

# Demand Forecasting and Inventory Optimization

Automating inventory management with machine learning, simulation and optimization

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## Business drivers

Inventory is one of the largest working capital investments and is critical yet complex to optimize. Organizations struggle to find the balance between demand and supply at a granular level. They find it difficult to:

- Reduce redundant inventory while timely meeting customer demands.
- Deploy an automated predictive analytics system.
- Rapidly change assumptions according to business needs.
- Gain visibility into forecast variances and key indicators.
- Make faster, informed business decisions.

## Solution overview

The **Demand Forecasting and Inventory Optimization** solution addresses inventory management complexities with advanced technology.

It builds a trusted data pipeline to standardize and scale data and models using predictive data analytics to improve decision-making for demand forecasting and inventory optimization:

- Utilizes machine learning (ML) to maintain precise inventory levels for each location and stock keeping unit (SKU)
- Employs predictive analytics to consider seasonal shifts, holidays, new products, intermittent demand and demographics
- Allows enterprises to simulate and improve ordering with various testing scenarios, adapting to market changes

Model performance view

Scenario planning

Simulation

## Solution benefits

Organizations using **Demand Forecasting and Inventory Optimization** services can:

- Improve customer experience with the right inventory
- Incorporate customer-specific demand forecasting with predictions at the location and product level
- Capitalize on previously unmet customer demand and untapped sales, and improve customer satisfaction by maintaining sufficient supply
- Simulate inventory strategies before deployment
- Leverage vast data using Microsoft Azure cloud technology



## Solution differentiators

- Individual customer predictions use customer history, SKU information and demographics to better predict demand and improve inventory levels with ML.
- Forecasting models use eight different techniques to find the best-fit model for each location SKU, blending repeat and new orders to reduce unnecessary inventory while maintaining customer service.
- A simulation engine evaluates inventory improvement potential and performs driver analysis to improve ordering parameters to meet business needs.
- Scaled computation and storage efficiently distribute artificial intelligence (AI) models and data over multiple clusters, allowing for the calculation of hundreds of thousands of SKUs and locations.

## Joint value proposition

- This solution helps enhance inventory management through advanced ML, accurate forecasting and robust inventory simulation.
- By leveraging leading-edge Microsoft technology and cloud capabilities, we enable scalable deployment that assists in empowering our clients to make well-informed decisions in balancing their supply chain with customer demand.
- This collaboration not only improves inventory processes but also helps drive efficiency and innovation, ultimately providing greater value and competitive advantage to our clients.

## Case study

A chemical paint company needed to standardize its demand forecasting process across business units and gain visibility into key demand drivers.

Client challenge	Engagement summary	Value delivered
<ul style="list-style-type: none"><li>▪ The client lacked a standardized digital system for demand forecasting across business units, resulting in a disparate and time-consuming data collection process.</li><li>▪ Additionally, they did not have a good understanding or visibility into key drivers, leading to manual creation and adjustment of demand forecasts.</li></ul>	<ul style="list-style-type: none"><li>▪ The client took the next step toward their goal of becoming a demand-driven manufacturer capable of generating transparent and reliable forecasts for inventory optimization.</li><li>▪ They closely collaborated with EY teams to develop an automated demand forecast solution that uses ML-driven insights to shed light on key demand drivers and generate accurate forecasts.</li></ul>	<ul style="list-style-type: none"><li>▪ Improved forecast accuracy by 12 percentage points.</li><li>▪ Approximately US\$20m to \$35m inventory reduction per global business unit.</li><li>▪ Approximately US\$500,000 reduction in obsolete inventory per global business unit.</li><li>▪ Provided visibility into forecast variances and key indicators.</li></ul>

## Contacts

EY



**Hugh Burgin**  
Global Alliance Leader  
Ernst & Young U.S. LLP  
[hugh.burgin@ey.com](mailto:hugh.burgin@ey.com)

Microsoft



**Jodi Lustgarten**  
Microsoft Alliance Director  
Microsoft Corporation  
[jodise@microsoft.com](mailto:jodise@microsoft.com)

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