

Case 1: ASP Auto Parts -- Seasonal Adjustment

ASP is a nation-wide auto parts wholesaler, with four regional distribution centers. In total, these centers stock more than 400,000 parts and they sell to more than 8,000 independent retail auto parts stores. ASP prides itself on its range of stock, so many inventory items have very low demand rates, often just one or two units per month. In some months, demand disappears altogether.

Forecasting at ASP is based on simple exponential smoothing of seasonally-adjusted monthly demand. Seasonality is assumed to be multiplicative, although ASP does not use the standard multiplicative adjustment procedure. Instead, they use a company-developed program that matches the demand data for each product to a library of “master” seasonal patterns. Seasonal indices are taken from the best match in the library. Originally, these master seasonal patterns were averages of seasonal patterns for groups of products. For example, one pattern was computed for air conditioning parts in each of the four geographic regions of the county. Another pattern was developed for heater parts in each of the four regions, and so on. Almost all of the master seasonal patterns have been judgmentally modified by company executives. No records are available on the justification for these modifications, which have taken place over many years.

Former Astros reliever Xavier Hernandez (known as the “X-Man” or simply “X”) is the ASP manager of corporate forecasting. X is uncertain about how good the master seasonal patterns really are. They have never been tested or compared to any other patterns or models. X asks you to study several parts and determine whether standard additive or multiplicative seasonal-adjustment procedures are superior to the master seasonal patterns.

CASE1.XLS contains 39 observations of demand data for two repair parts stocked at the ASP distribution center in Monica, Utah: A starter motor for a 1993 Camaro and a fuel pump for a 1965 MG Midget. The Camaro part is a “high demand” item, with an average monthly demand of 10 units per month or more. The MG part is “low demand,” with a monthly average less than 10 units. There are 13 accounting periods per year, so you have 3 years of data. The file also contains a column of the current ASP seasonal indices for each part.

Adjust the data using the ASP master seasonal indices, then perform seasonal adjustment, using both additive and multiplicative procedures. Note that you must modify the standard seasonal adjustment spreadsheets (ADDITMON and MULTIMON) because they assume 12 accounting periods per year. Be careful and make sure that your modified worksheets perform as intended. Follow ASP procedures by rounding the seasonally-adjusted data to the nearest integer (you cannot sell a fraction of a part).

Review the instructions on case writing in the syllabus, then write a report for X which explains the seasonal adjustment procedures that you tested. Explain results with appropriate tables and graphs. Make a recommendation about the best seasonal-adjustment procedure (ASP, additive, or multiplicative) for these parts. Do the results justify a larger sample? If so, how should this sample be selected?