ENHANCING BUSINESS INTELLIGENCE WITH FORECASTING

How to produce high-quality forecasts, ensure better decisions and plan more accurately
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Content providers for *Enhancing Business Intelligence with Forecasting* were Christina McKeon and Mike Gilliland.
Introduction

Business intelligence (BI) technology has been around for more than a decade. While the term BI became synonymous with historical query and reporting tools for many years, the definition of BI has evolved to include technology that addresses data integration, predictive analytics and information deployment. Predictive analytics often help companies address their most difficult business issues and achieve a competitive advantage in their respective markets.

Forecasting is a discipline of analytics that provides the foundation for planning processes across organizations. Good forecasting provides a more accurate view of the future, helping an organization save time and reduce costs, while better serving its customers and managing its resources. When used with data integration and information deployment capabilities, forecasting becomes even more powerful by pulling from multiple data sources and disseminating forecast results consistently.

SAS offers a complete BI platform that provides the most comprehensive BI capabilities in the industry. These capabilities include data integration, predictive analytics and information deployment. Included in SAS’ predictive analytics technologies are forecasting solutions that help organizations produce high-quality forecasts, ensuring better decisions and more accurate planning.

What Is a BI Platform?

Business intelligence means different things to different people.

In its simplest form, business intelligence is getting the right information to the right people at the right time so they can make decisions that ultimately improve performance. A more technical view of business intelligence usually centers on the process of, or applications and technologies for, gathering, storing, analyzing and providing access to data to help make better business decisions.

Regardless of how you define it, business intelligence is proliferating and reaching more and more constituents inside and outside of your organization. Information demands, data volumes and audience populations are growing and will continue to grow exponentially. The increase in available information also affects forecasting because there are more inputs to consider in both volume and type.
Although business intelligence was synonymous with query and reporting tools for many years, many organizations have discovered that the effective use of information requires more than reports that show historical data. In addition to the information delivery component of business intelligence, data integration and analytics are garnering just as much attention in overall business intelligence strategies. A platform for enterprise business intelligence routinely consists of the following categories of technologies:

• Data integration – capabilities for data connectivity, data quality, ETL (extract, transform and load), data migration, data synchronization and data federation. For forecasting, this involves incorporating all relevant sources of information, including:
  - Orders, shipments and inventory availability (for a manufacturer).
  - Sales, out-of-stocks and transaction volume (for a retailer).
  - Pricing, promotions and point-of-sale data (for a consumer products company).
  - Call volume (at a reservations desk or financial call center).
  - Sales quotas, marketing plans, operating plans, financial targets and such information as collaborative inputs from customers or suppliers.
  - External factors affecting demand, such as interest rates, unemployment, housing starts, competitor activities, GDP growth and weather.

• Predictive analytics – predictive and descriptive modeling, forecasting, optimization, simulation, experimental design and more. Forecasting uses many specialized types of models, such as exponential smoothing, ARIMA and unobserved components.

• Information delivery – capabilities to surface information from consistent, companywide data, and provide a single view of the data on which all planning decisions can be based.

Each of these components should be integrated not only in the business intelligence platform but also with your existing investments in hardware and software. A comprehensive business intelligence platform will be able to access all your data no matter where it resides and no matter what operating system is being used. It will move the data if necessary, store it properly, analyze it thoroughly and disseminate it to users through familiar interfaces.
Forecasting as a Foundation

Analytics uses data to deliver insight for better decisions. It includes quantitative techniques such as data and text mining, modeling, forecasting and optimization. For organizations, analytics provides the ability to address difficult business issues and then use those findings to differentiate them from the competition. Analytics can be applied across industries to help communication service providers improve customer retention, manufacturers predict inventory requirements, financial services firms find more profitable customers, and healthcare organizations predict the effects of government policies – just to name a few examples.

Business and IT executives are taking notice of analytics and consider it critical to their organizations’ own business intelligence strategies. As Thomas H. Davenport reported in *Competing on Analytics*, “At a time when firms in many industries offer similar products and use comparable technologies, business processes are among the last remaining points of differentiation. And analytics competitors wring every last drop of value from those processes.” Davenport’s research provides real-world applications of analytics at more than 30 companies, including Capital One, Marriott International, UPS, Procter & Gamble, Harrah’s and Amazon.com. To learn more about how some companies have built their businesses on analytics, see Davenport’s research as it appeared in the January 2006 issue of *Harvard Business Review* at [www.sas.com/hbranalytics](http://www.sas.com/hbranalytics).

Figure 1 illustrates how moving from accessing historical data in standard reports to applying more predictive analytics such as forecasting enables an organization to move from data to information to knowledge, and finally to intelligence. By applying analytics such as forecasting, organizations get a more predictive view of the business, progressing from knowing “What happened?” to knowing “What will happen next?”

*Figure 1: Organizational move from data to information to knowledge, and finally to intelligence.*
Forecasting is a discipline of analytics that provides the foundation for planning processes across organizations, including demand and inventory planning, budgeting, sales quotas, marketing campaigns and procurement activities. Decisions are made daily based on sound predictions of the future. The more timely and accurate the forecasts, the better the decisions will be.

Producing large numbers of frequent, up-to-date forecasts can be challenging given the huge amounts of data that may be involved. SAS approaches this common problem by providing forecasting technologies that efficiently analyze and forecast processes that take place over time, identifying previously unseen trends and anticipating fluctuations. These capabilities enable organizations to plan for the future more effectively. Many factors affect an organization’s performance. Factors such as economic conditions, competitive environments, customer demographics and marketing activities can be identified, quantified and included in the forecasting processes for improved results.

As the foundation for planning, forecasting touches many departments throughout an organization, giving you the ability to:

- Forecast demand for products and services.
- Perform promotional analysis.
- Predict staffing and resource needs.
- Perform site selection analysis.
- Make effective pricing decisions.
- Plan and understand your markets.
- Predict customer and market behavior.
- Analyze investment options.

SAS provides an open and integrated BI platform where forecasting technologies are built on the same architecture as the data integration and information deployment technologies. This integration saves time and money when pulling data needed for forecasts from multiple sources and deploying forecasts to different audiences in the organization.

**Delivering Forecasts**

Most organizations operate today with distributed teams, managers and executives all needing accurate, up-to-date information for decision making. Forecasts are often critical to daily decisions that need to be made throughout all levels of an organization.
Effective information delivery technologies should provide tailored user interfaces targeted at audiences with varying skill levels and deliver analytic results in easily understood terms. Executives might want to see forecasts updated daily on their dashboard. Managers may need the latest forecast in PowerPoint for a meeting. And you may be more comfortable sharing your forecasts with your peers in Excel or in interfaces built into forecasting software solutions. Many of these types of interfaces are shown in the figures below.

**Figure 2: Information can be delivered through Excel.**

**Figure 3: Information can be delivered through PowerPoint.**
Figure 4: Information can be delivered through SAS® Forecast Studio.

Figure 5: Information can be delivered through SAS Forecast Studio.

SAS offers information deployment capabilities to support a wide range of users. You can deliver your forecasting results to a wide range of users including executives, managers, analysts, power users and casual users. At the same time, you can ensure that everyone is looking at the same view of the data, which promotes consistency and collaboration across the organization.
Conclusion

Combining forecasting with other business intelligence technologies can help companies go from having a historical view of their business to having a more predictive view of their business. When used with data integration and information deployment capabilities, forecasting becomes even more powerful by pulling from multiple data sources and disseminating forecast results consistently, helping to put the entire organization on “the same page.” SAS offers a complete BI platform that provides the most comprehensive BI capabilities in the industry, including data integration, predictive analytics and information deployment. Forecasting is included in SAS’ predictive analytics technologies among many other powerful analytics. SAS® technologies can help organizations produce high-quality forecasts, ensuring better decisions and more accurate planning.

About SAS

SAS is the market leader in providing a new generation of business intelligence software and services that create true enterprise intelligence. SAS solutions are used at more than 40,000 sites, including 96 of the top 100 companies on the FORTUNE Global 500®, to develop more profitable relationships with customers and suppliers; to enable better, more accurate and informed decisions; and to drive organizations forward. SAS is the only vendor that completely integrates leading data warehousing, analytics and BI applications to create intelligence from massive amounts of data. For nearly three decades, SAS has been giving customers around the world THE POWER TO KNOW®.

Contact

Please contact us at 1-800-727-0025 or at www.sas.com/contact for more information.