Promotional causal forecasting: A case study on Morrisons Plc.

Executive summary

This project successfully analysed and built promotion predictive models for 20 pre-identified frozen products for Morrisons. The models were built on two different datasets Order and Sales. Today promotion represents significant percentage of marketing mix budget.

Challenge overview

Morrisons Supermarket Plc has around 25,000 products. It has approximately 6300 frozen products. Morrisons is in the process of migrating to Oracle’s enterprise resource planning (ERP) system. The company wants to test the results obtained from the Retail Demand Forecast (RDF) system.

The problem

The agreed project objectives were:

- To build promotional predictive models on 20 pre-shortlisted frozen products of the company at the company’s aggregate data level.
- To evaluate the causal forecast accuracy of the RDF system generated forecast and the current forecast system used by the company (Naïve or simple methodology) against the models built for this project.
- To provide a directional cue to choose between two the forecasting approaches the customer demand and order data.

Currently Morrisons follow simple technique for forecasting the two different approaches.

- Warehouse Replenishment (WREP) forecast method is used on Order data. WREP is five week average of the Order data.
- The customer demand forecast is referred as Sales Management System (SMS) on the Sales data. SMS is a naïve (last week data) forecast done on Sales data.

Results and achievements

The results of the predictive models were presented to the Evolve Team of Morrisons.

- From the analysis it can be concluded that Sales forecast models performed better than Order forecast models. This conclusion was based on three critical factors; Sales models had marginally better forecast errors compared to Order data. Model building process was challenging for order data given the randomness contributed by shoulder week data point. Literature analysis revealed that there Order data is bound to have more variation compared to the demand data. This phenomenon is popularly referred as Bullwhip effect.

- By analysing the results it could be concluded that overall predictive models have performed better than the RDF results. On a product by product case, for order data 14 out of 19 products have performed better than RDF results while for Sales data 10 out of 17 products have performed better than RDF. It was also observed that RDF causal had poor results in shoulder week period while the promotion period had better accuracy. Also it was observed that RDF has better results on promotion periods which had high promotion information variation. This result made to evaluate the promotion forecast methodology and results of RDF. However given the time constraints and this was beyond the scope of the project, the promotion information weren’t checked in the system.