What does SAS® Forecast Analyst Workbench do?
It provides an analytics-based framework for creating a demand-driven statistical forecast that automates and manages information exchange between everyone involved in the S&OP process. It provides a forecasting solution with strong what-if analysis for demand sensing and shaping that also enables the development of a consensus forecast in support of the S&OP process.

Why is SAS® Forecast Analyst Workbench important?
With increasing demand volatility and thin profit margins, robust demand forecasting and planning is vital for improving cost efficiencies while better serving your customers. But most existing supply chain management (SCM) and enterprise resource planning (ERP) systems are more focused on workflow, with little emphasis on analytics, resulting in inaccurate forecasts that lead to under- or over-stocks.

For whom is SAS® Forecast Analyst Workbench designed?
It is designed for forecast analysts and business planners responsible for creating large-scale statistical baseline demand forecasts for hundreds of thousands of products that provide input into the consensus forecasting process. Our solution is for organizations that are dissatisfied with current forecasting accuracy and are looking for more robust forecasting.

SAS® Forecast Analyst Workbench
Sense demand signals, shape and predict demand more accurately

With demand volatility and thin profit margins, effective demand forecasting and planning is becoming increasingly important for lowering costs and improving customer satisfaction. To ensure supply/demand balancing, companies must:

- Integrate historical data with real-time consumption data for more accurate forecasts.
- Use analytics for scenario analysis to understand the effect of sales promotions and other marketing decisions on demand.
- Import and consolidate forecasts from sales, marketing, finance and demand planning and use technology to create a consensus demand forecast.
- Use business intelligence to disseminate the results across the organization to support faster decision making.

Today, most companies use older ERP/SCM solutions that are workflow-based with little emphasis on analytics. The result? Inaccurate consensus forecasts because the process is resource-intensive, time-consuming and is driven solely by domain knowledge and guesswork.

Benefits

- **Accurate and automated forecasts mean having the right inventory**: SAS improves your statistical forecasting performance, enabling you to reduce finished goods inventory, safety stocks and back orders. SAS provides forecasts that reflect the realities of the business, improving your ability to forecast and plan future events with confidence.

- **Demand sensing and shaping**: Scenario analysis allows you to evaluate your sales history and plan for future events, including new product, location and channel introduction. We enable you to conduct what-if analysis using statistical models to find the optimal forecasting scenario based on available marketing investment strategies.

- **Flexible data modeling for complex forecasting requirements**: Our high-performance forecasting model repository contains all the core modeling techniques and methods across all classifications of methods. Custom algorithms and methods can be added with no limitation of number and types. Models can be compared using statistics and business rules to choose the best fit model.

- **Multi-tiered causal analysis (MTCA)**: MTCA is a patent-pending process that considers marketing and replenishment strategies jointly rather than creating two separate forecasts (i.e., one for consumer demand and another for factory shipments). It allows sales and marketing analysts to automatically sense and shape POS and syndicated scanner data up or down a business hierarchy and then use the resulting history and shaped forecasts as a leading indicator in shipment models to measure the push and pull of a company’s business.

- **Visual data exploration enables faster insights**: Gain rapid insights from your huge volumes of data and answer complex questions faster. SAS Visual Analytics augments data discovery and exploration to enable more profitably focused analysis. It empowers even those without analytics savvy to quickly zero in on areas of opportunity (or concern) from vast amounts of data.
A tightly integrated suite of supply chain forecasting and planning tools. This means that data moves seamlessly between applications, making it easier for the demand forecasting and inventory planning team members to collaborate, resulting in a shorter time from initial forecast development to execution - a smaller gap between data input and execution means a more accurate forecast.

Monitor, track and report with drillable alerts. Using a balanced scorecard or dashboard, you'll be able to surface forecasting results with KPIs and performance metrics through a series of monitoring, tracking and reporting capabilities.

Overview
SAS Forecast Analyst Workbench provides an analytics-based process for creating a demand-driven, statistical forecast that automates and manages the information exchange between everyone involved in the demand forecasting process. It provides the ability to sense demand signals and shape and predict future demand more accurately. It combines the power of automation, analytics and workflow to generate the most unbiased and accurate demand forecasts.

Large-scale, automatic forecasting
Our patented forecasting engine evaluates and synthesizes various models based on your requirements. The result is a forecast that best depicts your business at every level of your corporate/product hierarchy and accounts for complex supply chain networks with comprehensive business rules.

It creates a business/product hierarchy on the fly and automatically assesses every level of the hierarchy to determine the appropriate statistical model based on statistics, business rules and forecasts. The model repository has more than 200 methods to choose from, plus it can accommodate custom-developed algorithms. It is scalable, providing the user with the choice of running in batch or through the GUI.

Exception reporting allows the user to focus on inaccurately forecasted items, minimizing the resources required to concurrently forecast hundreds of thousands of products. You can also integrate consumer demand (e.g., POS and syndicated scanner data), model it and forecast it automatically using award-winning data access tools.

What-if analysis and scenario planning
Scenario analysis allows you to evaluate exceptions to your sales history and plan for future events, including new products, locations and channels. Conduct what-if analysis using statistical models to find the optimal forecasting scenario based on available investment strategies.

Scenario building allows simulation and testing of supply and production capacity constraints on marketing or promotional efforts. It provides feedback from that process to help you understand the constraints and develop an optimal production plan.

Event-modeling console
Our high-performance forecasting, event-modeling console provides an easy-to-use environment with pre-defined holidays with pulse, ramp-up/down, level shift, and temporary event modeling approaches that statistically measure the impact of sales promotions, marketing events and other activities. You can statistically model events to determine sales increases associated with promotions, special marketing events and other activities. Custom events can be created to calculate the effect of specific sales promotions and marketing activities and even how natural disasters will affect sales.

Model repository
You'll have access to the right forecasting methods to address your product portfolio requirements regarding growth areas, niche markets and new product demand based on the unique marketplace dynamics associated with your business. Flexible data modeling allows you to model large and complex forecasting structures and easily make adjustments to your forecast model to reflect changes in your business and products. For example, you can create forecast models for high-volume manufactured products, seasonal products, promoted products and slow-moving items that have intermittent demand.

All methods are evaluated using a combination of statistics and business rules to assign the appropriate methodology and model to every level and node in the hierarchy. This provides flexibility and accuracy because the historical data being evaluated for each level and node may require a unique method to create an accurate forecast.

MTCA
MTCA links a series of quantitative methods to measure the effect of sales and marketing strategies on consumer demand. MTCA then evaluates various what-if scenarios to shape and predict future demand. The result is that demand and supply are linked through the data using analytics rather than judgment. Manufacturers can use a series of causal models to measure the effect of demand on each level of the supply chain (e.g., wholesalers and distributors).

MTCA uses data and in-depth causal analytics to:

- Measure the effect of your marketing mix on consumer demand at the retail level.
- Link retail demand to shipments from manufacturers to retailers.
- Enable manufacturers to perform what-if analysis to predict future demand and help them choose the optimal strategy for producing the highest volume and ROI.
SAS Visual Analytics integration

Using SAS Visual Analytics, you can visually explore vast amounts of data to quickly uncover insights and relationships that may lead to new areas of discovery. You will be able to:

- Analyze demand signals.
- Explore sales volumes, trends and influencers and assess the most significant factors affecting demand.
- Review and analyze point of sale and syndicated scanner data.
- View the forecast value added (FVA), the value that each manual touchpoint or override adds to (or removes from) the forecast accuracy.

Typical marketing research provides answers to pre-defined questions. Visual analytics provides insight into questions you didn’t initially know to ask.

Integration with the SAS Demand-Driven Planning and Optimization suite

SAS Forecast Analyst Workbench is integrated into the SAS Demand-Driven Planning and Optimization suite, which includes our world-class forecasting capabilities (along with the supporting SAS New Product Forecasting Workbench and SAS Collaborative Planning Workbench).

Key Features

Large-scale automatic forecasting (patented)
- Interactive point-and-click interface.
- Project setup wizards.
- High-performance hierarchical statistical engine.
- Graphical engine.
- Statistical engine to provide various statistical calculations (e.g., MAPE, MAD, etc.).
- Filter generator.

What-if analysis and scenario planning
- Plug-in provided for the applications dashboard.
- What-if planning capabilities using model parameter estimates.
- Ability to change model parameter estimates to determine the effects on forecast scenarios.

Event-modeling console (patented)
- Interactive Java GUI.
- Pre-defined holiday events.
- Automatic date realignment for moving holidays.
- Customer event creator.
- Four event types:
  - Pulse.
  - Ramp up/down.
  - Level shift.
  - Temporary.

Model repository (patented)
- Model repository with pre-defined models:
  - Time-series methods.
  - Causal methods.
  - Intermittent-demand function methods.
  - Open model repository.
- Ability to add custom models.
- Choose from all model families:
  - Basic time series including moving averaging and exponential smoothing
    - Holt’s Two-Parameter ES.
    - Winter’s Three-Parameter ES: additive, multiplicative, linear trend and dampened trend.
  - ARIMA.
    - Non-seasonal.
    - Seasonal.
  - ARIMAX.
  - Dynamic regression.
  - Unobserved component models (UCM).
  - Weighted combined models (also known as Bayesian models).

MTCA
- MTCA links demand to supply using a process of nesting causal models together using data and analytics to measure the push/pull effects of your business.
The SAS Forecast Analyst Workbench can also serve as the primary forecasting front-end and input source for SAS Inventory Optimization Workbench, enabling inventory analysts to easily collaborate with their forecasting counterparts to develop the best inventory distribution plan the organization can support.

Monitoring, tracking and reporting
The dashboard application provides web-enabled reports to monitor and track forecast performance and interaction with the workbenches. It provides access enterprise wide. Included in the dashboard are alerts to identify issues related to forecast performance exception reports and iterative reviews of the consensus forecast.

Visit sas.com/forecast-analyst-workbench for system requirements, to download white papers, view screenshots and see other related material.

Key Features (continued)

SAS® Visual Analytics integration
- Specifically designed for analytic workloads using the SAS® LASR™ Analytic Server.
- Optimized for distributed computing environments to apply the parallel processing capabilities of many nodes (in essence creating a SAS super-computing environment).
- Designed from the ground up to be integrated with Hadoop for performance optimization and scalability.
- Visual data exploration - visually and interactively explore data to gain insights and discover patterns and trends for further analysis with analytics added to provide more meaningful views of information for making fact-based decisions.
- Web-based, interactive data exploration mode for any business user.

Integration with the SAS® Demand-Driven Planning and Optimization suite
- Collaborative planning workbench: Forecast input, review, comparison and override, all facilitated with a configurable workflow and approval process integrated with email.
- New product forecasting workbench: Combines business judgment with statistics with our patent-pending Structured Judgment Method, which suggests future demand of new products based on surrogate products.
- Forecasting for SAP APO: Advanced analytic forecasting integrated to APO with forecast parameter selection.
- Inventory optimization workbench: Multi-echelon inventory optimization and optimal replenishment planning including supply sensing and shaping using what-if analysis.
- Demand signal analytics: An integrated repository of demand information with tools to explore and analyze regarding sales, products, stores, territories, promotions, inventory, price, performance and operations.

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