A New Breed of BI: Self-Service Analytics That Your Business and IT Users Will Love

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THE POWER TO KNOW®

Contents

"It's easy to use."

You've heard it before, whether you're an IT professional or a business user. You may have even been handed a new business intelligence solution and told that it will make your life easier and be better for everyone. But when business users start working with the new tool, it turns out not to be so easy after all. The phones in the IT department ring constantly. Users beg IT to just run reports for them. The clock ticks, and by the time reports are created, they're already out of date.

Sound familiar?

The Fast-Paced World of Business Intelligence

Gone are the days when you could afford to rely on reports that took days or even weeks to build and required technical skill to create and understand. It's risky to even think that you can run a competitive business if you can only send traditional, static reports to an executive sitting behind an office desk.

These days, huge amounts and varied types of structured and unstructured data pour into your business from every imaginable source. And users work from virtually everywhere. Because they're so connected, they expect to have access to whatever data they need, when they need it, using any device and software they happen to prefer.

In such a dynamic environment, today's business users need access to all types of data, almost instantly. And they need more than standard, stale reports and dashboards. They need to be able to explore the data so they can discover new information and answer questions – not just about **what** happened, but also about **why** it happened.

Sure, there are BI solutions that will let you push a button and get an answer. But if you can't explain how you got the answer, or what it means, it's no good. Most self-service BI solutions can only display what has already happened, through reports or dashboards. And most have a predefined path of analysis that gives users very little creative freedom to explore new lines of thought.

To maintain competitive advantage, your BI solution should allow business users to quickly and easily investigate and interrogate the data to find out why something happened – to uncover the root cause behind the "what." Only with sophisticated visualization techniques and analytics that are relevant, easy to use and easy to understand can your business

users get the fact-based answers they need to create real business advantage.

Consider why this goal has been so hard to achieve with traditional approaches.

Recognizing the Barriers to Self-Service BI

Traditional methods that are used to access and combine data that's needed to solve business problems can be problematic. Why?

One reason is that traditional data warehouses can't accommodate the vast types, sources and volumes of data that exist today. You also have to account for different departments' strategies for managing data, plus you have to find all the data that lives outside of the data warehouse in rogue employees' spreadsheets. Then there's big data, like unstructured text data from social media or customer service records. Big data forces you to manage high volumes that can create frustrating performance issues – and may cause business users to give up, call IT for help, or be afraid to try anything new.

Beyond big data and performance implications, keep in mind that business users and IT professionals often miscommunicate. So when an IT person tries to fulfill a request – only to learn later that it was not what the business user really wanted – it sets up an iterative, time-consuming cycle that exasperates everyone.

How many times have you kicked off a job to run overnight, only to learn the next morning that there was a network hiccup, or some of the data wasn't available? So you lose eight hours. That's frustrating, and it keeps users from trying new things. Performance is critical. If you can do things more quickly, you can get answers faster, and be more agile and productive.

The structure of the data itself can cause issues, too. Complex data structures can take a long time to build using traditional methods. And think about what happens when IT builds an OLAP cube that turns out not to be what the users needed. At that point, the process has to start all over again as an IT expert rebuilds the cube. This delays business users and postpones decision cycles. Don't forget that you'll also have to spend time maintaining the reports that are built off of those OLAP cubes.

Altogether, these issues can turn into a real business headache.
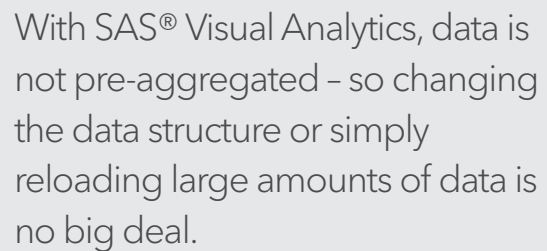
How Should Self-Service BI Work?

Effective self-service business intelligence gives users access to all types of data in a way they can easily understand and use, making analytics approachable. It makes business users feel empowered to work independently when it comes to accessing data, generating insights and sharing information. With true self-service BI, business users can pull in data from different sources and combine it as they want for analysis and reporting. They can explore the data analytically, and use an intuitive interface to quickly build highly interactive and visual reports and dashboards.

But just as important, true self-service BI makes IT professionals feel comfortable about giving users the power to do more, to have more flexibility. That's because it limits the amount of IT involvement in routine tasks, yet leaves ultimate data control and governance in IT's hands. IT is responsible for giving individual users and user groups access to the data and targeted capabilities. At last, IT can feel confident about relinquishing more control to business users – so everyone can work more effectively.

Self-Service BI From SAS: No Expertise Required

SAS® Visual Analytics is a comprehensive, self-service business intelligence environment that includes sophisticated, yet approachable, analytics. This easy-to-use visualization tool is a role-based solution that's geared to all types of users – from business users and data scientists to statisticians and IT.

With SAS Visual Analytics, your enterprise data warehouse can become the foundation for serving critical, business operations data to business users who can augment that data, explore it on their own and apply analytics to it. So users from across the enterprise will be able to ask the right questions of their data to expose unknown issues and uncover new opportunities.

> With SAS® Visual Analytics, data is not pre-aggregated – so changing the data structure or simply reloading large amounts of data is no big deal.

Giving Business Users the Flexibility They Need

With SAS, authorized business users can make minor changes to the data, but only for the types of data the IT group has given them access to. They can calculate a field, or bring together two tables – very simple types of data operations that can take some of the strain off IT without creating much risk.

Unlike traditional BI with summarized views and pre-aggregated cubes with hierarchies, SAS Visual Analytics lets users create hierarchies on the fly so they can drill through their preferred data path. This is possible due to in-memory computing technology, which can handle many terabytes of data, aggregating large amounts of data in sub-seconds.

Right out of the box, SAS Visual Analytics lets you use simple calculations like sums, differences or ratios, and continues with percentages and time series calculations. You can also make comparisons to the previous period or compare year-to-date followed by custom groupings of categories or measures. The software even includes complex calculations based on character values.

Figure 1: You can drop and drag different variables onto a correlation matrix to see the relationship between them.

From Hours to Seconds

Imagine a correlation matrix with 28 different variables – a 28x28 matrix. On a standard machine running normal hardware, a process like that can take four hours. With SAS Visual Analytics, it can run in about two seconds. That's very exciting for people who have done these processes and had to wait. It's hard to go back and do anything the old way when you can do it with SAS in just a couple of seconds.
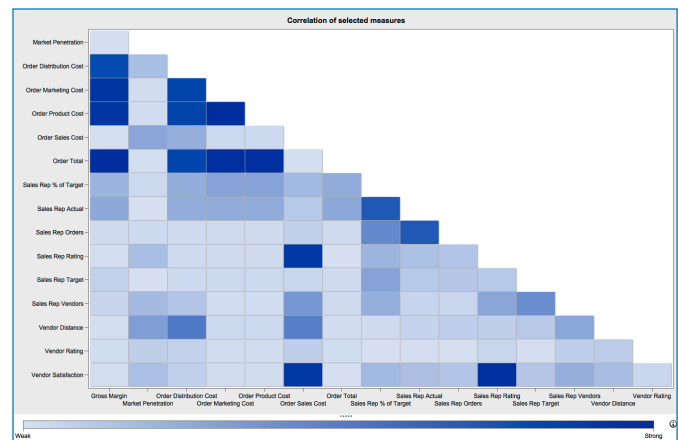
Correlation and Regression

As you explore data, you'll want to understand how various business metrics are related to each other. In the past, generating a correlation matrix meant that you had to submit a list of variables to an analytics expert who would run the analysis and return results. This process could take many hours.

With SAS Visual Analytics, everyone – even nontechnical users – can do it on their own using a correlation matrix. You simply drag and drop two or more variables onto the workspace, and the autocharting feature draws an appropriate visual. You see the results in seconds – and the visual immediately shows how strong or weak the relations are across all the variables. Then you can drill into the details by double-clicking on a correlation block to see the correlation and regression values for the selected variables. You can also view the trend by running various fit line models and looking at detailed results.

This type of functionality is especially useful for hypothesis testing. For example, it's a great way to validate or reject an assumption you have about your business. It also helps you narrow down the choices, helping you see which details (variables) are worth investigating in greater detail.

Forecasting

Understanding what's likely to happen in the future is important to all businesses. SAS Visual Analytics includes automated time series forecasting capabilities that show a statistics-based glimpse of what the future may hold. SAS provides a set of built-in forecasting models that run directly in memory. It automatically identifies the best-fit model based on the key selected time series variables.

For example, with simple drag and drop, you can add your choice of variables to build out a time series. SAS then selects the best model and displays the results. You can run the forecast as many times as needed, for single or multiple variables and across various intervals of forecast durations. The advantage? SAS displays an estimated confidence interval, so you get a sense of the uncertainty associated with the forecast. No one can forecast with 100 percent accuracy – and being able to manage the uncertainty is valuable.
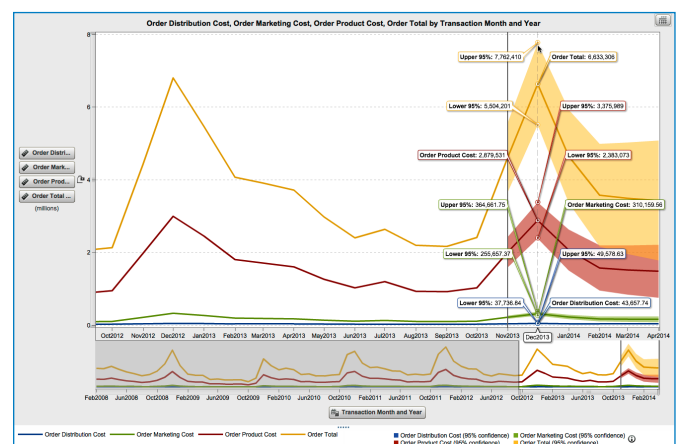

Figure 2: You can create a forecast for several different values by adding a time value and various metrics. SAS will pick the best forecast model automatically.

Scenario Analysis

In today's environment, you don't have much time to react to business situations. So it's essential to be able to simulate scenarios and quickly see the effects. SAS Visual Analytics lets you run scenarios and generate forecasted outputs. Once you create the forecasted result for a defined duration, you can add in more variables, defining them as underlying factors. Next, you'll see several options for creating various scenarios for the underlying variables you provided.

When you define multiple variables as underlying factors, SAS Visual Analytics calibrates which underlying factors contribute the most toward forecasting the metric in focus (y-axis). Then you can modify the possible values of the underlying factors and update, or re-run, the forecast. When the visual is updated with new results, you can compare the existing and new forecasting results based on a scenario in a single view.

Decision Trees

Decision trees graphically display a segmentation of a large amount of data across various dimensions and measures. They help you understand how the value of a target variable is affected by a set of other variables used for the analysis. This is often called root-cause analysis.

With SAS, you can create decision trees that include a combination of character and numeric variables so you can see where some of the influences are. This can help you better understand what's really going on in your data.

Using drag and drop, you can add the first variable that defines the focus variable for the decision tree. From there, you simply drag and drop other variables that you want to include as part of the analysis. The system calibrates the variables and identifies which one best describes the distribution of the key metric. It then segments the data by the values of these variables to build the full decision tree. Users can flip to a detailed tabular view and drill down into the details of a particular node in the decision tree to see the data distribution.

Text Analysis

So much information is captured in unstructured data channels like emails, Twitter feeds, social media discussions and online user comments that you can't afford to ignore it. By analyzing this text-based information, you can get real insights into customer experiences and opinions. For example, if you apply text analysis to Twitter streams, or to customer comments in call logs, you can quickly find out what hot topics are being discussed.

SAS Visual Analytics incorporates capabilities from SAS Text Analytics to analyze unstructured data in a highly visual, interactive manner. For example, it produces analytically generated word clouds that show you what people are saying about you in social media or survey data. So you can find out what some of the highlights are in your data without having to read a thousand responses. And you can do it all very quickly.
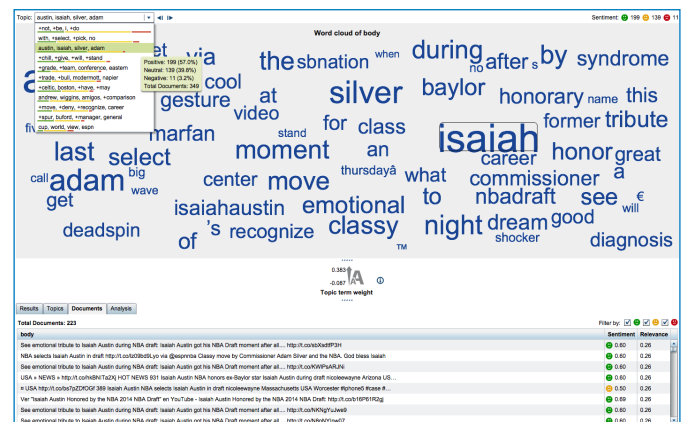

Figure 3: This word cloud shows a quick look at sentiments that were expressed about the NBA draft.

Reporting for Everyone

To make the most of your data, you need to be able to create meaningful reports that are easy to build, easy to understand and easy to share. With SAS Visual Analytics, you can select variables in a separate pane and drag and drop them to create a what-you-see-is-what-you-get type of report. You can combine things like pie charts and bar and line charts, along with crosstabs, tree maps and geographic data.

SAS provides a library of the most common graphs – maps, text boxes, images, typical gauges like dials or speedometers, and control objects to filter data interactively, like selection boxes, button bar lists or range sliders. So without any programming skills, you can create new calculations on the fly and build appealing, interactive flows within and across reports. All of this can tie into your back-end memory system, simplifying report building and reducing the strain on IT.

You can also deliver content in the way that makes the most sense for your organization – whether you're spreadsheet-based, prefer to get information from the web, or through mobile devices. All these options are fine, because SAS maintains only one version of each report. So regardless of the application or device you use, you'll always see the same, up-to-date report.
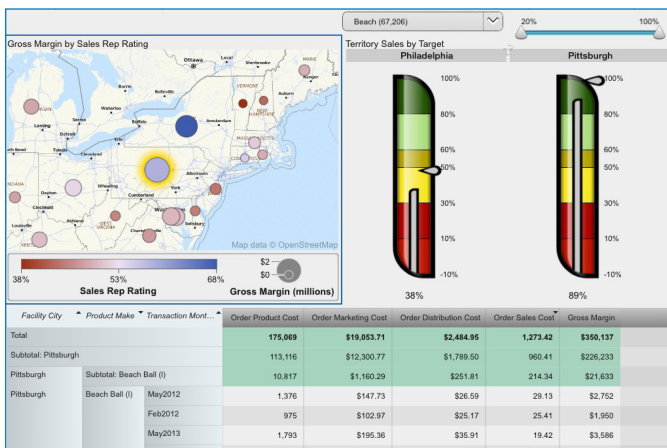
Figure 4: With this crosstab view of monthly sales, you can click on each line item and drill down to more detail to see the notes behind each transaction.

Visuals That Adapt to Suit Your Needs

Most business people know what it's like to read information from a crosstab. But if a crosstab has several hundred cells in it, it's time consuming and difficult to pull out the most important business information. Presenting that information in an appealing, visual way is much more effective. This is where SAS Visual Analytics can help.

If a simple bar chart is the best way to present information, that's what SAS Visual Analytics will recommend. But with more complex concepts, it would suggest a tree map. If you need access to raw numbers, you can switch from a graphical visualization to a tabular report. If data contains geographical information, you can visualize facts on geo-maps. SAS excels at transforming information to be presented in the most convenient, approachable way.

Familiar Tools to Encourage Collaboration

Some users, especially executives, may refuse to look at reports outside of an application they're familiar with (like PowerPoint). When it comes to making solid business decisions, you want to accommodate these preferences so your users can readily share information. With SAS Visual Analytics, the same reports that are available from mobile devices and the web are available from common Microsoft Office applications like PowerPoint, Word and Excel. You can even open the reports through Outlook and see them on SharePoint.

Even better, you won't be sending the report as a static PowerPoint deck, Excel spreadsheet or Word document. Whenever you look at the reports in any of your Microsoft applications, they'll reflect what's happening in your business right now.

Deployment Options Suited to You

SAS knows IT staffs are overworked and often asked to do more with less. To accommodate different needs, SAS has flexible deployment options that include a variety of traditional, cloud or hosted (on-site or off-site) solutions. On-site deployments can be done for single machine deployments and distributed deployments. And cloud deployments offer multiple tiers that can support everything from small user groups (such as five users) to as many as you might need.

Conclusion

Known for its industry-leading analytics and business intelligence solutions, SAS is focused on helping businesses use data and analytics to make better decisions, faster. The combination of self-service BI and analytics positions you for improved productivity and smarter business decisions. So you can become more competitive as you use all your data to make better-informed decisions. Instead of depending on hunch-based choices, you can make decisions that are truly rooted in statistics. And you can do it through an interface that anyone can use.

At last, your business users can get close enough to the data to manipulate it and draw their own reliable, fact-based conclusions. And they can do it in seconds or minutes, not hours or days – without any help from IT.

Learn More: Test Drive SAS® Visual Analytics

See what SAS is doing with self-service BI by trying SAS Visual Analytics for yourself. This test drive lets you look at standard reports for many different industries, and log in and work with the SAS Visual Analytics explorer. The interactive test drive is all web-based, running on the cloud. Try it at sas.com/software/visual-analytics/demos/all-demos.html.

To contact your local SAS office, please visit: sas.com/offices

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