Business Forecasting: Techniques, Application and Best Practices

This workshop surveys commonly implemented business forecasting methods, explains how they work conceptually, reveals their strengths and limitations, and offers best practices for applying them in a business environment.

Numerous real-life examples from a range of industries will be presented. The workshop will utilize the Forecast Pro software to illustrate how the techniques are applied to corporate data.

You will leave the workshop with a working knowledge of quantitative and qualitative forecasting methods, enabling you to improve your forecast process and your forecast accuracy.

Workshop Outline:

Part I: Introduction to Forecasting

A broad overview of business forecasting and its various uses within the organization. Topics include approaches to forecasting, features of data, the role of judgment, and resources for forecasters.

Part II: Univariate Forecasting

A discussion of the benefits and limitations of using univariate forecasting methods followed by a closer look at exponential smoothing and Box-Jenkins (ARIMA) models.

Exponential Smoothing

A survey of exponential smoothing techniques with particular emphasis on the Holt-Winters family of models, Croston's intermittent demand model and a model designed to forecast items that exhibit significant volume only at certain times of the year. Topics include the pros and cons of using these models, when they are best used, how they work, identifying model components, parameter optimization and model diagnosis.

Box-Jenkins (ARIMA) Models

An exploration into the use of ARIMA models for business forecasting. Topics include the advantages/disadvantages of using these models, how and when they should be applied, automatic identification procedures, and model diagnostics.

Part III: Multivariate Forecasting

A discussion of the benefits and requirements for using multivariate forecasting methods followed by a closer look at event-index models, machine learning approaches, and dynamic regression models.

Event-index Models

Event-index models extend the functionality of exponential smoothing models by providing adjustments for promotions, stock outs and other events that move around the calendar. This unit addresses how these models work, how and when they should be used, and how to customize their design to best suit your needs.

Forecasting with Machine Learning
An overview of the basics and benefits of forecasting with machine learning (ML). Topics include the basics of machine learning powered forecasting, when ML is likely to improve your forecasts, and the steps involved in generating ML forecasts. A particular emphasis will be placed on extreme gradient boosted trees, an ML approach that performed well in the M5 forecasting competition.

Dynamic Regression

A detailed look into the ins and outs of regression forecasting. Topics include when regression models are best applied, how to build a regression model, ordinary least squares, leading indicators, lagged variables, Cochrane-Orcutt models, hypothesis testing and the use of "dummy" variables.

Part IV: Post Workshop Video Access

In addition to the live workshop, attendees will have two weeks of access to an on-demand video library of the topics that will not be presented live. These include:

Components of Data
An in-depth look at the different components found in time series data including trends, seasonal patterns, business cycles, trading-day variations, interventions (events) and noise. Discussion includes the forms the components can take, spotting local vs. global components, interpretation of business cycle indicators and the use of decomposition routines.

Forecasting Accuracy and Evaluation

A detailed look at evaluating the accuracy of forecasting methods. Topics include the distinction between within-sample and out-of-sample errors, a survey of error measurement statistics, a summary of findings from forecasting competitions and an explanation of how to use both real-time tracking reports and simulations as predictors of model performance.

Identifying Problems in Your Forecasting Process
Approaches for focusing on critical items when forecasting large volumes of data. Topics include evaluating and forecasting SKU data, filtering and ABC (Pareto) classification, outlier detection and correction, exception reporting and measuring accuracy across multiple time series.

Multiple-Level Forecasting

This session explores hierarchical forecasting techniques. Topics include discussion of the need for forecasting at various levels, product vs. geographical hierarchies, reconciliation strategies, top-down vs. bottom-up approaches, the use of proportional allocation and adjustment for seasonality.

New Product Forecasting

This session explores various approaches for forecasting new products. Topics include the pros and cons of different methods based on a product's classification, and a review of popular methods including item supersession, forecasting by analogy and the Bass diffusion model.

About the Workshop Leaders:

Eric Stellwagen is the President and co-founder of Business Forecast Systems, Inc., a market-leading firm focused on providing software solutions and education to business forecasters. He is the co-author of the Forecast Pro software product line which is currently in use at more than 12,000 companies worldwide. He consults widely in the area of practical business forecasting and has worked with many leading firms including Coca-Cola, Mondelez, Merck, Nabisco, Owens-Corning and Verizon. With more than 30 years of experience, he is recognized as a leading educator in the field of business forecasting, and has presented seminars and workshops under the aegis's of many groups including the Institute for Professional Education, the American Production and Inventory Control Society (APICS), the University of Wisconsin, the University of Tennessee, the Institute for Business Forecasting, the World Research Group, the International Institute of Research, the Electric Power Research Institute, the International Communications Forecasting Association and the International Institute of Forecasters. He has also served on the board of directors of the International Institute of Forecasters and serves on the Practitioner Advisory Board of Foresight: The International Journal of Applied Forecasting.

Sarah Darin has 20 years of experience with statistical consulting, sales forecasting, regression modeling and marketing analytics. Sarah holds a Master's of Science in Statistics from the University of Chicago, where she also served as a Lecturer for two years. She has consulted for clients across a broad range of industries, including Consumer Packaged Goods, Telecommunications, Technology, Retail, Automotive and Finance. Before joining BFS, Sarah was Vice President of Consulting Services at Nielsen where she focused on custom analytic solutions for the CPG and Expanded Vertical practices, teaching customers how to efficiently integrate, manage, model and forecast large-scale datasets. Sarah's ability to understand and explain statistical concepts in the context of real-world, messy data makes her an ideal instructor for this workshop. Sarah received her undergraduate degree in Applied Mathematics from Harvard University.

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