Demand Planning In Consumer Packaged Goods Industry

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November, 2010
For
INFORMS
Forecasting Seminar
Role Of Forecasting

- Supply Chain: Inventory Planning, Capacity Planning
- Marketing: New Product Launch
- Sales: Promotion, Sales Force Allocation
- Finance: Plant/Equity Investment, Budgetary Planning
- Human Resources: Workforce Planning, Hiring, Layoffs
Characteristics Of The Forecast

- The forecast is always wrong. It should include the predicted value and unbiased error.
- Long term forecast is less accurate than the short term forecast.
- Aggregated forecast is more accurate than lower level forecast.
Forecasting Methods

- Qualitative: Subjective and relies on judgment and opinion
- Time Series Models: It uses historical shipments/orders to predict the future
- Causal (Regression) Model: Uses the relationship between the demand and other variables
- All of the above
Things To Be Considered Before Forecasting

- Statistically generated forecast
- Promotional events
- Gained/Lost distribution of the product
- Lifecycle of the product
- The use of CPFR (Collaborative Planning Forecasting and Replenishment)
Most Common Statistical Methods

- Moving Average
- Exponential Smoothing
- Trend Models
- Seasonal Models
- Seasonal Trend Models
- Regression
Selection Of Coefficients in Statistical Models

- It is critical to select appropriate coefficients when building a statistical model.
- Alpha: Smoothing coefficient for level
- Beta: Smoothing coefficient for trend
- Gamma: Smoothing coefficient for season
- For details see Zhang, X (2010)
Measures of Forecast Error

- Mean Absolute Percentage Error (MAPE)
- BIAS
- Forecast Error can be measured at various levels
- Tracking Customer/SKU is more relevant for the sales team
- Tracking SKU/DC is more relevant for the supply chain team
Forecastability

- ABC Classification helps setting different targets for different products.
Demand Management Process

Day 1  Generate statistical forecast

Day 2 - 3  Demand Planning team reviews and adjusts the forecast by SKU, DC and Customer

Day 4  Open up forecast cycle

Day 4 - 6  Field Sales Managers review demand planning forecast and input their forecast by customer and package

Day 7  Demand Planning team sends out forecast reports to Directors/VPs of Sales for review

Day 8  Directors/VPs of sales adjust the forecast by region and brand

Day 9  Senior Management reviews the forecast

Day 10  Updated forecast gets loaded to the ERP system

Day 11-13  Forecast is reviewed by the Inventory Planning Team and deploys the product from plants to the DCs

Day 14-15  Capacity Planning team sees the requirements at the plants and adjusts production plan

Day 16 - 20  Review statistical forecast profiles at SKU, DC and customer level based on YTD and year-over-year trends.
## Integrating People To The Forecasting Process

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References

- Zhang, X (2010) “Chapter 7: Demand Forecasting in a Supply Chain” Available online at http://www.wright.edu/~xinhui.zhang/SCM/Lectures/chopra3_ppt_ch07.ppt#300,1, Chapter 7 Demand Forecasting in a Supply Chain
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