



SAS® DEMAND FORECASTING FOR RETAIL

Outperform the competition and drive improved business results with SAS' next-generation demand forecasting platform

What does SAS Demand Forecasting for Retail do?

SAS Demand Forecasting for Retail uses SAS' unique high-performance forecasting engine to automatically diagnose, model, execute and reconcile forecasts across multiple merchandise levels and locations. It allows creation of forecast projects and manages forecasts with a built-in forecast repository and versioning system. SAS Demand Forecasting for Retail produces results at any level of the product and location hierarchies down to the SKU/store level.

Why is it important?

Accurate, consistent forecasts are a key input to financial planning, assortment planning, allocation, replenishment and store labor planning processes. SAS provides a common demand forecasting platform to provide consistent, accurate, detailed and aggregate forecasts. Improved forecast accuracy and consistency drive better decision making, better allocation and replenishment, reduced out-of-stocks, and reduced manual intervention in the supply chain, the results of which drive both top- and bottom-line growth.

Who is it designed for?

Accurate understanding of consumer demand is critical to many business processes, from financial planning through the supply chain, thus benefiting many retail enterprise users. In a retail organization, demand forecasts are leveraged in pre-season and in-season planning activities by merchandise buying, planning and allocation teams, as well as dedicated forecast analysts, promotion managers and more who benefit significantly from reliable forecasts across the organization.

Retail organizations today must strive to satisfy the unique demand for each of their customers to thrive in the 21st century. Gone are the good old days of the mass market where a single assortment standard pricing and a single "average location" forecast would satisfy consumer demand in all stores. Often, predicting demand for a single item in a single store can be a difficult proposition. Forecasting demand for all stock-keeping units (SKUs) across all stores and all geographies is a much greater challenge.

This increased complexity must be addressed in an ever more challenging business environment. Dynamics such as globalization, increasing customer expectations, high-efficiency supply chain models and diversification of sales channels have made the retail industry intensely competitive.

This competition, in conjunction with economic conditions, has resulted in increased pressure on profit margins, forcing retailers to focus on better understanding the demand for merchandise throughout its retail life cycle. The result is a need for better forecasting and more reliable methods for managing demand. Ultimately, the goal is better planning, fewer stock-outs, improved margins and more solid overall business results.

Effective forecasting in this environment requires sophisticated capabilities delivered via a highly automated solution.

Key Features and Benefits

- Highly Accurate Forecasts** – SAS provides the most robust library of models in the retail software industry that generate forecasts based on underlying trend, seasonality promotions, inventory effects and other known casual factors. Proprietary "best pick" functionality automates model selection.
- Faster Implementation** – A retail-specific data model and workflow that provide enhanced usability.
- Drives Business Results** – By seamlessly integrating with existing planning processes, SAS Demand Forecasting for Retail helps identify opportunities and improve profitability.
- Softlines Ready** – Includes models for fashion forecasting, short lifecycle products and intermittent demand; leverages SAS Merchandise Assortment Planning for fashion forecasting workflow.
- Highly Scalable** – Supports the entire organization down to the individual store SKU level for all types of retailers.
- Reduced Workload** – Automated exception based forecast management reduces the need for manual inputs and forecast updates.

Reducing Forecast Errors Saves Money

Forecast errors can result in significant costs to retailers. Potential sales losses can range from 20 to 25 percent as a result of stores running out of a product or not having enough of a popular brand, color or style.

These costs include:

Over-forecasting:

- Excess Inventory and Obsolescence
- Higher Inventory Holding Costs
- Reduced Inventory Turns
- Unexpected Transshipment Costs
- Lower Margins

Underforecasting:

- Costs for Order Expediting
- Higher Product Costs
- Lost Sales from Out-of-Stocks
- Lost Companion Product Sales
- Customer Satisfaction Issues

SAS Demand Forecasting for Retail provides an accurate picture of key demand signals to all levels of the retail organization. An integrated workflow is required to provide an actionable demand forecast without getting end users bogged down in detailed statistical forecasting. In short, SAS® Demand Forecasting for Retail was developed with these challenges in mind.

What if you could develop accurate, preseason plans based on expected customer demand and other statistically generated demand insights using large-scale, automated forecasting that reduced errors, increased efficiency and improved your bottom line? With SAS Demand Forecasting for Retail, these things are possible in a common platform.

Product Details

SAS® Demand Forecasting for Retail

Statistically sound demand forecasts serve as the foundation for all levels of merchandise planning. SAS® Demand Forecasting for Retail provides the foresight your organization needs to survive in an increasingly consumer-driven

economy. Forecasts can be generated for any dimension of your business (SKU, store, region, etc.), appropriate for the user and need. SAS' solution adapts to your business, not the other way around. With the combined SAS® Integrated Merchandise Planning and SAS Merchandise Assortment Planning solutions, planners are able to build merchandise, financial and assortment plans that better anticipate consumer demand. Additionally, when coupled with SAS® Merchandise Assortment Planning, the powerful forecast management functionality lets retailers reconcile demand in a centralized platform.

Built on High-Performance Forecasting Analytics

SAS Demand Forecasting for Retail is built on the SAS® Forecast Server. SAS Forecast Server has the power to generate a starting-point forecast as a means of seeding financial plans and also helps with in-season re-forecasting so that the retailer can better react to sales. In addition, SAS Forecast Server reduces the overall workload by rapidly generating multiple statistically based forecasts without the need for human intervention, but also provides the capability to override generated forecasts in special instances. SAS' technology automatically chooses the best model and optimizes its parameters to produce the forecasts.

In addition, SAS has the most robust library of forecasting models for a wide range of retail business situations. This library includes intermittent demand models, unobserved components models, ARIMAX models, dynamic regression, exponential smoothing models with optimized parameters and user-defined models. For the forecast analyst, SAS provides a quick and easy way to manage forecasting through the new SAS Forecast Studio graphical user interface.

Adaptable Forecasting Execution Workflow

Our demand forecasting solution offers a detailed and flexible forecasting workflow. It offers the capability of defining the analyst control points and parameterization for this best-practice workflow, supporting all forecast execution scenarios and configurations. This is critical for analysts who need to adapt forecasts to individual products within the model and across the forecast horizon. This solution leverages the workflow from SAS® Merchandise Assortment Planning for preseason forecasting of new fashion or short lifecycle items.

SAS® Demand Forecasting for Retail follows an integrated approach, working with SAS® Merchandise Planning or an external replenishment system to automate the forecast execution process. This process, which includes data preparation, diagnosis, model selection, fit/forecast, automated evaluation and reconciliation, can be executed for each distinct level of merchandise and location as well as for each distinct KPI. Analysts can choose to skip one or more of the steps in the above process either while working on a forecast or during the batch execution. Users can also define unique performance metrics to suit specific business needs.

Designed to Meet Large-Scale Forecasting Needs

The focus is on speed, without sacrificing accuracy. Utilizing SAS' industry-leading analytics, forecasts adjust to changing demand and quantity patterns, handling seasonality, including difficult-to-predict demand for slow-moving goods. To do this, the SAS® Demand Forecasting for Retail solution provides a pre-defined data/information/analytics framework for demand forecasting data model for the retail

industry. This framework stores data for points-of-sale, events, promotions, price, weather and other effect parameters which can have an impact on demand. The solution has proven extreme scalability through benchmarks for large forecasting needs using multiple concurrent forecast jobs at retail enterprise levels.

Comprehensive Retail Intelligence

SAS® Demand Forecasting for Retail is just one part of SAS' vision for complete retail intelligence. Retailers can employ a wide range of powerful SAS solutions, all built atop a common retail business intelligence platform to allow for rapid integration and lower total cost of ownership. These solutions include nearly three decades of SAS retail analytics experience and merchandising best practices. No other vendor offers such a comprehensive, integrated set of solutions for retailers.

- **SAS Customer Intelligence** — Identify, acquire, activate, serve and retain profitable customers.
- **SAS Merchandise Intelligence** — Drive revenue, protect margins and earn customer loyalty with optimized merchandise plans, assortments, demand forecasts, pricing, promotions, space plans and allocations.
- **SAS Operational Intelligence** — Leverage organizational assets to serve customers and trade with vendors efficiently and profitably.
- **SAS Performance Management** — Analyze, forecast and maximize profits across the entire value chain and monitor performance toward common goals.

Key Features

SAS Demand for Forecasting for Retail

- Native integration with SAS® Integrated Merchandise Planning solution provides financial, assortment and allocation planners:
 - Direct access and management of demand forecast versions.
 - Use of dynamic time set for automatic adjustment of the forecast time frame based on a number of periods after current time period.
 - Easy use of merchandise and location filters, clusters and time events.
 - Access to forecast accuracy reports and metrics.
- Segmentation of SKUs, based on sales patterns and other variables, to identify individual SKUs that can be addressed one at a time where similar forecasting strategies are applicable.
- Pre-forecasting analysis to determine the seasonality of SKUs and relevant historical data.
- Statistical forecast generation at any level in the merchandise (SKU, subcategory, category, etc.), time (day, week, month, quarter and season) and location (retail outlet, postal code, city, state region, country) hierarchies.
- Demand forecasts that incorporate the base forecast, seasonality, trends, promotions and events that predictably affect demand.
- Introduce new products, define “like item(s)” and manage demand signals with integrated merchandise planning workflow.
- Decomposition of sales to clearly see the historical demand patterns of merchandise through seasonal component, trend component and irregular component analysis. Helps investigate trends and seasonal variation in sales.
- Support for top-down, bottom-up and middle-out forecast reconciliation.
- Control of the models and workflow at a forecast job level for specific merchandise or location level as well as for a particular KPI.
- SAS® Forecast Studio provides exception-based forecasting to simulate and monitor any unusual parameters that are input in manual mode.
- Ability to specify flexible effect parameters that influence forecasts. For example: event, price, weather and promotions, including halo/cannibalization, pantry and delay promotional effects.
- Ability to allow defined KPIs to be executed within a forecast job. For example: sales units, sales dollars, inventory count, etc.
- Model revisit: saving the model in a repository for subsequent forecast runs. This helps analysts review the soundness of a particular forecast model based on changes in business conditions.
- In-season planning: forecast revisit and progressive weeks re-forecast based on new history, each week.
- Archive forecasts. Ability to archive a configurable number of prior forecasts so that forecast accuracy reports can be generated.
- Configurable standard forecast reports, including options for plots and statistical measures. Reports may be saved as HTML, PDF or Excel documents and are accessible from SAS Merchandise Planning.
- Supports multiple country formats and database configurations for dates, currency and language.
- Includes effective error-handling mechanism to report any issues occurring within the forecasting process.

SAS® Demand Forecasting for Retail Software Components

SAS Forecast Server
SAS BI Server
SAS/ACCESS®

Technical Requirements

- Client environment
- Microsoft Windows (x86-32):
Windows XP Professional
 - Internet Explorer

Server environment

SAS servers, including Base SAS and SAS Metadata Server, can be installed on one or more hardware systems in a multitier configuration.

- AIX (64-bit), Release 5.1+
- Solaris (64-bit), Version 8, 9 or 10 on SPARC
- Microsoft Windows (x86-32):
Windows Server 2003

Web tier

- SAS includes a reference implementation of Apache Tomcat.

SAS – A World Leader in Business Intelligence

Founded in 1976, SAS is the world's largest privately held software company and the industry leader in business intelligence. Today, SAS serves more than 4 million users at nearly 41,000 sites in 111 countries, including more than 80 percent of FORTUNE Global 500® general merchandisers and specialty retailers. SAS is also an associate member of the National Retail Federation.

For nearly three decades, SAS has been giving retail organizations THE POWER TO KNOW®. SAS leverages the investments you've already made in operational and transactional systems, adding a layer of intelligence you can't get anywhere else.

For more information, visit us at

www.sas.com



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POWER
TO KNOW.**

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