable range for production planning, meaning that less sales opportunities are missed and unsold inventory is less of an issue. This improvement was seen for both the US and Canada.

The supply chain and production teams report that the budgeting and planning is much more efficient, noting that the prediction has become even more accurate in the months since the solution was first used.

Evalueserve – powered by mind+machine

Evalueserve is a global professional services provider offering research, analytics, and data management services. We are powered by mind+machine – a unique combination of human expertise and best-in-class technologies that use smart algorithms to simplify key tasks.

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