Forecasting for Spare Parts by TecCMI

Executive Summary

This project was conducted for TMD Friction, which is the biggest brake friction material manufacturer in the world. The company is facing the spare parts market and using the software, TecCMI, to forecast and maintain inventory. The main objective of this project is to optimize the inventory control by investigating TecCMI and improve its forecast accuracy by adjusting the settings.

Challenge Overview

The highly cost inventory is always a big issue in the spare parts market and it results from inefficient and ineffective inventory control. However, optimizing the inventory is extremely difficult due to the complexity of producing accurate forecast in the spare parts market. Improving the forecast accuracy is, therefore, the first priority to optimize the inventory control.

The biggest challenge of this project is to investigate the forecast and inventory management software, TecCMI, which is specially developed for the spare part market. In addition, it is necessary to utilize the software to produce the most accuracy forecasts in order to optimize the inventory.

The Problem

The objective is to improve the forecast accuracy of TecCMI. The first step is to investigate TecCMI and find out all the potential factors and settings which would have impacts on forecasts produced by TecCMI. In addition, the 3-month information of forecast method and seasonality chosen by TecCMI has been collected from 18 products. Then Intelligence Forecaster (IF) was used to investigate the characteristics of these 18 time series to see if TecCMI always selects the best method and correctly includes seasonal effects in the model to forecast. Moreover, the limitations and restrictions of TecCMI have been discussed. The outcome of this project should be useful and helpful for TMD Friction to improve the forecast accuracy of TecCMI.

Results and Findings

The results and findings are outlines as follows.

- TecCMI does not always produce accurate forecast because it very commonly selects inappropriate forecast method and falsely includes and ignores seasonality in the forecast model.
- The settings of TecCMI should be adjusted according to the characteristics of customers’ demand patterns. It is not reasonable and proper to use the same settings for all the products.
- The users can use “Forecast Factor” to manipulate the forecast. To be more precise, they can include the external factors or forthcoming promotion plans in the model by this function. It is indeed a potential way to improve the forecast performance in TecCMI.

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