



Business Analytics and Data Quality, Big Data, Strategy and Visualization

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From the Gartner Files: 2012
BI Summit Hot Topics: Data
Quality, Big Data, Strategy and
Visualization

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About IBM Business Analytics

Introduction

Consider these statistics:

- By 2013, 33% of business intelligence (BI) will be accessed on handheld devices.
- Through 2015, 85% of Fortune 500 organizations will be unable to exploit big data for competitive advantage.
- By 2013, 90% of the data integration and data quality tools that vendors will offer will be low-priced, entry-level solutions.

Gartner analysts developed these predictions after a year of recording observations from clients at events, in workshops, in roundtables and in one-on-one sessions. Along with making these predictions, they identified data quality, big data, BI strategy and visualization as not only the hot topics but also the major challenges for organizations in the coming year.

In addition, they noted that there are ways to avert the predictions for 2015 and to take advantage of those for a year from now. They note that mobile BI should address more than convenience. Organizations should not buy into the hype of big data

challenges. To implement truly strategic BI successfully, organizations need a real BI strategy. Visualization technology is key, as is promoting partnerships between the business and IT.

Gartner's recommendations

Gartner posits that BI programs move more slowly through an organization than many other technologies because of internal company politics. An open and two-way line of communication is necessary between the business and IT for BI to have any impact, and business and IT should focus their combined efforts on a data quality program that uses technologies that have been developed to analyze new information types. More specifically, they make these recommendations:

- Data quality is essential to the success of BI, so if your organization does not currently have a data quality program, you should implement one as soon as possible.
- Mobile BI creativity is important, so your company should consider developing

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ways to benefit from mobile BI that go beyond providing convenient access away from the office.

- Before changing strategies or making massive investments in big data technology based on big data hype, determine whether you have a big data challenge.
- Consider how you are using BI and if you are struggling with it. If you are, develop a strategy that focuses on expected outcomes.
- BI should be more than reporting. To enjoy the full benefits of BI, you need interactive visualization.

IBM believes these recommendations have merit. To this end, IBM offers:

- Business analytics software that helps enterprises implement data quality
- Mobile BI apps that provide more than access on the go
- Solutions that help organizations keep an eye on big data
- Services that help organizations develop a viable BI strategy
- Applications for interactive visualization

Data quality

Data quality has a profound effect on BI and business analytics because your intelligence and analysis is only as good as the data you are using and analyzing. Many problems with BI programs can be traced back to data quality issues. Flawed information can also introduce risks that prevent you from achieving your BI objectives. Data quality management and control helps organizations like yours identify, prioritize and remediate any data imperfections before they adversely affect your business intelligence.

By analyzing, cleansing, monitoring and managing data, you can turn data into trusted information; this enables better business decisions

and improves business process execution within your organization. As part of its Smarter Analytics portfolio, IBM offers [data quality and information integration](#) solutions that standardize source data fields; validate, certify, and enrich common data elements; and match records from different data sources, or even within data sources. These solutions help you remove duplicate data, identify and link common entities and create a single record of information from the best information from multiple sources for each unique entity. The result is an accurate view of information that spans multiple source systems.

In addition, [IBM® SPSS® Statistics Professional](#) software includes data quality capabilities that help you prepare analytics and statistics data, determine its validity and identify missing values. Data preparation capabilities identify suspicious or invalid cases, variables and data values, and they provide you with a means for viewing patterns of missing data and summarizing variable distributions. Optimal Binning searches for the best possible outcome for algorithms designed for nominal attributes while the Automated Data Preparation tool detects and corrects quality errors and imputes missing values in one efficient step. In addition, recommendations and visualizations help you determine which data to use.

In the areas of data validity and missing values, SPSS Statistics Professional examines data from several different angles with one of six diagnostic reports, then estimates summary statistics and imputes missing values. It can diagnose serious missing data imputation problems, replace missing values with estimates, display a snapshot for each type of missing value and any extreme values for each case. It removes hidden bias by replacing missing values with estimates to include all groups—even those with poor responsiveness.

Mobile BI

Currently, most mobile BI software is being used to access information away from the office by employees and executives who travel or visit clients at their sites. It is viewed as a convenience because users can show other people reports and dashboards on demand instead of promising to send a report by email after someone in the office runs it. However, as mobile devices continue to overtake traditional

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desktop computers and workstations as the main way users interact with information, companies need for their mobile BI solutions to provide more than simply access. They need to provide action, in the form of interactive reports and dashboards that can even be used when a user is disconnected from the Internet. They also need to provide data as it is happening in the form of operational BI.

IBM offers [mobile business intelligence apps](#) that enable your mobile workforce to interact with reports, analysis, dashboards and more on smart phones, tablets and notebook computers. With these apps, users can experience insight wherever they go and interact with information in a rich and visual experience. IT can confidently and easily deploy relevant and reusable business intelligence to any device. And, the IBM business intelligence platform can help IT support these mobile apps and provide the same type of experience to everyone.

For example, [IBM Cognos@ Mobile](#) extends interactive Cognos Business Intelligence to a broad range of mobile devices, including the Apple iPhone and iPad, Android phones, and BlackBerry phones and Playbook. With a rich client, users can view and fully interact with Cognos reports, dashboards, metrics, operational BI, analysis and other information in a security-rich environment. Users receive timely, informative and interactive information to support their decision-making, regardless of location.

In addition, [IBM Cognos Active Report](#) provides an interactive analytics experience in a self-contained Cognos Business Intelligence application for browsing and exploring data offline. Report authors can build reports targeted to user needs, keeping the user experience simple and engaging. Mobile workers can take their data with them to discover opportunities and analyze trends even when they are nowhere near a network.

Big data (and almost big data)

The hype about big data can appear to be almost as large as big data itself. In the marketplace and on the web, companies hear and see alarming figures about how big data is threatening the systems and applications they use to analyze data, report on data, identify trends and make predictions. Big data comes from importance sources such as social media, which can be a boon to companies, especially marketers and retailers.

For those companies that need to deal with big data today, IBM offers big analytics, which can surface data directly from its source, query specialized systems, visualize masses of data, navigate context and relation, interpret meaning linguistically, analyze streamed data, uncover hidden patterns and more. Also, [IBM Cognos Consumer Insight](#) includes text analytics, which help you analyze and gain

insights from big data generated by social networks and the web. In short, big analytics solutions from IBM Business Analytics assemble the right mix of information from sources such as transactional, application, machine and social data and enterprise content so that you can derive true value from big data.

But, in this stage in the life of big data, the majority of companies need not immediately invest in software for implementing huge Hadoop clusters or writing applications for a MapReduce framework. This is not to say that companies should not keep an eye on big data. However, of greater concern is the performance of applications and systems that query terabytes of warehoused data, which are great quantities although not currently at the level of big data. For those situations, the [IBM Cognos platform](#) provides in-memory acceleration features.

A query layer with optimized query generation combined with multiple levels of in-memory caching provides enhanced performance for complex heterogeneous data. For data volumes in the terabytes, the query layer provides in-memory analytics acceleration for dimensional analysis. A feature called dynamic cubes uses the power and scale of the relational database and a combination of caching, optimized aggregates and optimized SQL for faster queries.

BI strategy

Many companies have acquired a number of business intelligence and analytics tools but have been disappointed in them. A main reason for that disappointment is because they invested in these tools without a clear definition of what they were supposed to do for the company or even who was going to use them. Although some companies have begun to create BI strategies, there is still work to be done. Creating a partnership between the business and IT and combining their knowledge and expertise is the first step, because without buy-in and agreement from both, a sustainable BI strategy will be difficult.

After IT and the business have agreed to work together, IBM provides services that can help them collaborate on realizing your company's BI objectives faster with less risk and at a lower cost with an effective BI strategy. Specialists from IBM Business Analytics and Optimization services can help you improve how you use BI tools for decision-making, productivity and efficiency and also develop an environment where relevant, accurate and timely information is provided to monitor and improve performance.

[IBM Cognos Guardian](#) services are also available to help your company develop or optimize your BI strategy. These services are designed to provide the right IBM Business Analytics expertise at the right time with guidance, advice, reviews, assessments, assistance

and training. IBM specialists pass their experience and proven practices to your team, helping you become increasingly self-sufficient while placing you on a guided path to long-term, sustainable success.

Thorough reviews during current implementations or comprehensive health checks for deployed solutions are available to help improve performance, design, security, maintenance, and administration of your Cognos implementation. Guidance and design expertise help ensure an optimized BI strategy for your business needs before the build phase or your implementation.

Interactive visualization

Visualization is now considered paramount to understanding business information and making the right decisions to drive your business forward. Simple data visualization in the form of dashboards has been a hallmark of business intelligence solutions for a few years now and they are invaluable tools for helping users quickly view data they need to do their jobs, such as regional sales figures, call center volume, market trends and revenue projections. But because dashboards are not designed for in-depth analysis, a need for another type of visualization called analytics visualization, or advanced data visualization, has emerged.

Analytics visualization goes farther than dashboards or even interactive dashboards. Analytics visualization provides dynamic data content, the ability to query data by manipulating visual portions of graphs or charts and the links needed to analyze multiple dimensions or attributes, animation, personalization and alerts.

IBM Cognos Enterprise provides both types of visualization. For simple data visualization, Cognos Enterprise provides IBM Cognos Workspace and Workspace Advanced, where business users can view charts, graphs and other graphical representations of the data they need to accomplish their tasks. Cognos Workspace and Workspace Advanced are also interactive, enabling users to drill down to more detailed information from their dashboards.

For analytics visualization, Cognos Enterprise includes IBM Cognos Insight. With Cognos Insight, users can independently (without the help of IT) create and share compelling visualizations that clearly communicate analytics results. They can control the look and feel of analysis so that insights are presented in the most meaningful and understandable way. A rich set of chart types and predefined design themes are available to add style and visual appeal.

Cognos Insight also provides the interactivity needed to derive the most benefits from analytics visualization; users can filter results based on the association between related groups of information and apply simple search to find a particular member in a set.

Conclusion

What is the current status of your company's BI program? How satisfied are you with the BI tools you are currently using? If you believe that your company's BI program could move faster and provide more value or you believe that you are not getting the most out of your BI technology, consider Gartner's recommendations for data quality, mobile BI, big data, BI strategy and visualization. These recommendations can help you improve your situation and derive higher satisfaction from your investments. IBM provides business intelligence, performance management and business analytics software, solutions and services to help you address Gartner's recommendations. The result can be a BI program that puts you ahead of the BI and data curve, now and in the future.

Source: IBM

2012 BI Summit Hot Topics: Data Quality, Big Data, Strategy and Visualization

Unlike many technological developments, which make dramatic leaps, business intelligence programs often move slowly, impeded by internal politics. BI projects can only work if business and IT talk to each other, and one of the first things they need to agree on is initiating a data quality program.

Key Challenges

- Investments in mobile business intelligence (BI) should address more than plain convenience.
- Most organizations are confused by big data hype.
- If BI is truly strategic, a real BI strategy is the key to success.
- Understanding visualization technology is essential for addressing user needs.
- Instead of “business versus IT,” adopt a partnering model.

Recommendations

- If you still don't have a data quality program, start one immediately.
- Run a series of brainstorming sessions and workshops to identify potential mobile BI use cases. Start with those users who don't have a desk or rarely see an office.
- Keep an eye on big data, but don't drop everything because of it. Chances are, you don't have a big data challenge.
- Review your BI business case. If you struggle with it, you likely don't have a BI strategy. Better think about the expected outcomes before investing in technology on good faith.
- Stop thinking in “reporting” paradigms and broaden your BI portfolio to include interactive visualization capabilities.

- It is simple: BI can only work if business and IT talk to each other. Don't expect the business user to come with a detailed list of requirements, because it is always the result of long conversations.

Strategic Planning Assumption(s)

By 2013, 33% of BI functionality will be consumed via handheld devices.

Through 2015, 85% of Fortune 500 organizations will be unable to exploit big data for competitive advantage.

By 2013, 90% of data integration and data quality tools vendors will offer low-priced entry-level solutions.

Introduction

During the 2012 conference series of BI Summits, Gartner analysts revisited some of the observations from the events, collected during countless client interactions, such as question and answer sessions after presentations, one-on-one sessions, roundtables or workshops. Often, when compared with previous years, a shift in behavior can be detected when:

- Organizations become more mature
- Younger generations enter the workforce
- New technologies and ideas emerge
- Old habits die and people learn new skills

Some of the observations listed in this document should have been addressed and resolved years ago. However, organizations have not had the skills, stamina, power or priorities to engage. Although technological developments make dramatic jumps, BI programs in most organizations move rather slowly and are often dragged down by internal politics.

Analysis

There are many topics discussed during the BI Summit conference season. Often, things don't change year over year and other times there is a clear shift in organizations' maturity across the board. Interestingly, despite all the various hype topics around BI, organizations keep concentrating on the rather mundane challenges that are often nontechnical in nature.

This is a selection of some of the most important hot topics and interesting observations from the 2012 BI Summit conference series in London, Los Angeles and Sydney.

Data Quality Reloaded

Although it's a problem as old as IT, data quality only now seems to be getting more attention than in previous years. Maybe it's the mounting pressure from the countless compliance regulations, such as Basel II, the Sarbanes-Oxley Act, or Solvency; maybe it's a side effect of more information governance programs, certainly seen in the more data-heavy industries like banking and insurance; and maybe it's because business leaders have finally understood that lack of data quality is their own problem and not IT's problem, and data stewardship has to be one of their core competencies. Whatever the reason, it's a good sign that organizations are addressing the issues at hand. After all — and Gartner has been maintaining the position for years — bad data quality is dangerous for companies' BI programs. The root of nearly all BI problems is found in the data, and even more so pretty much every other investment in application technology — whether ERP, supply chain management, or CRM — is jeopardized if the data is wrong.

BI Summit attendees at data quality sessions and roundtables described various innovative ideas to increase data quality and user confidence. For example:

- Requiring the certification of data sources from which reports or dashboards can be generated
- Storing and analyzing users' record updates to identify potential user errors
- Using data profiling techniques for publishing quality rankings
- Assessing which user or data steward has created or maintained the best data quality metrics

Other attendees have bluntly described no-win situations in their respective organizations, interestingly often in the government sector. The theme of "information is power" — which regularly leads to lack of information sharing, lack of trust, multiple definitions of the same data elements, uncontrolled backdoor data flows — leaves many IT executives frustrated. This situation calls for two options: the answer of "giving up" and resorting to an indifferent attitude as in "we just store your data, whether it's good or bad" is tempting. However, the better but more painful alternative is to "raise hell" and point out the various risks until someone in a position high enough in the executive ranks takes notice. A quick vote among conference attendees showed that most would go with the latter option.

Lacking Mobile BI Creativity

Unsurprisingly, mobile BI is discussed a lot. There is hardly any vendor booth or product demonstration without the showcase of a tablet. Mobile dashboards — with gesture navigation, high resolution and rich interactivity — are making excellent "demoware." Also, not only are tablet devices selling quickly, but customers are very interested in mobile BI technology. However, based on the countless conversations with clients, there is one caveat. Potential users are particularly interested in what other users are doing with mobile BI, which

indicates a fundamental lack of real "use case thinking" and creativity. There are a few remarkable case studies where mobile BI is making a big difference for the particular user. However, the vast majority of customers seem to stop at the traditional BI user in the rather common roles in executive management, finance, sales or marketing, all of which do little more than use the same reports as they used before on their laptops, with the only difference being rendered on the new form factor. What a missed opportunity this is. Instead of staying within the traditional scope of BI, organizations should try finding new use cases for new user types, in particular those that don't work from an office but are working on location (for example, hospital stations, construction sites, assembly lines, oil rigs, or airport concourses).

Organizations must break out of their historical BI thinking, where some kind of report is delivered to an army of knowledge workers. The promise of BI has always been that virtually everyone could benefit from BI, including functional roles that were rarely on anyone's radar, such as doctors, nurses, truck drivers, construction workers or gate agents. With the advent of smartphones and tablets, we can finally reach those users and help them become more productive in their respective roles. The pervasiveness of the devices is finally enabling the pervasiveness of BI. After all, tomorrow's BI user does not sit at a desk anymore.

Big Data — Much Hype but Little Action

Big data is one of the current hot topics. Large amounts of hype and fear, uncertainty and doubt is generated about the big data theme, almost exclusively by the vendor community that sees an opportunity to sell new hardware, software, solutions and services. Since the common attributes of volume, velocity and variety (coined in 1999) are resonating very well in the market, users must totally commit to big data, right? Not quite.

From the interactions with clients, we learned that big data is not part of most organizations' main concerns. Of course, clients are interested in hearing about the variety of potential use cases (for example, analyzing large amounts of sensor data in smart grids and finding patterns in large amounts of meteorological data for deploying wind farms). Similarly, the increasing number of "un-schematized" (or "unstructured") data sources from websites — such as blogs or social networks — is noted as an area for potential big data challenges. Still, most organizations largely expect a service provider to handle many of the issues associated with big data. In fact, the number of companies that will be required to invest in massive Hadoop clusters and know-how to write applications for a MapReduce framework, is relatively small. As such, it is not so surprising that the result of the show of hands at the BI Summit keynote with almost 1,000 attendees, who were asked whether they will be launching a big data project, indicated that essentially nobody is planning to invest in that kind of initiative. That is not to say that big data is a nonstarter. However, it is apparently not a top priority.

BI Strategy — Are we There yet?

When asking BI Summit attendees a few years ago about a "BI strategy" for their company's strategic BI initiatives, essentially nobody had a strategy. Tools, yes, and plenty, but really no plan about what value those tools were supposed to deliver or who was using them for what purpose. It's all a bit different now, as indicated by the many clients attending the BI Summit either talking about their efforts to create a proper strategy, often initiated by newly formed BI competency center teams, or having Gartner review their BI strategy documents altogether. Now, this is not to say that all strategy documents have the necessary input from the user community (also known as "the business") and are still rather technically focused. But, more frequently than before,

a group of business analysts that work between IT and the various functional areas — such as finance, sales or marketing — are taking the lead in formulating the BI strategy. This is good news.

Clearly, organizations that are able to drop the politics and collaborate across departmental boundaries are in a much better position to generate impact and real value from their often large BI investments. The most quoted challenge in this process seems to be proper business case prioritization, both from a functional requirements perspective and as a decision between long-term infrastructure development and the need to support the business with pragmatic solutions. Still, the line of business (LOB) demand for “higher flexibility” should not be understood by IT as giving up total control over the BI infrastructure, allowing any user to proceed to so-called “Excel hell,” without the need to justify the requirement.

Seeing Clearly Through Visualization Confusion

Interest in data visualization is on a strongly upward curve. This is great news as grids are not good at delivering information effectively — worse, in many cases the row and columns of figures in reports actually obscure the meaning resident in the data. Visualization applies (sighted) users’ innate ability to aid identification and understanding in a much more effective way than tabulated figures ever can. However, from discussions at the BI summits, it’s evident that there is confusion over the “dashboard” term, which is being used (by some vendors) as a catch all for visual BI forms. This can lead to misconceived evaluations and the misapplication of visualization capabilities. To be specific: dashboards are for monitoring or alerting on a defined set of measures. They are key performance indicators that are subject-, process- or role-specific, ideally updated frequently and rendered using visual metaphors like dials and gauges.

As such, dashboards are unsuited to doing analysis — a dashboard should be like a physical dashboard in a car: simple, easy to read and clear.

However, there is really no such thing as an analytic dashboard. For that need BI leaders should look to the other graphical form of BI output — analytic visualizations. These support the discovery and exploration of datasets in a much more free-form manner, using a series of linked, often rich or specialist chart types on batches to data to aid in the discovery of patterns, segments, unobvious relationships and outliers. Don’t confuse the two visual BI forms — you’ll likely need both in your BI armory to meet requirements: personalized dashboards for the bulk of users to quickly track their performance against defined goals (increasingly on mobile devices); as well as analytic visual capabilities for a smaller group of business analysts, category managers or similar, to get a broader view of what the data means.

Is IT Part or Partner of the Business?

For years, we have been discussing the shift of purchasing decisions of analytics, from the IT organization to within the business. In 2012, we consciously modified the conference agenda and marketing materials to attract more of the business analytics buyers. It worked. During the opening keynote, we asked the audience to indicate their alignment by clapping. Although those reporting to IT are still the dominate audience, those reporting to an LOB are not far behind. The most common role in attendance was that of the business analyst, working in a specific domain, such as marketing, supply chain or customer support. They came from government, banking, insurance, high-tech, healthcare and other vertical markets. Having analytics and IT analytics teams at the same conference and hearing each other’s needs and capabilities, was beneficial to both. Too often, these organizations work in isolation. Business users can justify what seems to be wasteful spending, set unrealistic schedules

or don’t seem to care enough about data quality, while IT organizations demand conformance to process, set unrealistic schedules and strive for data perfection.

We found that the pace layering concept was a good way to help everyone understand how to resolve the conflicts. Some analytic applications are foundational to the operation of the business, and demand strict conformance to compliance, data quality and the time it takes to do things right. Here, the IT professionals should have their say. Some analysis is used for competitive differentiation and requires a balance between process and agility. The use of software as a service solutions and self-service data exploration tools are appropriate here, and the business buyer may know best what is needed. However, sustainable differentiation typically requires access to data across multiple departments — the domain of the IT organization. When business innovation is involved, the analytic applications are often built to address short-lived business models using analytic technology that is not yet ready to be put into production. Here, the business must have control, but the wise ones maintain strong ties to their IT organizations. We encourage our clients in the IT organization to embrace the change in the analytics market. Do not stop the business from addressing problems that would cause an IT organization to experience time or budget constraints. On the other hand, we see that the most innovative and competitive organizations are those where the IT and business organizations partner.

*Gartner Research Note G00238726, Andreas Bitterer
Bill Gassman James Richardson, 26 September 2012*



About IBM Business Analytics

IBM Business Analytics software delivers actionable insights decision-makers need to achieve better business performance. IBM offers a comprehensive, unified portfolio of business intelligence, predictive and advanced analytics, financial performance and strategy management, governance, risk and compliance and analytic applications.

With IBM software, companies can spot trends, patterns and anomalies, compare “what if” scenarios, predict potential threats and opportunities, identify and manage key business risks and plan, budget and forecast resources. With these deep analytic capabilities our customers around the world can better understand, anticipate and shape business outcomes.



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