SAS® Forecasting for Midsize Business

Plan for the future more confidently with reliable, automatically generated forecasts

What does SAS® Forecasting for Midsize Business do?

SAS Forecasting for Midsize Business automatically generates forecasts to help organizations plan for the future more efficiently and effectively. It includes a complete model repository with a full range of forecasting methods; automated statistical forecast model selection and optimization; hierarchical reconciliation; event modeling; "what if" analysis; and scenario planning.

Why is SAS® Forecasting for Midsize Business important?

The robust solution gives small and midsize businesses access to automated and statistically sophisticated forecasting that only large companies could afford previously. It frees users from the data constraints of Excel and regression-based planning, and enables self-sufficiency by automatically selecting forecast models from a comprehensive repository. Forecasters can optimize parameters without manual programming or reliance on IT – so they can focus on the most business-critical planning efforts.

For whom is SAS® Forecasting for Midsize Business intended?

It is designed for small and midsize businesses that need an easy-to-use, affordable and quick-to-deploy solution that automatically generates reliable forecasts without manual coding. Built for organizations with limited IT and skilled forecasting resources, it caters to the needs of analysts who create forecasts, as well as their managers and directors.

It's challenging for small and midsize businesses to plan for the future with confidence. Without skilled forecasters or IT assistance, business users may rely only on instinct or historical data. Data can also be an issue. Too much or too little data, data in the wrong format or with missing values, outliers – all can skew the forecast.

Business users often depend on simplistic, off-the-shelf software and Excel to make forecasts. But these tools lack the mathematical sophistication required to forecast in today's volatile economy. They can't handle large data volumes, don't support data preparation, can't account for missing values or outliers, and are unable to model the impact of multiple variables – such as seasonality, marketing events and competitive activity. The results are cumbersome, time-consuming processes and unreliable, poor-quality forecasts riddled with user biases.

With SAS Forecasting for Midsize Business, small and midsize organizations get an affordable, easy-to-use solution that provides comprehensive forecasting capabilities in a PC environment. Through point-and-click tools, users can quickly generate forecasts without any manual programming. The software automatically selects the most appropriate forecasting method from a comprehensive model repository and optimizes parameters to generate highly reliable forecasts. The solution's automation and statistical sophistication improve efficiency and effectiveness for all levels of decision makers.

Key Benefits

- **Get reliable forecasts without manual coding**. Across multiple products and locations, and at all levels of aggregation, the solution automatically builds the most appropriate models for your data to deliver reliable forecasts – while minimizing errors due to human intervention, bias or lack of expertise.

- **Make faster, better decisions with manageable forecasting processes**. By making large forecasting processes easier to manage, the solution allows analysts to focus on the most important forecasts and on other value-added analysis and reporting tasks.

- **Plan future events more realistically**. Based on variables that you supply in the modeling process, the software automatically selects business drivers, holidays or events to generate forecasts that reflect the intricacies of your business and the drivers of the forecast behavior.

- **Assess uncertainty and risk in forecasts**. By indicating a statistical and visual range of likely outcomes instead of just providing a point forecast, the solution enables users to assess uncertainty and risk in the forecast – and make decisions accordingly.

- **Provide ease of use to all skill levels**. The solution's convenient, wizard-driven GUI gives novice users state-of-the-art forecasting methods without requiring any programming or knowledge of time-series models – yet it has all the power and sophistication that more advanced analysts need.

Solution Overview

The software tools at many small and midsize businesses lack automated forecasting capabilities. Most of these tools get bogged down if large numbers of forecasts are needed. The result could be compromises in the model selection process – modelers may use a limited number of generic models for all their forecasts rather than custom building realistic models.

When forecasting is done at an aggregate level, discrepancies may appear in order quantities at lower levels. Poor planning leads to consequences such as lost revenue, customer dissatisfaction, tied-up working capital, high inventory carrying costs and others.

SAS Forecasting for Midsize Business helps small and midsize businesses plan more effectively by speeding and improving the forecasting process and removing reliance on just historical data. It automatically selects the most appropriate forecasting model from a comprehensive repository based on a full range of forecasting methods – including time series, ARIMA, dynamic regression and UCM. As a result, the solution minimizes instinct-based decision making and delivers statistical robustness.

Through the solution's hierarchical reconciliation capability, users can forecast at any level of product hierarchy and then reconcile the forecast up or down based on their needs. A wizard-driven interface guides them to select the most appropriate reconciliation technique. The solution can automatically combine multiple forecasting models. These composite models – based on averaging (or otherwise combining) more than one individual model – tend to forecast better than an individual model.

SAS Forecasting for Midsize Business also includes a robust event-modeling engine to help estimate the effects of sales promotions, marketing events and other external events (e.g., pricing policy actions, severe weather, etc.). Planners can test what-if scenarios, such as price changes or promotional activity, and determine their likely impact on future demand. Graphical displays show the effects of planned and unexpected events, helping forecast and plan future sales and marketing activities. The solution is designed to help you integrate forecasting as an ongoing, repeatable process within your organization's planning workflow.
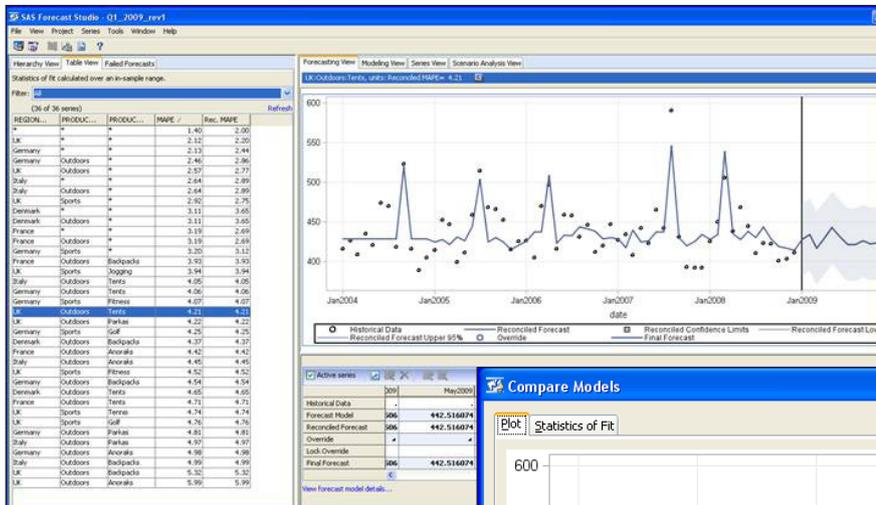

Figure 1: Users can interactively optimize parameters, set up hierarchies and model events through the SAS Forecast Studio GUI.
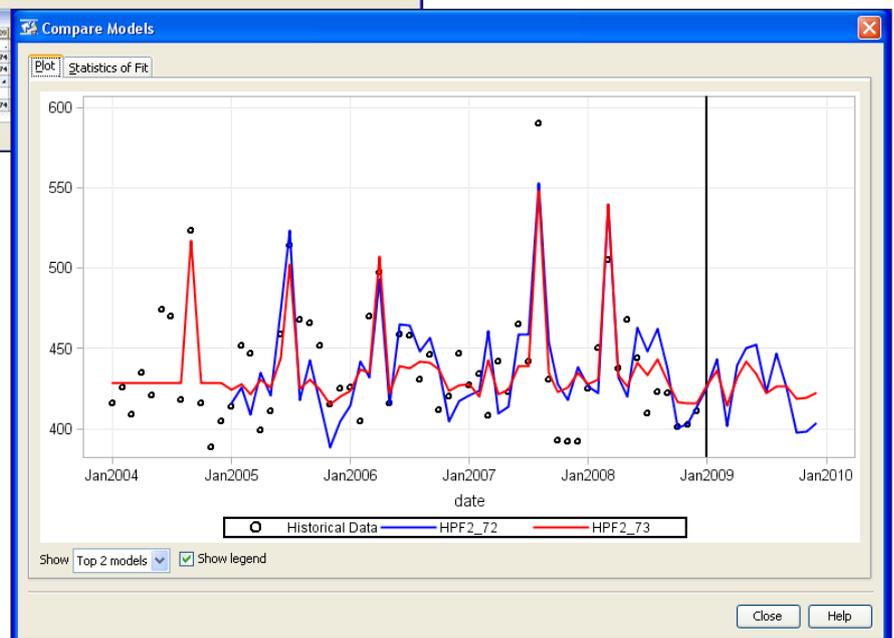

Figure 2: Compare the fit of forecasting models with SAS Forecasting for Midsize Business, to aid with model selection.

Automatic forecasting

SAS Forecasting for Midsize Business can automatically generate statistically sound forecasts for up to 1,000 time series per project, without the need for human intervention in the modeling process. It includes a patented forecast engine that automatically selects the most appropriate forecasting model (or combination of models) from a comprehensive model repository based on historical data and user-defined criteria. It also optimizes these model parameters.

Add any number of business drivers and events to the models to produce a forecast that best depicts your business and environment. Specify holdout samples so that forecasting models are selected based not only on how well they fit with past data, but also how likely they are to predict the future.

The solution provides hierarchical forecasting for organizations that have complex product or corporate hierarchies. You can forecast at the hierarchical level and then synchronize and allocate forecasts within the hierarchy. This approach provides reliable forecasts at every level, helping prevent forecast errors due to aggregate-level forecasting.

The solution provides scalability by allowing you to create multiple projects if there are more than 1,000 time series to forecast. For example, you can set up separate projects by product family or brand, by sales or distribution territory, or by forecaster.

Unlimited model repository

The solution provides a wide range of forecasting methods to address all your corporate or product portfolio forecasting needs – including the unique marketplace dynamics associated with your business. SAS Forecasting for Midsize

Key Features

Automatic forecasting

- Automatically forecast for large numbers of products, entities or tasks; optimize model parameters.
- Include or add any number of business drivers and events in your models to produce the forecast that best depicts your business.
- Specify holdout samples so that forecasting models can be selected based not only on their fit with past data but also on their likelihood to predict the future.
- Perform automatic hierarchical forecasting: define the hierarchy and model parameters through an interactive graphical interface.
- Employ flexible hierarchies. Users can define their own hierarchies to make them more suitable to their particular forecasting challenge. Different projects can have different hierarchies.
- Reconcile up and down the hierarchy, preserving locked forecast values.
- Generate exception reports based on sound statistical logic and business rules.
- Support forecasting as an ongoing and repeated process that fits into your organizational planning workflow.
- Publish results via hard copy, the company portal or the Internet.

Unlimited model repository

- Extensible model repository meets all your forecasting needs.
- Comprehensive repository comes complete with a broad range of built-in models, such as:
  - Time-series methods, including:
    - Single exponential smoothing.
    - Holt's/Brown's two-parameter exponential smoothing.
    - Winter's three-parameter exponential smoothing (additive/multiplicative).
    - ARIMA.
  - Causal methods, including:
    - ARIMAX (ARIMA with intervention and causal variables).
    - Lagged variables/transfer functions.
  - Dynamic multiple regression.
  - Unobserved components model (UCM).
- Open model repository allows users to create and add their own custom models.

Easy-to-use graphical user interface

- Use automated forecasting and set up the hierarchy, parameters and business rules through an interactive graphical interface.
- Employ an eight-step project wizard that walks analysts through the steps to set up a new forecasting project or work with existing projects. Users can generate automatic forecasts in batch mode or through the interactive GUI.
- Easily add events that might influence the forecast – such as holidays and promotions – through an events dialog box.
- Guide analysts through the development of custom forecasting models, built from scratch or based on models in the repository, using a model-builder dialog box.
- Give analysts multiple ways to work with the forecast results using forecast, series and model views.
- Let analysts use the scenario analysis view to create what-if scenarios – such as changes to pricing or promotions – and determine their likely effects on future demand.
- Identify exceptions automatically: generate exception reports based on sound statistical logic and business rules.
- Employ the user-override facility to manually forecast statistical values; override the locking facility if needed.
- Publish results automatically via hard copy, company portal or Internet using extensible reporting tools.

Business offers a virtually unlimited range of model types in its extensible repository. In addition to the multiple built-in models (naïve, exponential smoothing, ARIMAX, unobserved components, dynamic regression and intermittent demand), users can create and add their own models to the repository. By selecting from this array of models, you can generate better forecasts for a wider range of behavior.

Easy-to-use GUI

SAS Forecasting for Midsize Business includes the easy-to-use SAS Forecast Studio GUI. This GUI provides access to the power of SAS forecasting without requiring you to learn how to write SAS code. The solution operates in both an interactive and a batch environment, allowing users to choose the way that is best suited to their needs.

Event-modeling console

The solution statistically models events to determine sales lifts associated with promotions, special marketing events and other irregular activities. Using patented technology, the event-modeling console allows users to choose among several event types – including pulse, level shift, ramp up/down and temporary events. Preprogrammed holiday events are also available (e.g., Christmas, Easter and others).

What-if analysis and scenario planning

The solution includes a scenario analyzer that lets users test what-if scenarios – such as changes to pricing or promotions – to determine their likely effect on future demand. This capability is useful in designing sales and marketing programs across a variety of industries, and can help proactively push customer demand toward more favorable patterns. Through scenario analysis, users can generate realistic, optimistic and pessimistic projections for better planning.

Data preparation

SAS Forecasting for Midsize Business includes time-series data management capabilities. You can convert transactional data to a time-series format and make forecasts in a single step, or you can feed the converted data into a forecasting data mart as part of an overall data processing function. By preprocessing transactional data, the solution saves significant time and resources.

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