CASES

NESI INTELLIGENCE FOR BUSINESS

Sales forecast with correlation to macroeconomic indicators

Accurate sales forecasting is a critical factor for companies looking to optimize their commercial strategies and manage inventories efficiently.

Although sales specialists have in-depth knowledge of the market, relying solely on human forecasts can lead to considerable errors. Statistical models, such as ARIMA and ARIMA-X, provide the opportunity to refine these forecasts by correlating them with economic indicators, offering greater accuracy and a view that is better adjusted to macroeconomic conditions.

Challenge

In this company in the industrial sector, although the experts had a valuable understanding of customer and market behavior, their forecasts lacked a robust quantitative basis. With an average forecast error of 18% over the months, the company was looking for a way to increase accuracy and make the forecasting process more reliable.

The aim was to find a model that could combine the qualitative knowledge of the experts with a statistical approach that took into account external economic factors, such as inflation and the exchange rate, which directly impact sales.

Solution

In this company we developed a forecasting model using three statistical time series techniques: Smoothing, ARIMA and ARIMA-X. The greatest expectation was placed on ARIMA-X, which correlated sales forecasts with economic indicators such as IPCA, GDP, Industrial Production Index, Dollar and Price Adjustments.

Throughout the process, two of these indicators showed the best accuracy results before validation with real data.

After nine months of monitoring and comparison with real data, the experts' model generated an error of 18%, while the ARIMA-X model, using one of the selected indicators, reduced this error to just 0.5%. In addition, the model also crossed variables such as Turnover, Production Volume and Price, allowing an in-depth analysis of the trend of each product line, which made it possible to re-evaluate commercial strategies.

Differentials

- **High Accuracy:** Using the ARIMA-X model with economic indicators reduced the forecast error from 18% to 0.5%.
- **Integration of Economic Indicators:** The model correlated sales forecasts with macroeconomic data, such as IPCA and GDP, bringing greater realism and adjustability to the projections.
- **Review of Commercial Strategies:** Detailed analysis of turnover, production volume and price helped to identify market trends and adjust strategies for each product line.
- **Real-time simulations:** The ability to cross multiple variables has enabled the company to carry out simulations and make continuous adjustments to forecasts and strategies.

Results

- **Reduced Forecast Error:** The ARIMA-X model, adjusted with economic indicators, reduced the forecast error from **18% to 0.5%.**
- **Adjusting Commercial Strategies:** Based on more accurate forecasts, the company was able to realign its sales and production strategies, optimizing its response to the market.
- **Data-based decisions:** Integrating economic and production data with forecasts has enabled more informed decision-making, mitigating risks and improving resource allocation.

We offer customized solutions to improve sales forecasts, using advanced statistical models that integrate economic variables to increase the accuracy of sales projections.

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