

Ferro Leverages Economic Data to Improve Forecast Accuracy

Capgemini's Predictive Analytics developed an external market data-driven sales forecast model to address key planning, reporting and analysis requirements at Ferro



The Situation

Ferro is a diversified specialty chemicals company which has a global presence across multiple end-market industries. Ferro's original sales forecasting process was based on a large number of offline spreadsheets, and planners used to download the actual data from SAP and manipulate the forecast numbers on a case-by-case basis, often projecting an average of historical data. Multiple iterations were done to correct any discrepancies and to arrive at one number. The whole process was time consuming because it required a lot of manual effort, and the resulting forecasts were often unreliable because they did not take into account the macroeconomic forces which impact Ferro's business.

The Solution

Ferro wanted to implement a robust product & region-level sales forecast model based on external market forces which are likely to influence their sales. Ferro wanted to see the correlation between economic indices and the sales of its product lines, and to use this information to forecast future sales.

In addition, Ferro wanted to automate and integrate forecasting with their existing SAP-based budget process.

The Result

The team from Capgemini developed an external data-driven statistical sales forecast solution and implemented it with SAP, significantly improving forecast accuracy and creating a strategic decision support framework with politically neutral long-term demand forecasts.

How Capgemini and Ferro Worked Together

The statistical sales forecast solution is different from traditional predictive approaches which use historical data to drive future forecasts. In addition to historical data, the statistical forecasting approach uses external economic indicators like GDP, total industry output, disposable income, etc. to predict future sales. Using regression analysis to factor in economic trends to the sales predictions not only gives a more accurate forecast but also provides insights to business directors about the trends impact demand in a particular region. Our approach involved four steps:

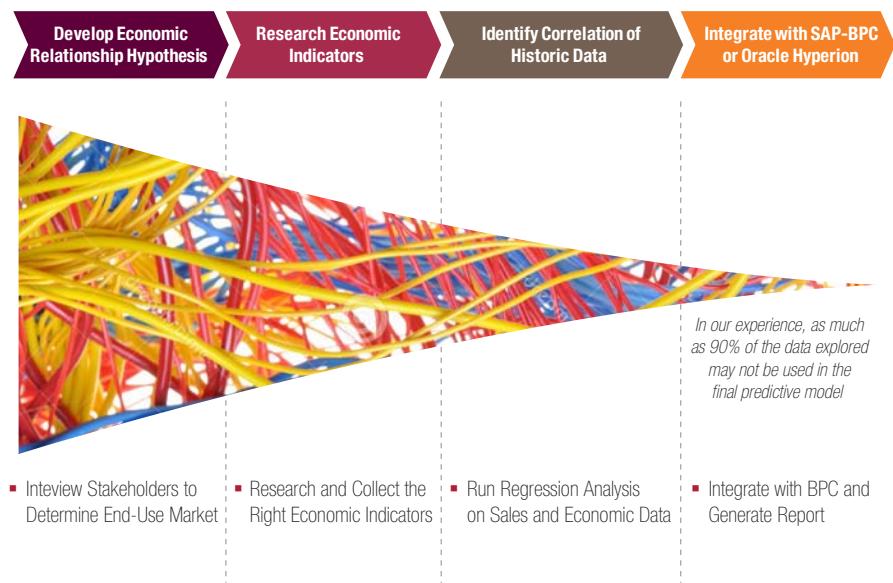
Develop Economic Relationship Hypothesis (ERH)

For the first step, we interviewed the stakeholders of each business at Ferro to determine the end-use markets for each of their products. The resulting ERH formed the hypothesis for testing through the regression analysis exercise.

Research Economic Indicators

Economic data varies greatly in terms of depth, breadth and frequency. We analyzed the economic data available from multiple public and private sources to select the data provider that was the right fit for Ferro's business model and forecast accuracy needs.

Capgemini External Market Indicator Sales Forecasting Methodology



Source: Capgemini Consulting Analysis

Economic data varies greatly in terms of depth, breadth and frequency

Run Multivariable Regressions

Statistical regression analysis is the exercise of analyzing the fit of a time series of dependent (sales) and independent (economic indicator) variables to a linear historical pattern. Capgemini's data scientist applied a rigorous statistical methodology to create the best possible prediction model using multivariable forecast formulae. Our regression algorithm¹ is designed to siphon out predictive insights from the noise in the data to identify the most accurate economic relationships.

Integrating with SAP BPC

In the last step, we automated the whole process by integrating it with Ferro's existing ERP solution. SAP BPC NW 10.0 is one of the most prominent budgeting & forecasting tools available, and once the model was developed, it could be pushed out to all SAP-enabled sites globally.

Why SAP BPC-based Statistical Sales Forecasting?

Given the intertwined nature of the global economy, it is difficult to gauge the impacts of disparate economic factors on a corporation's demand. Whereas, it is possible to measure the influence of external factors on the sales of a particular product in a particular region. Sales forecasts relying solely on historical sales are often inaccurate because they do not consider external economic factors.

Therefore, developing a model which considers both historical data as well as external economic factors will generate more accurate sales numbers, and automating and integrating this model into SAP-BPC saves management time and effort.

Ferro uses the predictive sales model for long-term demand forecasting, creating a politically neutral starting point for supply chain and capital planning discussions.

Capgemini's unique offering comprises of leveraging the expertise of **Capgemini Consulting**, to develop the sales forecast model, and **Capgemini's Business Information Management (BIM)** practice, to implement the sales forecast model into any major ERP system. With both teams working together to leverage their strengths, this unique service offering has delivered tangible results for our clients. The current project was implemented within a timeframe of 12 months.

Benefits and Business Impact of Predictive Sales Model (PSM) to Ferro

Solution Benefits	Business Impact
<ul style="list-style-type: none"> ■ Accurate Sales Prediction (reduced standard error of forecast by 71%) ■ Better inventory management & production planning ■ Better capital allocation ■ Automated short term (1 year) and long term (5 year) forecast process ■ Reduced budgeting & forecasting cycle time ■ Integrated with other planning models like operational planning ■ Dashboard with variance analysis 	<ul style="list-style-type: none"> ■ More informed corporate financial decisions ■ Better external guidance ■ Reduced time for budgeting & forecasting ■ Reduced total cost of ownership ■ Better internal governance

Source: Capgemini Consulting Analysis and Ferro PSM Performance

¹ *The goal of least squares regression is to find the linear formula with the highest R2. However, highest R2 is not the only goal of regression. Forecasters should always ask for verifying evidence that data analysis results are true in the real world, like the ERH. To prevent over fitting, the model drops noisy indicators, choosing only indicators which are individually correlated before combination with other variables

For more information

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Ferro Corporation (NYSE: FOE) is a leading global supplier of technology-based performance materials for manufacturers. The company operates primarily in Europe and North America and employs approximately 4,000 employees across 33 manufacturing sites around the world. The company was founded in 1919 in Cleveland, Ohio.

Ferro products are sold into the building and construction, automotive, appliances, and household furnishings industries, and its customer base covers over 100 countries.



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