



EyeOn product Moving Holidays and Seasonality

Better forecasts through the perfect
combination of conventional statistics
and Machine Learning

For a multinational manufacturer of paints and performance coatings (annual sales over €9bln), like for many of our customers, the unconstrained demand plan is the key input for the supply planning process. In particular for B2C business, a highly accurate demand forecast three to four months out is vital to ensure a good production plan, resulting in appropriate (not too high, not too low) inventory positions.

With this customer, we noticed a recurring drop of forecast quality during the Chinese New Year period in Asia. In a productive co-development effort, EyeOn established a best-practice on how to more accurately forecast demand for such cases.

Background

Moving holidays are holidays that occur each year, but where the exact timing shifts from the perspective of the Gregorian calendar system. Since the date of these holidays changes from year to year, their effect can impact several months depending on the date. This often leads to significant decrease in the performance of the statistical forecast (i.e., lower accuracy and higher bias) for the months affected by the moving holiday. In this leaflet, we will show how EyeOn addresses this challenge for one of our customers.

EyeOn product

Realized Business value though incorporating moving holidays in the statistical forecasting method

Conventional statistical models (e.g., Moving Average and Exponential Smoothing) are widely used within the industry to predict demand. These models usually perform well, and they are intuitive and easy to interpret for planners. However, these models are not able to model the complex effects of moving holidays - even if a seasonal component is added. To overcome this, we created a forecasting approach in which these moving holidays are automatically considered.

For one of our customers, we implemented the moving holiday Chinese New Year in their demand planning. By considering demand drops and peaks due to the Chinese New Year, we obtain an increase of 3.5 percentage points in forecasting accuracy and a reduction of 44.6 percentage points in forecasting bias. This is also shown in Figure 1. The sales quantity per month is indicated in grey bars; the orange representing the months affected by the Chinese New Year, with the impact on demand clearly visible. The forecast based on conventional statistical models is displayed in blue, and the new forecasting technique for Chinese New Year is displayed in green. The green line is a better prediction of the sales quantity during the Chinese New Year period.

Our new forecasting method leads to greatly improved performance, and a planner no longer has to manually adjust the statistical forecast to capture the effect of Chinese New Year. As a result, the demand planners can focus on those products where the enrichment is of added value – for instance capturing certain market dynamics or customer specifics, that automated methods cannot know about. All in all, this leads to a better demand forecast, resulting in a better supply plan, and therefore improved customer service and better inventory positions.

Generally, any company with manufacturing or consumers in Asia will see this effect to some extent, and this technique can help make a better prediction for that period. In addition to New Year in the Chinese calendar, the same method can also be applied to moving holidays such as Easter and Ascension Day. Additionally, this method would apply to holidays determined by the Islamic calendar, such as Ramadan.



Figure 1: Comparison of conventional statistical forecasting and our proposed forecasting approach.

Curious what our approach could do in your organization?

Are you eager to learn more about this or curious if this method could also be valuable for your organization? Get in touch with one of our experts:

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Our promise

We apply proven innovations on forecasting and planning. We approach our clients' challenges in the most pragmatic way possible. Using our extensive knowledge, we deliver valuable results and turn challenges into opportunities. This is how we develop and implement fit-for-purpose improvements with sustainable impact.