

# AI-driven demand forecasting for a healthcare major

## Implementing demand forecasting for a global healthcare distributor

InfoVision partnered with a global healthcare distribution leader, operating across 32 countries, to implement an AI-driven demand forecasting solution. This enabled precise weekly order predictions, optimized inventory management, reduced costs, and enhanced customer satisfaction.



### About the customer

The customer is a global leader in healthcare product distribution. Operating across 32 countries with an extensive customer network, the business model required precise inventory management and order prediction capabilities to run at optimum efficiency.



## Business need: Precision inventory management

The customer sought to transform their inventory management system through advanced predictive modelling. The project aimed to:

- Forecast demand for 1,000 top products, identified through recency-based analysis.
- Predict weekly orders for 300,000 active customers in the distribution network.
- Optimize inventory levels with weekly prediction cycles.

The primary objectives were to enhance inventory optimization, minimize stockouts, reduce operational costs, and elevate customer satisfaction. This data-driven approach promised to transform the company's supply chain efficiency and overall customer experience.



## Solution delivered

InfoVision implemented a comprehensive AI-driven demand forecasting solution leveraging advanced analytics. The approach included:

### Data preparation and processing

- Utilized 13 months of historical data (September 2021 to September 2022) for model training and validated predictions with October 2022 data.
- Optimized BigQuery ETL pipelines for efficient processing of customer-product records.

### Feature engineering

- Developed 40 production features incorporating historical order trends and product-specific demand cycles.
- Analyzed customer-product interaction patterns to enrich the feature set.

### Model maintenance

- Weekly retraining with updated data.
- Performed regular performance verification and refinements.



### Customer segmentation

- Focused on recency (purchase dates), frequency (order patterns), and monetary (revenue contributions).
- Applied RFM (Recency, Frequency, Monetary) analysis for precise and actionable segmentation.

### Model development

- Built the primary XGBoost model with hyperparameter tuning for accuracy.
- Developed the secondary model using PyCaret Random Forest for benchmarking and validation.



## Tech stack



### Cloud Platform

Google Cloud Platform



### Data Warehouse

BigQuery



### Machine Learning

XGBoost, PyCaret



### Programming

Python



## Business impact

Delivered transformative AI-driven outcomes including:

### Prediction accuracy



# 90%

predictive accuracy enabling precise inventory management.

### Operational efficiency



# 4X

accelerated prediction processing through BigQuery optimization.

### Cost optimization



# 40%

reduction in total cost of ownership (TCO) by minimizing stockouts and enhancing operational efficiency.



Transform your business with data-driven decisions that enhance customer satisfaction and operational efficiency at scale.

Reach out to us at  
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if you have a similar case to discuss.