BeyeNETWORK

Global coverage of the business intelligence ecosystem

Ease of Use

and

Interface Appeal

in

Business Intelligence Tools

BeyeNETWORK Research Report for Tableau Software

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Executive Summary

Just as the eyes are the window to the soul, business intelligence (BI) tools are the window to the data that helps business users identify new opportunities and make fact-based decisions. Despite the critical role that BI tools provide, adoption remains low and BI tools are considered difficult to use, with largely unappealing interfaces.

Assessing a BI tool's ease of use is difficult because it is influenced by subjective factors. However, the importance of ease of use — rated even higher than specific tool capabilities and analytic power — makes it a critical aspect to address in making BI more pervasive and with bigger business impact. Each group of potential BI users — whether power users who work with data for most of the day, or casual users who only have a short time to glance at information — brings their own set of experiences and expectations to a BI tool. Customers and vendors alike need to consider these differences so they can improve ease of use, leveraging whichever innovation is appropriate for a particular type of application and user segment.

Currently, BI tools are rated as some of the most difficult to use relative to a variety of technologies including Google, email, and Excel. Power users rate BI tools as more difficult than casual users. Companies who described their predominant BI tool as very easy to use had a much higher BI adoption rate than those who described their BI tool as only somewhat easy or difficult.

An appealing interface provides a powerful first impression, particularly when trying to embrace new users. The way a product looks and works influences how pleasant and effective it is to continue using a particular BI tool. With BI, a cumbersome interface and workflow competes with other ways of working, whether gut feel decision making or asking the expert. If someone doesn't have to absolutely get to the data to do his or her job, an unappealing interface can be a barrier to continued use. In considering various interfaces within a BI platform, the authoring interface is rated the least appealing. Dashboard interfaces rated the most appealing, but still leave room for improvement.

In trying to address ease of use and interface appeal, vendors have introduced a number of innovations such as BI's integration with Microsoft Office, in particular Excel, Adobe Flash animation, and BI search. Of these innovations, Microsoft Office integration is the most widely adopted. Lackluster adoption for other innovations is mainly because customers have not purchased the option.

Despite claims that BI tools should be easy enough to use so that training is not required, most people want some training, at least half a day. Even if the BI tool is easy to use, understanding the data requires time and explanation. A bigger issue is in the gap in the amount of training people feel they should have and what they actually get. People who think their job requires a day or two of formal training are generally getting that training. However, BI experts and managers who say half a day of training should be required are not receiving any formal training.

What Makes BI Easy and Appealing?

Ease of Use is Important but Subjective

Ease of use is a much-touted BI requirement but one that is highly subjective and not well understood. As a BI tools expert, I usually find learning new BI tools relatively easy. However, ask me to take over the Xbox controls and I am lost, while my son will "click" away without, of course, having ever read a manual. One person's "easy" is another person's "difficult."

Some BI tools seem harder to use than others, and certain tasks require more clicks in one tool versus another. Number of clicks to accomplish the same task could perhaps be an objective criterion in assessing ease. And yet, even that is not quite indicative of ease of use because we could only measure one task (for example, building a query). We really want to assess (but can't) the whole picture: How many clicks and how much time does it take for a business user to arrive at a particular insight? Beyond number of clicks in the BI process, the degree to which a tool is considered easy to use is highly influenced by our own set of skills, experiences, and expectations.

For these reasons, in assessing ease of use, one needs to consider not only the BI tool itself, but also differences among potential users. Differences such as gender, age, and job type will influence how easy a tool is considered to use and learn.

 As an example, the younger generation may find playing songs on an iPod easy. But give them a record player and playing music will be a challenge, let alone skipping tracks (you pick up the needle, for those who don't recall). The reverse may be true for someone who grew up with record albums. As an industry, BI is still relatively young, having emerged in the early 1990s. A portion of the work force that has grown up with computers and easy access to information may have a different view of BI than workers who once relied on paper and colored pencil to create insightful graphs. Age is not the only differentiator of how people view BI. Job role too will affect how easily BI is perceived. An IT developer, understanding databases, load volumes, and the complex SQL behind the scenes, may be more tolerant of dull interfaces, slow queries, and confusing toolbars than a sales manager who wants everything as simple and fast as Google.

A tool may be considered easy to use because it is familiar. With BI tools, that familiarity may come from other business tools they use. This is one reason why many vendors have added capabilities to allow users to access and interact with data directly from a Microsoft Excel spreadsheet. An Excel-like interface to BI is ideal for those users who are data analysts, already comfortable in Excel. For front-line workers and managers who don't spend their days crunching numbers in a spreadsheet, such an interface is overwhelming. A Google or email interface to BI may be more appropriate for this segment.

People who spend less time analyzing data as an everyday part of their jobs will be influenced by other interfaces and office tools than Excel. Google is considered an easy-to-use, simple interface for accessing information. In 2006, when Google announced an enterprise version of its popular consumer interface, a number of BI vendors thought this type of interface would be an answer to ease of use for

casual BI users. They promptly released Google-like interfaces, a term the industry refers to as BI search. Other vendors and users remained skeptical that such a simplified interface would solve the ease-of-use challenges. Given the different influences on ease of use, it would seem that there is not one single silver bullet for easier BI. Instead, improving ease of use will involve multiple approaches. The approach that will most resonate for a particular BI user and application will vary because of all the unique influences each user brings to his or her BI experience.

While there are not many absolutes for ease of use, the following findings are consistent:

- Ease of use is very important.

- Ease of use is subjective and influenced by a user's prior experiences and expectations.

A solution is easy to use when:

- It is familiar because it works as expected and is similar to another tool with which a user has experience.

- It takes less time and fewer clicks to accomplish the ultimate goal. Routine tasks may be automated and personalized.

- It is intuitive and obvious in how a task can best be performed.

Ease of Use Matters Beyond the Business User Interface

When I first embarked on this study, my expectation was that ease of use was primarily a concern for the business user. After all, the business person is the ultimate BI customer, the decision maker who most needs easy access to data for decisions and insights. However, the customer case studies highlighted that while ease of use is indeed a key requirement in the business user interface, ease of use for IT to deploy and enhance the BI environment is also critical.

When IT struggles to access, prepare, and present data for analysis by business users, it's a show-stopper. For example, Alco Industries, a Canadian distributor and manufacturer of aluminum fencing, has limited IT resources. Data locked in the accounting system was only accessible via fixed reports built by IT. Alco Industries wanted a more interactive, self-service BI environment, but deployment effort and costs for traditional BI tools were prohibitive. Alco Industries selected Indicee, a software-as-a-service (SaaS) BI solution. The SaaS model brought ease of use for IT; there is no hardware for IT to acquire or support. Because Indicee automatically creates an OLAP cube by detecting data relationships and then creates prebuilt reports, ease of building an initial environment also required less resources.

Ease of deployment was also important at Dorel Industries. Dorel Industries is a global manufacturer of juvenile products. With facilities in 17 countries and three major business segments, the decentralized structure of the company made getting a consolidated view of the business and of the data a challenge. Using IBM Cognos 8 Data Manager, the ease with which data from multiple data sources

could be extracted, transformed and loaded into a BI environment was a decisive factor in making BI possible at Dorel's headquarters.

Taking this into account, customers and vendors should consider ease of use across the full BI life cycle for various stakeholders and user groups, including:

- Ease to deploy and enhance a BI solution – most important for IT personnel. While this group of stakeholders may be willing to tolerate a greater degree of "pain" in the BI process, easing their workload and helping them do more with fewer resources will allow them to deliver more BI and better serve the business.

- Ease to create BI content such as reports and dashboards – most important to IT personnel and business power users.

- Ease to interact with, explore, and consume BI content such as dashboards and reports – most important to business users and the final decision makers.

- Ease of making insights once the data is accessed and presented – mostly affecting decision makers who may not even use a BI tool today.

Interface Appeal: Fluff or Substantive?

They say "beauty is in the eye of the beholder" because beauty, like ease of use, is subjective. What is considered aesthetically pleasing in art, architecture, fashion, and computer design varies greatly. It seems that the degree of symmetry and themes from nature consistently increase the degree to which people consider something beautiful. But beyond that, perception of beauty changes with culture and time. For example, the Renaissance painter Botticelli would have found today's beauty standard for skinny women rather unattractive compared to what was then a plumper norm!

So the degree that a BI interface is considered appealing or not is hard to evaluate. When crafting the survey, in our first draft I initially gave survey respondents the option of assessing an interface as "ugly" versus "very appealing." There were concerns that survey respondents and vendors alike would find this categorization offensive. So we agreed on a range of "very unappealing" to "very appealing."

The degree to which an interface is appealing will most affect the first impression for a new BI user. With low BI adoption rates beyond power users, first impressions matter. An appealing interface can help engage a new user. An unappealing interface becomes yet one more barrier to pervasive BI.

Beyond that first impression, interface appeal can affect the degree to which someone enjoys continued use of a particular BI tool. For power users who must have access to the data, there is a higher degree of tolerance for unappealing interfaces, sometimes because they have little choice; their jobs require data access and manipulation regardless of whether or not the process is enjoyable. An appealing interface, then, simply makes the experience of using a BI tool more pleasant on a day-to-day basis.

Similar to the saying that "beauty is more than skin deep," interface appeal is not only the design and appearance of the BI interface, but also encompasses how the BI product works. An analogy of a sleek-looking sports car is appropriate. That first impression of a sports car may entice a driver. Speeding the car along open stretches of a highway only adds to the appeal. Drive the same car on a mountainous, snow-covered road and that car is suddenly a lot less appealing! In this regard, appeal needs to be considered along with suitability for the type of business questions and analytic needs.

 At Chevron, for example, the technology group and business users were not immediately clear about how they would use a newly discovered product, TIBCO Spotfire. They only recognized that it worked differently from their traditional BI tools and that it had the potential to help improve efficiency in their oil exploration. As business users could visualize and interact with their data in ways never before possible, they discovered more opportunities for efficiency and became even more passionate about the product.

BI Tools are Difficult to Use ... for Everyone

According to the survey results, BI tools are not that easy to learn or use, even for people who spend the majority of their day accessing and analyzing data.

Compared to other technologies and office tools such as email and Excel, BI tools ranked near the bottom (See Figure 1), with only 23% describing their primary BI tool as very easy to learn and use. The only software that ranked harder to use is the internal transaction systems deployed to manage inventory, sales, or purchase orders.
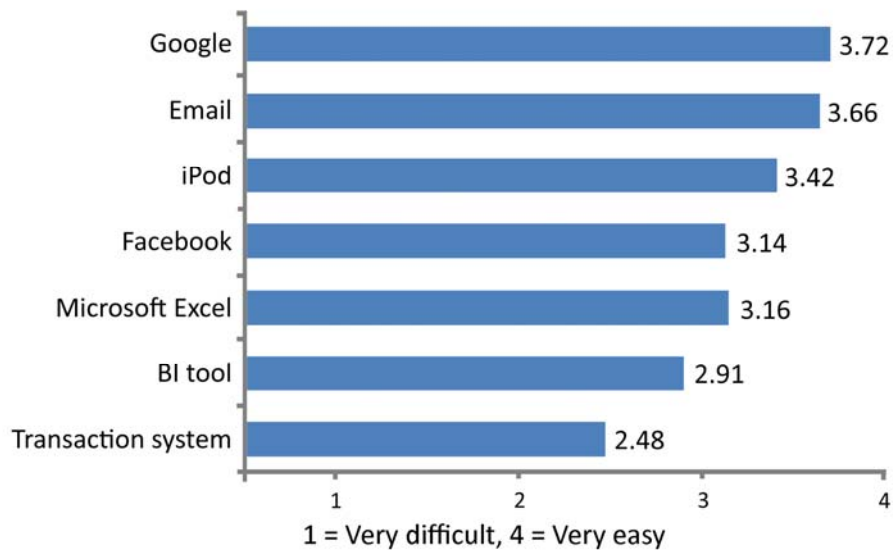

Figure 1: Response to Survey Question – How easy do you find the following tools to learn and use?

This ranking sometimes changed depending upon gender and age. Male, older boomers (55+) found their BI tool easier to use than everything except Google. This is particularly true for those male boomers who have been using BI for more than five years.

The amount of training affected how easy someone considered their BI tool, but the relationship is not linear in that more training does not mean a BI tool is viewed as increasingly easier. Business and financial analysts who received a half day of training rated BI tools the easiest, compared to other job roles or training duration.

BI Adoption and Ease of Use

When BI is easy to use, it is more widely adopted. According to the survey results shown in Figure 2, an average of 27% of employees use BI. However, for companies that rate their primary BI tool as very easy to use, the adoption rate is significantly higher at 35%.
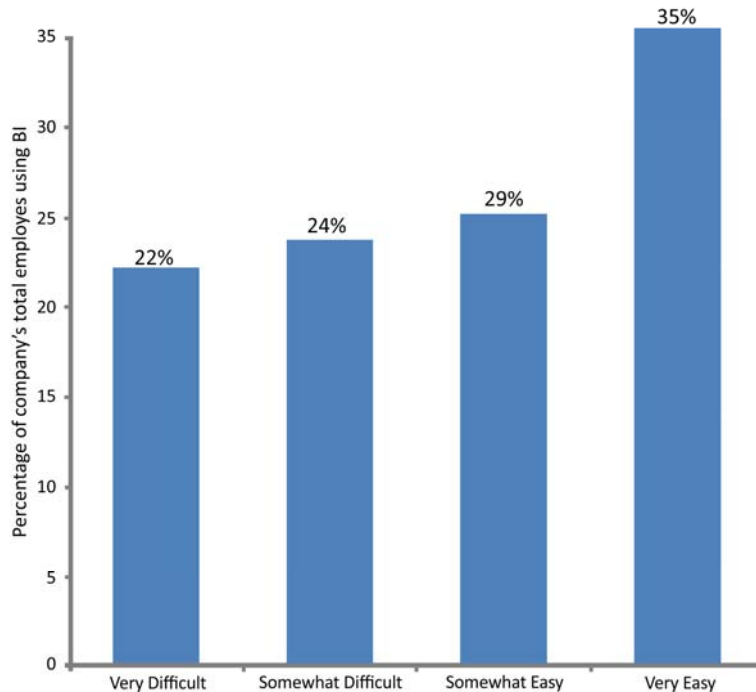

Figure 2: Ease of Use and BI Adoption

Barnes-Jewish Hospital (BJH), the largest hospital in Missouri, is a good example of how ease of use affects BI adoption. When implementing a new time and attendance system, BJH was looking for a solution that would be easy to use by all employees, whether administrators, doctors, or nurses. BJH selected Tableau Software because it allows users to create their own queries and visualizations with little support from IT. Within only a few months, 3,000 users were able to use Tableau, with little to no training.

BI Interfaces are Appealing ... Sometimes

To assess interface appeal, we asked survey respondents to score various screens in a range from very unappealing (1) to very appealing (4). The survey included branching logic to direct respondents to screens that related to their role in BI. Therefore, information consumers were directed to BI start-up screens used for finding BI content and to various dashboards. BI developers and authors were directed to screens that showed authoring interfaces.

Logos from the vendor products were intentionally blurred. Resolution for the screens was approximately the same for all screens but was not as clear as if someone were working in the actual BI tool. In a perfect study, we would have controlled for data type, content, and software defaults; however, that was beyond the scope of this survey. We relied on vendors and sample applications for the screen shots.

Without these controls, these assessments offer some insight as to what people find appealing and unappealing but are limited in their accuracy. As well, because respondents could view only a single screen, the rating on appeal only pertains to the initial impression and not to the overall experience with a product.

If first impressions matter, in multiple products, the initial welcome page where users choose their reports or content is deterring. The one product that was rated more appealing had a greater use of color, icons, and information about each report or dashboard. Considering this, customers would be well advised to change the default start page to something other than a list of reports, a default in many products. At the very least, make a favorite report or dashboard the start page for information consumers.

Dashboard interfaces were generally well-rated with four products being rated appealing to very appealing, and only three products having a larger portion rated as unappealing. The dashboards that were rated higher had a greater use of brighter colors, in varying hues, and with gradients. One of the dashboards with the lowest rating used gray bars for charts, and tabular content that used a green-bar style background for alternating rows of data. The other least appealing dashboard certainly contained a lot of visual elements, but perhaps too many, with multiple spark lines and bullet graphs, often in gray.

Of the three components evaluated, the least appealing aspect was the authoring interface, with all five screens averaging below 3 or below appealing. The screen that scored the lowest had the highest number of toolbars and icons on the tool bar. This suggests that while report and dashboard authors need capabilities, showing too much even to power users is overwhelming. Authoring interfaces that scored better had fewer toolbars and icons, and rendered the data values within the authoring interface rather than simply showing field names as placeholders.

Easy-to-Use BI is Very Important

Survey respondents were asked to assess the importance of various factors for BI to support more users, more decisions, and to better impact business performance. Not surprising is that data quality was rated the highest as shown in Figure 3 with 56% of survey respondents rating this as essential. On average, easy-to-use BI tools were rated the next highest, more so than specific tool features such as the ability to create calculations and crosstabs. Thirty-two percent of survey respondents rated ease of use as essential to these BI goals, and 47% rated it as very important. The overall ranking of certain factors was closely rated, but it's noteworthy that personalization, with users controlling filters, sorts, and personalization was rated essential by 36%. This high ranking suggests users want more than just a static, production-style report that IT builds. In this regard, self-service BI should not be construed as users creating their own queries and reports but is better described as an environment that allows users to personalize the data they see, either automatically by role and job or by filters and sorts they can easily apply.

In both the survey results and case studies, customers indicated that the ability to combine data from different data sources is very important and frequently essential. As an industry, vendors take a variety of approaches to handle multiple data sources, with some tools allowing IT to address this requirement centrally, and other vendors giving the users more autonomy. Of the various BI roles considered, business and financial analysts rated this more important than other job types. There is no single correct approach, and even when there is a central data warehouse, business users continue to need to combine data from additional sources.
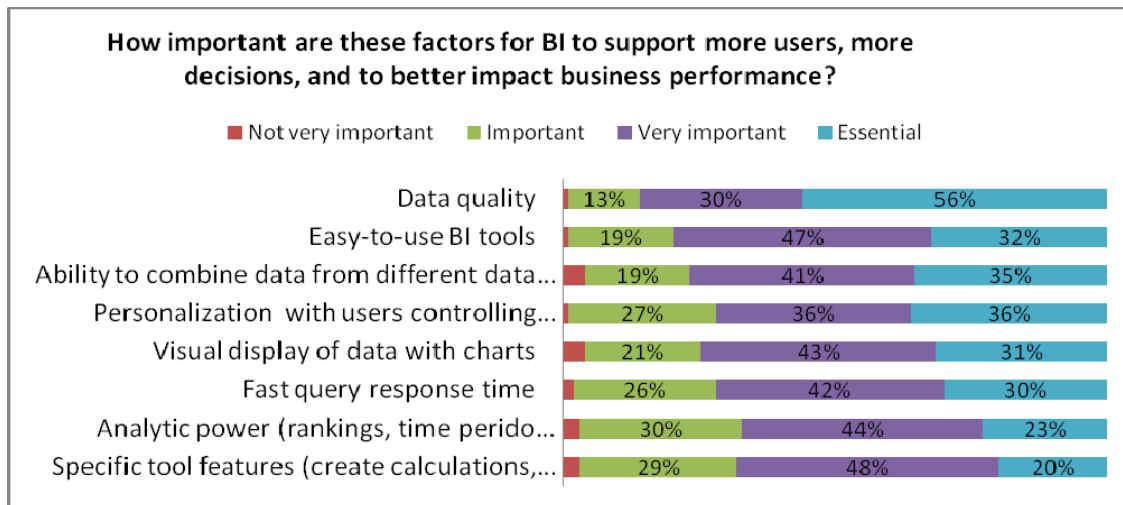

Figure 3: Ease of Use Ranks Second as Essential for BI Success

The degree to which BI tools are easy to use is often perceived as a barrier to pervasive BI. However, survey respondents feel strongly that if BI were easier to use, then BI would more greatly support decision making and would enable people to spend more time on analysis and insight than on gathering data.

How someone defines ease of use is subjective, but it seems that the importance for ease of use also varies among different groups of users:

- Field staff and front-line workers rated ease of use as most important, even above data quality. Middle managers rated ease of use and data quality as equally important.

- Ease of use had a higher priority among people who spend more than 4 hours a day working with data. This finding is interesting in that it is usually the power user types that the industry assumes are willing to tolerate a greater degree of difficulty in BI. It also confirms the perception that ease of use is too often sacrificed in exchange for more features when it shouldn't be.

- Business and financial analysts gave ease of use a lower priority, fifth overall, and rated data quality and the ability to combine data from multiple data sources as most important.

- Visual display of data with charts was rated most important by people who spend only 1-2 hours a day working with data.

- Females rated analytic power such as rankings and time period comparisons of BI tools more important than males rated it, but still fifth overall.

Interestingly, ease of use does not follow the theory of Pavlov's hierarchy of needs — ease of use did not become less important even when someone considered his/her current BI tool as very easy.

Innovations that Improve Ease of Use and Interface Appeal

Vendors have tried to tackle ease of use and interface appeal challenges from different angles. There is no silver bullet in improving either aspect. Some innovations such as web-based BI, in-memory analytics, web-based deployment, and software as a service make BI easier for IT to deploy and maintain. The degree to which vendors offer free trial versions was often cited by case study customers as a way in which the customer could more readily evaluate and prototype a solution before committing to a purchase. A number of innovations specifically address ease and appeal for the business user. Three specific approaches considered in the survey were Microsoft Office Excel integration, use of animation, and BI search.

Microsoft Office Integration with BI

While many products initially began their BI integration with Microsoft Office as a one-time export to CSV and Excel file formats, now a number of vendors allow users to work within a Microsoft Office application and query the BI environment using the Office interface. This integration is not a one-time export, but rather, a live connection to the BI environment. For example, an Excel user can refresh queries, drill and pivot from within a spreadsheet. Some BI products allow this direct BI access also via email, PowerPoint, and Word interfaces. As shown in Figure 4, 58% of survey respondents use these capabilities, the highest of any of the innovations surveyed.
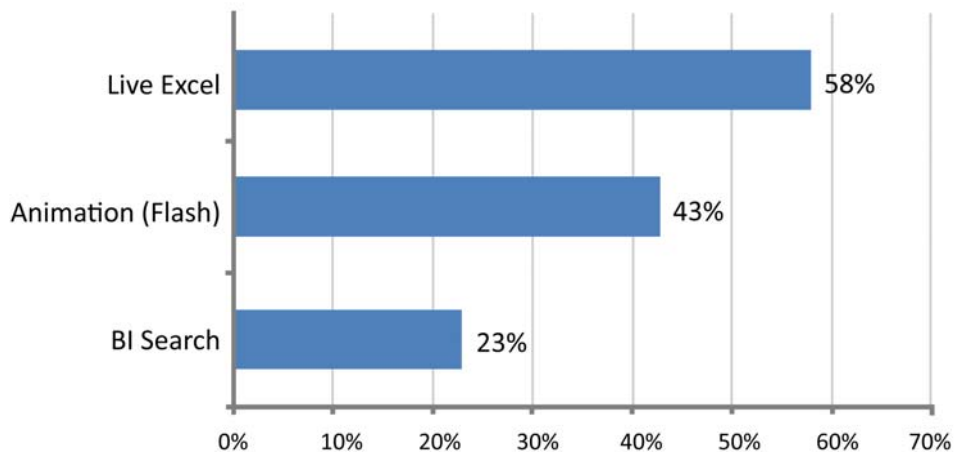
Figure 4: Recent Innovations Have Mixed Adoption Rates

In addition to real-time Office integration, scheduled exports and email distribution are widely supported among BI products. At Cabela's, an outdoor supplies retailer, managing the merchandising process from having the right products on hand to optimizing discounts is critical to company profitability and customer service. Cabela's selected MicroStrategy primarily for its ability to provide analytics without requiring IT to build a MOLAP cube. However, using the scheduling and email distribution capabilities within MicroStrategy, executives now receive a daily flash report with enterprise performance metrics, giving them timely and an at-a-glance view of merchandising indicators. This aspect of their MicroStrategy deployment has become mission critical and BI adoption is high.

Animation

BI vendors predominantly use Adobe Flash to achieve animation, either within the interface or within a dashboard or report. Animation can be used for either visual appeal or to improve insight. For example, having a menu selector fade in or fade out (similar to the iTunes storefront, referred to as fisheye animation) makes for a more engaging and fun interface. However, imagine a line chart that displays sales. If that line chart actively moves up or down as the time period is expanded or narrowed, it's easier to see and remember the changing trend. A flashing indicator for a stock-out could draw a user's attention to that negative indicator.

While animation in reports and dashboards can improve appeal and insight, too much animation and superfluous animation can have negative consequences. Survey respondents who were not using these capabilities said animation could be distracting or make the dashboard look like a "cheesy website." An IT developer in the banking industry said that users did not want to be entertained and only wanted to see results. While such a mind-set may sometimes be valid, it is less valid if we consider BI's low adoption. Anything to improve how engaging and appealing users perceive BI removes a barrier to

initial use. With these concerns in mind, animation should be more widely adopted, but as this aspect of BI gains traction, best practices for effective use of animation in BI should be developed.

One vendor that has had a positive impact from and makes extensive use of Adobe Flash is eThority. eThority uses animation not only for dashboard consumption, but also for navigating BI content, authoring, and exploration. Citrix Systems emphasizes simplicity and interface appeal in its own product design, such as GoToMeeting and GoToAssist. The ease with which eThority allowed Citrix Human Resources Information Services to access multiple data sources was a key requirement. However, eThority's clean and appealing interface proved to be a differentiator.

BI Search

BI search refers to capabilities that allow existing BI content, ranging from reports and dashboards to message queues and full data warehouses, to be indexed and exposed to an enterprise search engine. In some cases, users can use a search interface such as Google OneBox or IBM OmniFind to search existing content; in other cases, the search interface can be used to create a new query in plain English, such as "sales for 2009 in New York." Across the BI industry, vendor support for BI search is mixed, with some vendors enthusiastically developing and recommending this approach, while other vendors claim it is overhyped. Of the innovations assessed, BI search was the least adopted with only 23% saying they were using it. Even this number sounds high, however, and I suspect survey respondents instead were referring to the broadly used "Find" boxes within the BI portals rather than specific integration with enterprise search.

Training

The thinking goes that if BI tools were easier to use, then users would require little to no training. After all, how much training did you get on your iPod or on Google?

In reality, only a small portion of users (19% as shown in Figure 5) say no formal training should be required. Twenty percent of survey respondents would like at least half a day of training. The gap between expectations and the amount of actual training received appears large. It would seem problematic that 37% receive no formal training, when only 19% think no formal training is appropriate.

In considering who expects no formal training and those who receive no formal training, the gaps are largest for IT developers and BI experts and for middle managers and executives, as shown in Figures 6 and 7 (job roles and training approach with insufficient data points were removed). At the other end of the spectrum, it is surprising that a large portion of managers expect to receive 1 to 2 days of formal training in BI tools as many BI experts (including myself) assume this class of users should require no formal training. It's not clear from the survey data if this is what managers and executives really *want*, or if it is what they have come to *expect* given the complexity of BI tools.
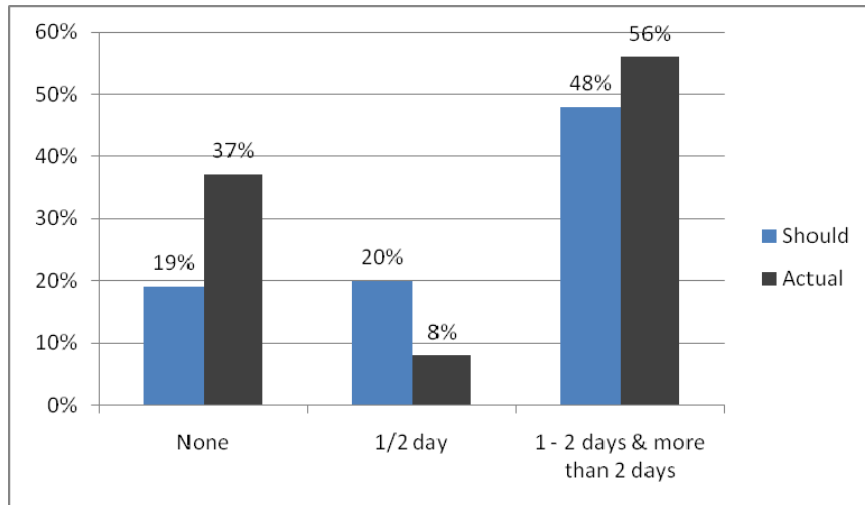
Figure 5: Desired Training Versus Actual

An easy-to-use BI tool allows customers to devote more attention to understanding the data versus learning the tool. DAKOTACARE, for example, provides health insurance to South Dakotans and also acts as a third-party administrator for other insurance providers. They selected QlikTech QlikView for its rapid deployment and easy-to-use dashboards. Learning the tool and how to navigate the dashboards only takes an hour, but they spend days on training to ensure people understand the data in those dashboards.
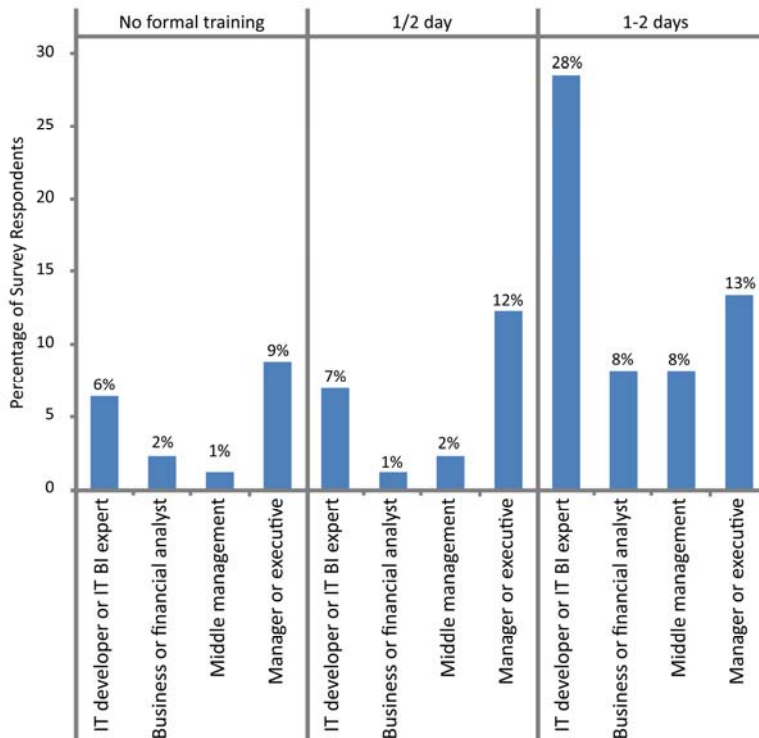

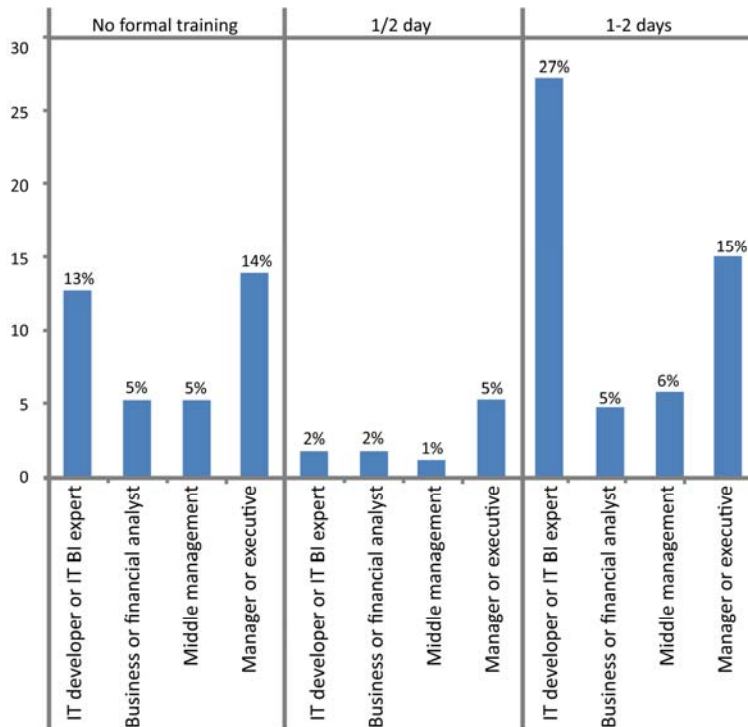**Figure 6: Expected Training by Job Type**

Figure 7: Actual Training by Job Type

Summary and Recommendations

Ease of use and interface appeal are important factors in making BI more pervasive, particularly beyond the power user base. These factors should not be viewed as superficial nor as requirements that are of concern only to the most casual of BI users; even BI experts and power users want easy-to-use, appealing BI tools. When BI is difficult, more time is spent learning tools and on routine tasks than on using the data for insight and business improvement. It's particularly telling that easy-to-use BI tools are rated as more important than BI features and analytic power.

Despite its importance, vendors, BI buyers, and BI users must recognize that ease of use and interface appeal are subjective. Ease of use and interface appeal should be assessed during the buying process, but asking someone why they like a particular BI tool more than another is like asking someone why they like a particular painting more than another. Ease of use and interface appeal should be assessed across the full BI life cycle and considered for different groups of users and types of applications.

Visual appeal serves as a powerful first impression but also affects how much users enjoy working with a BI tool on a routine basis. For the most part, vendors have a long way to go to improving visual appeal in their BI products, particularly within the authoring interfaces. Dashboard interfaces were considered more appealing than other aspects, but indicate that best practices need to be established for more effective use of color and the amount of information someone prefers having on a single
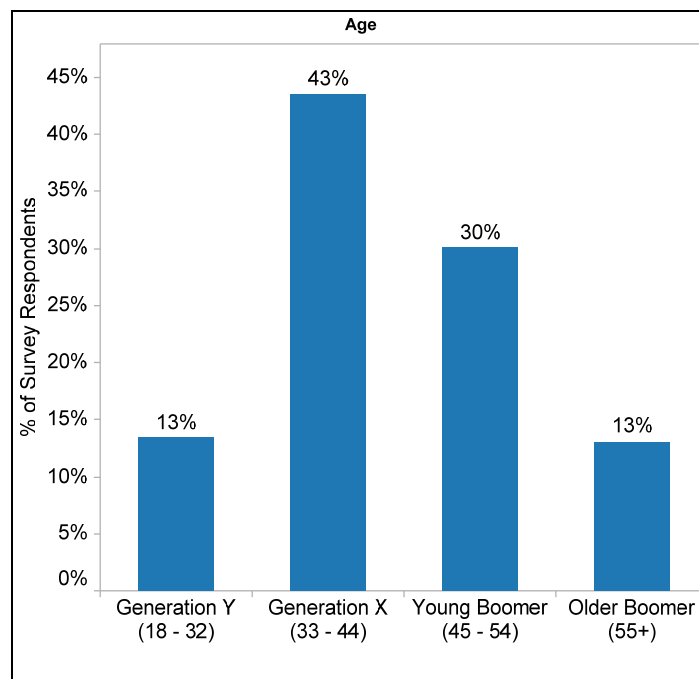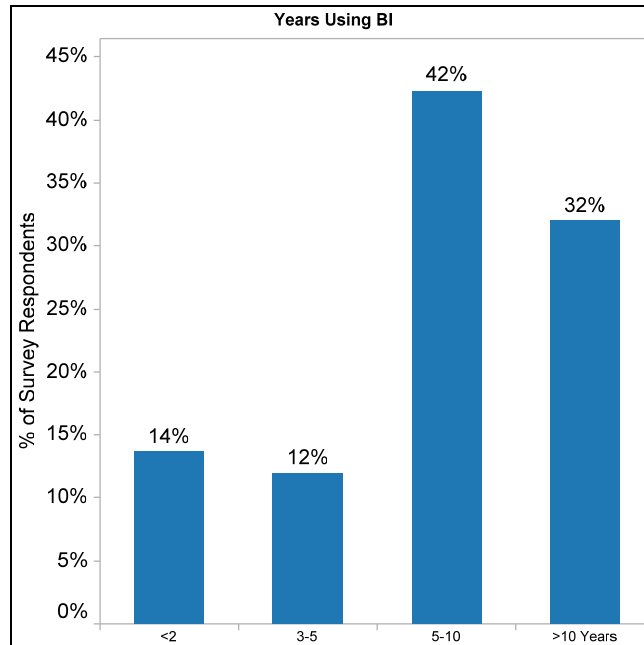
page. Determining *what* people need to see may follow a formal requirements process, but determining *how* they like to see it may require a greater degree of intuition and art.

The BI industry has adopted a number of innovations to address ease of use and interface appeal. Customers should monitor these innovations and understand why some will resonate more with certain classes of users. However, with the exception of Microsoft Office integration, other innovations such as Flash animation and BI search are not widely adopted. The most-often cited reason for not yet using these innovations is that the company had not purchased or deployed the capabilities. A large portion of respondents was not even aware the capabilities existed. This suggests that BI vendors need to do more to promote the capabilities and make them easier to acquire.

Training and expectations for what is a reasonable amount of training affects a user's perception toward BI's ease and usefulness. Customers should offer multiple training approaches and durations tailored to particular roles and job levels.

Survey Demographics

There were 255 valid survey responses. The following charts show the size of the respondents' organizations, their breakout by age, the role they play within the BI ecosystem and the number of years of experience.

Years Using BI

_____

Age

How BI is Used

Category	%
I access prebuilt reports, dashboards, and analyses that experts create	17%
I create my own reports, dashboards, and analyses	35%
I rely on information provided by others, but I don't access BI tools directly	5%
I support BI users and/or administer the application	40%
Other	4%

% of Survey Respondents

_____

Company Size

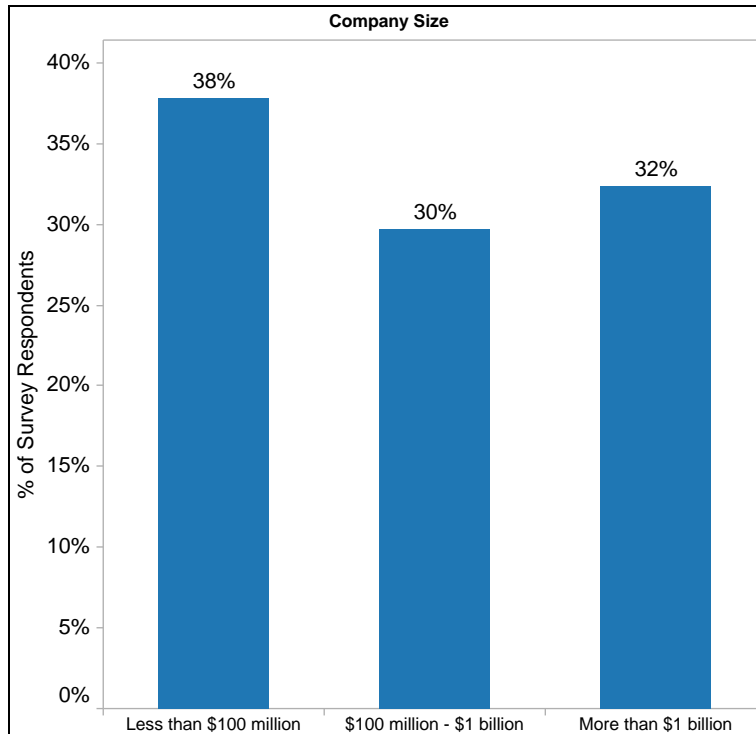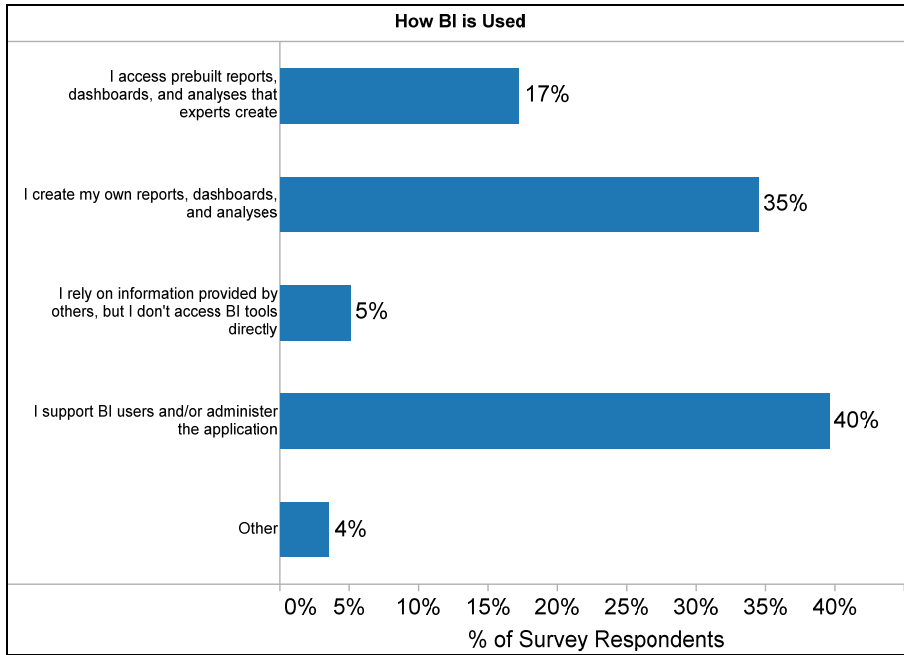| Company Size	% of Survey Respondents
Less than $100 million	38%
$100 million - $1 billion	30%
More than $1 billion	32%

Tableau Software: Product Overview

Tableau Software (www.tableausoftware.com) is a visual discovery tool. The company was founded by a team of Stanford University Ph.D.'s and is privately held.

As a visual discovery tool, the process of querying and visualizing data with Tableau is a single step process. The following figure shows how business users drag and drop measures and dimensions onto a worksheet. Tableau will automatically pick the best visual representation of the data, whether a tabular display, scatter plot, bar chart, or trend line for time series-based data. Tableau can either replicate data in a Tableau extract or can access live data in spreadsheets; Microsoft Access databases; relational data sources such as Microsoft SQL Server, DB2, and Teradata; or multidimensional databases such as Oracle Hyperion Essbase and Microsoft Analysis Services; as well as columnar databases such as Vertica.
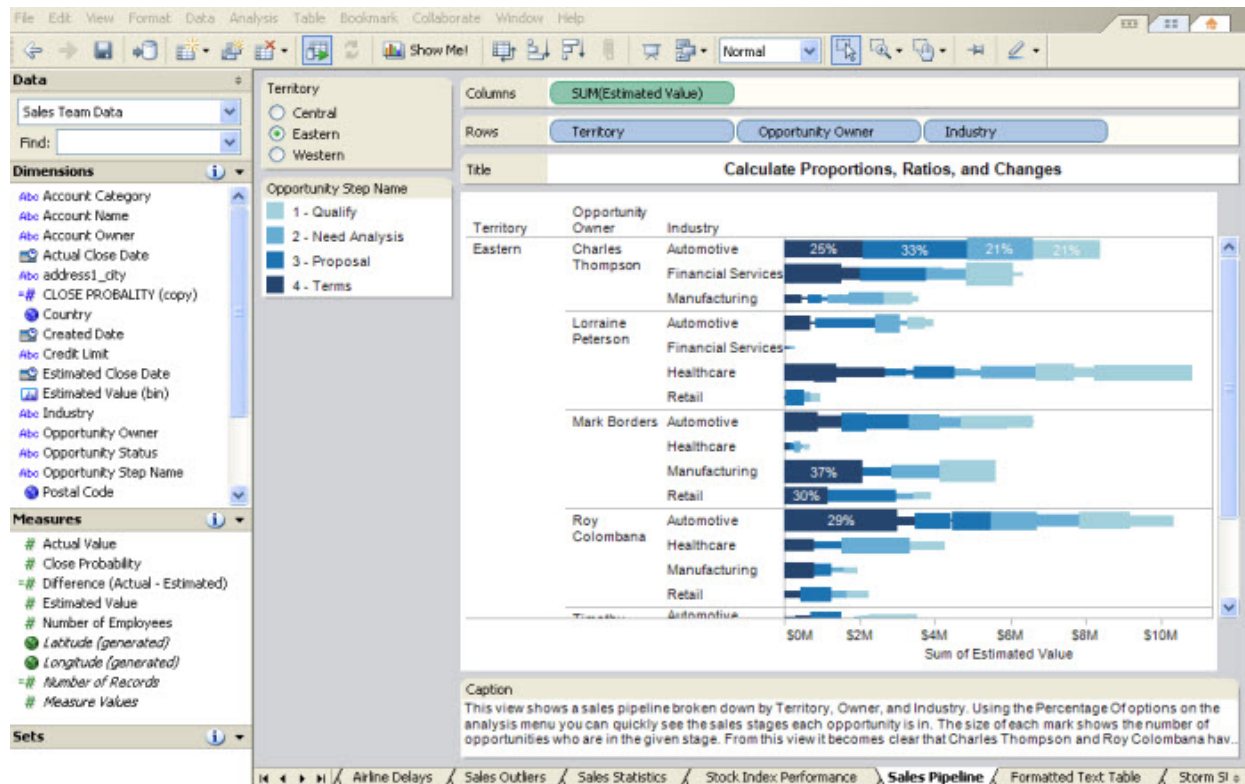
As users see the data, quick filters enable them to readily filter the data via checkboxes and sliders; for example, there is a quick filter for Territory in the preceding figure.

In querying the data, users can change aggregations for measures, bin dimensions, or create new groups. Individual worksheets can then be presented into a dashboard. Using Tableau Server, dashboards and workbooks created in the desktop editions can be shared and accessed via a browser.

Pricing and Packaging

Tableau Software comes in three editions:

- Desktop Personal Edition for $999 that can access data in Excel, Microsoft Access or text files.

- Desktop Professional Edition for $1,800 that can access data in personal and enterprise databases.

- Tableau Server that allows Professional Edition users to publish workbooks to a server, so consumers can access and interact with data via a browser.

Tableau Software Case Study: Barnes-Jewish Hospital

Background

Barnes-Jewish Hospital (BJH) (www.barnesjewish.org) at Washington University is the largest hospital in Missouri. It serves over 50,000 in-patients a year and more than 80,000 emergency room visits. It has been consistently ranked by U.S. News & World Report on the honor roll of best hospitals in the country. Like many hospitals, ensuring the appropriate staffing levels when demand varies is an ongoing challenge.

Business Challenges and Requirements

In 2009, Barnes-Jewish Hospital was implementing a new time and attendance system. With the new system, the Patient Care Services had an opportunity and determination to stop labor budget overruns that had become the norm. The goal of the project was to optimize the staffing levels and reduce the variance in both overstaffing certain departments and understaffing others.

Dr. Linh Dye is a Project Manager within the special projects group, a group within IT that delivers targeted solutions. The return on investment for projects delivered from this group has to be both large and fast. With the implementation of the new time and attendance system looming, Dr. Dye's team knew that to improve the staffing levels, they would need to change processes and provide greater transparency for everyone involved. The solution had to be easy enough for potentially 9,000 employees to use. They had only 70 days to find a solution.

Ease of Use, the Interface, and Tableau

Barnes-Jewish Hospital had other BI tools in place at the time, but they were used primarily within enterprise applications in which IT develops reports.

Ease of use was the number-one criteria in evaluating a product. "Our business partners know their data better than we do. They use the data. I knew if the product was easy to use, it would free my team's time to focus on the more technical challenges versus creating reports," explains Dye. Dye was looking for a solution that her team of 3 could use to support potentially 9,000 people. The second key factor in selecting Tableau was the ability to visualize the data. "It's like painting the data. It's so vivid and beautiful. This generates interest."

Dye and her team downloaded the trial version of Tableau Software. The online training was easy - another factor that influenced their selection. "We got business users to try Tableau, using their own spreadsheets to create reports and dashboards." The tool is so easy to use that training for the 3,000 users is not required. It's only the power users who need the online training. While users may not need formal training, Dye advises that you still need a formal process to identify which reports are important and should be centrally shared. The special projects team and Tableau power users continue to meet on a weekly basis to review reports and prioritize.

Tableau allows users to access data in the hospital's many databases including SQL Server, DB2, Oracle, Microsoft Access, and spreadsheets. The daily labor productivity data lets people see details down to individual time card punches, lunch breaks, and premium paid usage such as cost of overtime. In the past, people may have run a standard report and exported data to a spreadsheet to analyze. Dye says that because the users, rather than IT, are now developing the reports, there is less exporting to spreadsheets to sort, filter, or chart the data. The business users can design the reports and dashboards the way they need the information, so there is less exporting.

The application is robust enough for BJH to analyze two years of staffing data, including scheduled hours, actual hours, and budget hours. Establishing baseline staffing levels has allowed the hospital to identify areas for improvement. These metrics can also be compared to other hospitals staffing levels.

The solution has saved the hospital millions of dollars, and they have not gone over budget on staffing since it was implemented. Dye continues on the strategic vision for BI to reach all employees at the hospital. Tableau will soon be embedded in a new touch-screen application that will be accessible at all the nursing stations. Nurses will be able to see a full task list with information from many data sources and applications. "For three years, we have dreamed to transform nursing workflow and the workforce with information technology." Tableau Software is helping to bring that vision to a reality.

About the Author

Cindi Howson is the founder of BIScorecard, a resource for in-depth BI product reviews, based on exclusive hands-on testing. She has been advising clients on BI tool strategies and selections for 15 years and is the author of *Successful Business Intelligence: Secrets to Making BI a Killer App.* Prior to founding BIScorecard, Howson was a manager at Deloitte & Touche and a BI standards leader for a Fortune 500 company. She is a TDWI (The Data Warehousing Institute) faculty member. She has an MBA from Rice University.

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