


**CASE STUDY**

# Inventory Optimization

## Sundberg

**PROBLEM / CHALLENGE**

Sundberg carries a wide variety of SKUs to support their ecommerce and appliance repair customers' needs. Because these items are used when home appliances are broken, availability is critical. However, inventory investment had grown faster than sales and customers were complaining about stock-outs of key items.

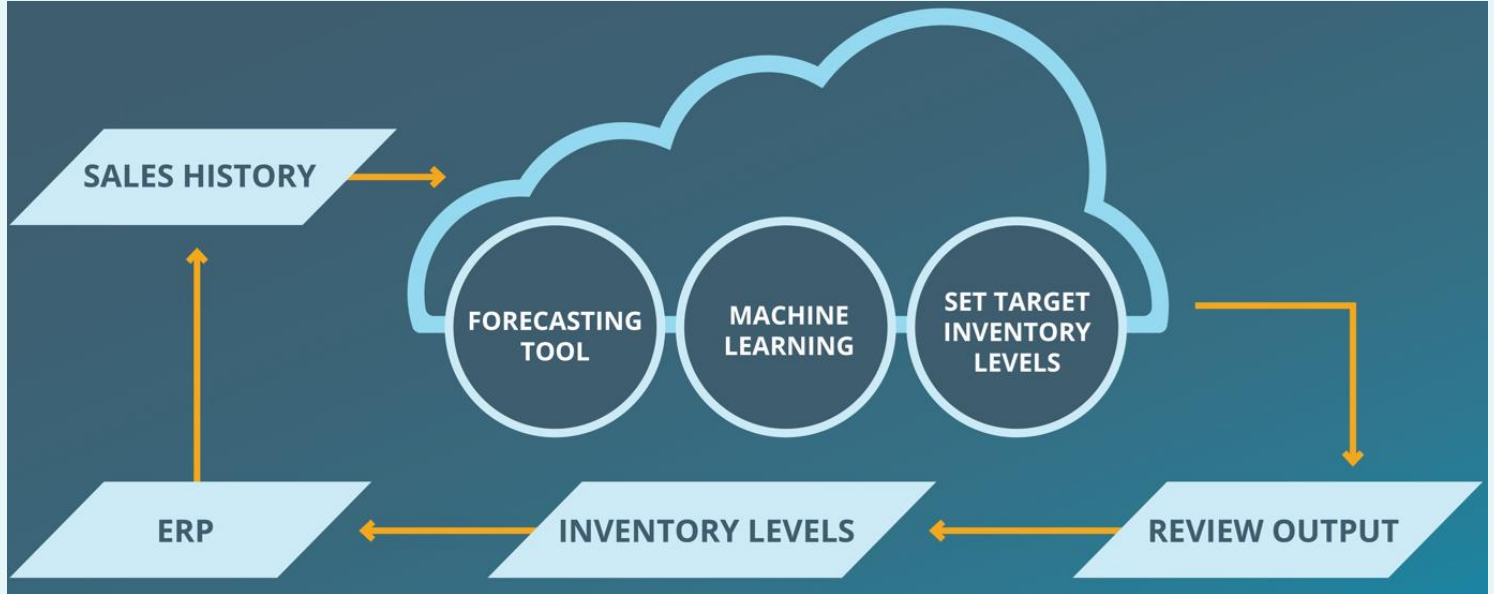
**REDUCTION OF LOST SALES AND SURPLUS INVENTORY BY SKU CLASS**

SKU Class	Count of SKUs	Lost Sales	Surplus Inventory
A	1141	\$125,627	\$669,997
B	1346	\$174,790	\$241,609
C	4548	\$259,858	\$445,746
D	3593	\$47,017	\$88,877
		\$607,292	\$1,446,230

**IMPLEMENTATION DETAILS:**

- **Classified SKUs into A, B, C, D and F using multiple criteria**
  - Unit sales
  - Number of times sold
  - Manufacturer critical item
- **Onboarded Sundberg data to Optimal Velocity Demand Forecaster® Optimization model**
  - Worked with Inventory and purchasing team to build business rules around inventory policies
- **Ran model for 3 months to allow machine learning to adjust the model and reduce forecast error**
- **After model improvements, uploaded forecast, reorder points and reorder quantities into Epicor P21 ERP**
- **Each month download prior month's sales data, rerun model and upload forecast, reorder points and reorder quantities**
- **Meet annually to discuss business rules and make model updates to improve forecast accuracy**

## ■ OPTIMAL VELOCITY INVENTORY OPTIMIZATION SERVICE



### ■ DIFFICULTIES ENCOUNTERED:

- Sundberg sells to very diverse customers including large e-commerce companies (Amazon.com, Wal-Mart.com, etcetera) and local appliance repair companies throughout the Midwest
- Ecommerce demand can be very sporadic requiring additional demand pre-processing to remove spikes and consider lost sales during stock-outs
- Large ecommerce orders can stock-out popular items which must be prevented to make sure core customers (repair companies) have inventory.

### ■ DEMAND FORECAST & INVENTORY OPTIMIZATION MODEL

- Math programming model minimizes forecast error by optimizing the impact of trend, seasonality and sporadic demand on future expected demand on each SKU
- Preprocessing smooths sporadic demand and fills in lost sales due to stock-outs
- Use forecast error, manufacturer lead-time and SKU class in-stock target to calculate safety stock.
- Calculate reorder points and reorder quantity

### RESULTS

- Reduced lost sales by \$607,000 annually
- One-time \$1.45 million reduction in surplus inventory

Reference: Coty Salazar, Supply Chain Manager  
csalazar@sundbergamerica.com