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Success Story

AI-Powered Demand Forecasting for Water Heater Manufacturer

About the Client

A prominent consumer goods manufacturer specializing in water heaters, catering to both residential and commercial markets worldwide. The company offers a diverse range of water heater models tailored to different geographic regions.

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Business Problem

The client faced challenges in accurately forecasting the demand for their water heater models across various sizes and capacities. Relying on a rule-based sales forecasting model in Excel yielded an average demand forecasting accuracy of 50-60%. To enhance accuracy and address regional biases, the client sought a machine learning-based solution. Accurate forecasting was crucial for optimizing production, distribution, and inventory management.

Solution Offered

To tackle demand forecasting challenges, we developed an AI-powered platform using three years of daily sales data to enhance 4-month predictions.

➢ **Data Preparation:** Sales data was categorized (A, B, C), cleaned for missing values and outliers.

➢ **Transformation:** The Dickey-Fuller test addressed non-stationarity, trends, and seasonality.

➢ **Modeling:** ARIMA, Holt-Winters, XgBoost, and LSTM were tested for accuracy.

➢ **Results:** Holt-Winters achieved 90% accuracy for A-category, while XgBoost reached 75-85% for B and C.

➢ **Platform:** A web-based tool enabled precise sales forecasting with periodic model retraining.

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Outcome

The implementation of the AI-powered Demand Forecasting Platform delivered transformative results for the client:

➢ **Enhanced Planning:** Accurate demand forecasting empowered the client to strategize production and distribution more effectively. The platform allowed them to align production with actual demand, minimizing resource wastage.

➢ **Cost Savings:** By mitigating overproduction and streamlining inventory management, the client achieved substantial cost savings. The reduction in unnecessary inventory accumulation led to better financial efficiency.

➢ **Operational Efficiency:** The AI-powered platform streamlined the decision-making process, ensuring optimal allocation of resources based on data-driven insights.

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Conclusion

Through the collaboration with our AI-driven forecasting solution, the water heater manufacturer was able to overcome historical forecasting challenges. Accurate demand predictions catalysed efficient production, reduced costs, and improved overall operational effectiveness, solidifying the company's position as a leader in the consumer goods industry.

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