



CHECKLIST REPORT

2016

Delivering Business Value Faster with Visual Analytics

By David Stodder and Fern Halper

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FOREWORD

Business decision making is undergoing a data-infused renaissance. Organizations are tired of the limitations of spreadsheets and dealing with long IT business intelligence (BI) development cycles just to gain access to the data they need now. Fortunately, with the advent of visual analytics and discovery tools (many offered in the cloud), the journey to data insight is getting simpler and faster. Rather than trying to divine meaning from a group of predefined reports or simple static dashboards, visual analytics helps users gain insights from data more quickly using intuitive data visualization. Increasingly, visual analytics tools provide easy-to-use data preparation features for better data access. They support collaboration, mashups, and storytelling.

TDWI Research sees growing interest in applying more modern, up-to-date tools for working with data. In our recent report on data visualization and discovery, 33 percent of survey respondents said that they are implementing data visualization for discovery and analysis now and 45 percent are planning to implement it.¹ Business users are driving this momentum; they want tools that enable them to be more productive, agile, and effective in working with data and applying data-driven insights to their daily decisions.

Many are calling this the “age of democratization” in analytics, where more than just the few specialists (such as data scientists) are able to discover data insights. Business leadership, business-side analysts, and nontechnical personnel across an organization can do so as well. Increasing demand for faster, higher-volume data analysis—both to gain value and for competitive advantage—is feeding this democratization of data and analytics across enterprises. The economics of cloud computing are also a factor, enabling organizations to spin up systems faster and respond to immediate business demand for data and analytics sooner.

How does the organization empower business users to make use of these technologies? This Checklist Report focuses on helping organizations understand and employ the necessary best practices.

STEP ONE

CULTIVATE DATA DISCOVERY SKILLS WITH VISUAL ANALYTICS TOOLS

What BI reports and spreadsheets do not give users is the ability to discover and see patterns and trends in data from varied sources, including those that are outside data warehouses. Discovery goes beyond basic, static descriptive analytics that report on metrics, such as total or average sales per quarter presented in a dashboard. Data discovery enables users to explore data to answer existing questions and pose new ones. Users can experiment with new views through data visualization to look for unexpected correlations, trends, and patterns.

Leading visual analytics and discovery tools provide many features previously available only from more complicated tools that required IT specialists to implement. Modern self-service features enable business users to use graphical tools to drill down into deeper data layers and slice and dice data to look at portions that merit examination. Visualization capabilities make it easier to filter data for multilevel analysis. Some tools even provide suggestions for the best visualization for a given data set. These are powerful capabilities designed to help businesses get to—and act on—insight faster.

However, ease of use does not mean that training is unnecessary. The most important training is often not in how to use tool features and functions but in building skills to work with data and apply it to business decisions. We see this in our research—three areas where users need the most help are in understanding the data, understanding the business, and improving critical thinking abilities. The first two are base minimum for using visual analytics and data discovery tools. However, skills such as critical thinking with data, understanding basic statistics fundamentals, and data visualization best practices need to be cultivated.

To build analytics skills, some organizations provide in-house training with third parties. Others send their employees to user or third-party education conferences. Organizations can also help users by facilitating mentoring sessions or office hours where analytics experts are available to answer business users' questions. Some organizations offer lunch-and-learn opportunities. Others set up internal analytics enablement centers to build skills and grow the analytics culture. This can include “data labs” or “data clubs” with members from multiple areas and varied backgrounds.

STEP TWO

NURTURE DATA STORYTELLING SKILLS

If business users are empowered to perform analysis, they should also know how to tell data stories. What good is it to do the analysis if no one pays attention to the results? Data storytelling goes beyond simply presenting numbers and facts in reports. It involves narrating the data exploration and analysis process so that the significance and relevance of the findings are clearly understood.

Of course, there are important principles in data storytelling:

- **Understand your audience.** This means shaping the question and the narrative from the listener/collaborator/reader perspective. For example, executives don't necessarily care about the details of an analysis, though a business analyst might.
- **Build the narrative.** Good storytellers know how to structure the narrative. They don't overwhelm people with information and they remember that the visualization is not the story.
- **Engage with the data.** Good storytellers can bring the story in the data to life. This might include interactive visualizations that can drill down into important details.
- **Get to the point.** Good storytellers know that at the end of the story, the audience must understand the answer to the original question.

Storytelling with data has evolved as the technology has evolved. Vendors that provide visualization software for analytics and data discovery, for instance, are now providing tools as part of the suite that include storyboarding, annotation, collaboration, interaction, and dynamic updating. This means that users might build the story in the tool itself. This can help keep the data and its story together rather than in multiple disconnected computers, thereby eliminating version control problems and fostering collaboration and communication.

Either way, whether in slides or via the software, it is still critical to know how to build the story to engage the audience, leave an impression, and get them to take the action—especially if the person who is doing the analysis is not the decision maker. Developing storytelling skills is an important part of the visual analytics and discovery process.

STEP THREE

USE DATA VISUALIZATION EFFECTIVELY TO MAKE INFORMATION ACTIONABLE

Business decision makers can apply data insights faster when they can readily grasp the significance of the data. Classic BI reports, not to mention spreadsheets, give users only the numbers; they do not provide context nor do they help users discover critical relationships between pieces of data that might indicate important trends and patterns. Data visualization helps solve this problem.

Data visualization is about presenting data through graphical representations such as charts, scatterplots, geospatial maps, animated effects, and more. In fact, leading visual analytics and discovery tools come with libraries of visualization types to fit different requirements that enable users to easily apply them, often through familiar drag-and-drop interfaces. Data comes alive when experienced through visualizations. The tools allow users to freely examine certain areas more closely, filter out less relevant information, change the look, or click to drill down deeper into the data.

TDWI research finds that the following best practices are helpful in getting the most out of data visualization:

- **Be clear on the purpose.** The mission of data visualization should not be to manufacture “eye candy.” The intention should be to make it easier to understand what's being conveyed so that users can make better decisions and take smarter actions. Knowing the audience and what they will do with the information is a helpful starting point in determining the most appropriate type of visualization for the data.
- **Use visualization to enrich information.** What's lacking in most standard reports is context and links to other relevant information. Sales data, for example, can be made more meaningful if other kinds of information—such as social media analysis, contact center interaction analysis, or marketing campaign performance—are available for business users to include in their visualizations. Use the power of visualization to create a more complete picture.
- **For mobile users, consider the form factor.** Visualization can be especially helpful for mobile users who are on the go and need actionable information. However, these users will need visualizations that are tailored to smaller display screens and allow for easy navigation from one related visual object to another because they cannot all be presented at once. Avoid complexity.

 **STEP FOUR**

PROVIDE SUPPORT FOR DATA BLENDING AND DATA PREPARATION

A key to successful visual analytics is being able to blend data from different sources to gain a more complete picture of the business. Traditionally, blending (or integrating) data has been the responsibility of IT, but now some visual analytics and data preparation tools enable users to do more on their own. To enable more blending to be done without IT, tools should provide facilities for sourcing, cleansing, and data preparation.

This includes:

- **Tools for self-service data blending.** Data for analysis may come from multiple sources, both internal and external. These may include spreadsheets, databases, data warehouses, or even big data stores such as Hadoop clusters. Newer data preparation tools enable business users to combine data sources. This capability goes under the name of *data blending*, *data munging*, or even *data wrangling*. This is an important function for analysis because traditionally data access and preparation tasks have been the biggest time sink in any analysis. Self-service tools provide drag-and-drop or point-and-click interfaces that allow users to easily select data sources for analysis and combine multiple data sources together. This gets the data analysis started faster and enables insight more quickly.
- **Tools for managing data quality.** Although IT may clean data in some company data sources, it is still important for users to make sure the data meets their standards. If users are exploring alternate data sources, they will need to manage the quality of the data themselves. This might include deduplication, name and address cleansing, and dealing with missing data or outliers. This might also include tools for ensuring data accuracy, such as profiling tools to look for data inconsistencies across sources.
- **Flexible tools to support new analysis.** An important aspect of analysis is the ability to manipulate the data for different requirements. For instance, a business user performing a retention analysis might want to know how long someone has been a customer or each customer's average spend. Many tools support these kinds of derived or calculated variables in addition to supporting data transformation (e.g., from linear to log) or normalization/standardization.

 **STEP FIVE**

WEIGH THE CLOUD FOR BUSINESS ANALYTICS AGILITY

To be agile with analytics, businesses need an alternative to the long deployment schedule of on-premises systems. TDWI research finds growing interest and adoption of public and private clouds for analytics. Organizations favor the cloud's scale-on-demand capability and that it can be easier to get up and running. Increasingly, cloud solutions are more feature rich in addition to their flexibility. Ironically, organizations that have been hesitant to use the cloud for analytics, typically citing security as a concern, have been running many of their core CRM, ERP, marketing, and HR applications in the cloud for years.

Often, a good starting point for cloud analytics—especially for business users who want to get started fast—is the software-as-a-service (SaaS) model. With SaaS, business applications are hosted by the provider and delivered as a service. The benefits of SaaS for visual analytics include scalability for multiple users, ongoing software updates, and maintenance. Many vendors provide their visual analytics platforms as a SaaS model.

End users can also extend the value of their investment in SaaS with platform-as-a-service (PaaS) to build custom applications. In PaaS, the provider delivers a solution stack—an integrated set of software—that provides the organization's developers with tools to build an application.

Of course, before entering into an agreement with a cloud provider, it is important to do your homework. First, be sure you understand the service itself. Does it provide the level of visualizations needed? Is it easy to use? What data sources does it support? How much does it cost? Most vendors provide a free trial period for a limited set of data, so take advantage of it. Second, look for hidden costs. For instance, find out about data transport and storage costs. Ask about any contract termination provisions in terms of data. Third, since security is always top of mind, ask about it. This includes how the provider maintains data integrity, data privacy, and data security. What certifications does the provider have? Finally, ask about any service-level agreements, including uptime commitments, maintenance plans, visibility into operations, and any shared governance (see Number Seven).²

²The Cloud Security Alliance is a good resource for additional information on controls and security, online at www.cloudsecurityalliance.org

STEP SIX

STRENGTHEN USER EMPOWERMENT THROUGH BETTER BUSINESS AND IT COLLABORATION

Good collaboration between business and IT is essential to the successful democratization of visual analytics. Yet often a business function, such as marketing, might decide that it needs to do its own analysis; perhaps the staff doesn't want to wait for IT or they feel IT can't help them. However, just as the proliferation of spreadsheets led to company-level data reconciliation nightmares, the same outcome is possible with visual analytics solutions if there is no collaboration between IT and the business—especially as more business users are involved. Business users often hit a wall created by poor data quality and integration, problems with scalability, or insufficient funding when collaboration isn't present. This hurts users throughout the business.

Successful IT groups realize that their role is to enable the business to succeed. IT provides the data infrastructure that supports visual analytics activities; they are responsible when things go wrong with the infrastructure, but that cannot turn into a reason not to satisfy the business need for data and analysis. As the business side of a company provides the kinds of questions they are looking to answer, IT must determine how to provision the data and support visual analytics.

TDWI research indicates that building the data-driven culture necessary for success in analytics is easier when there is collaboration. IT and the business can work together to implement best practices that build this culture and empower users. The most successful deployments occur when business and IT leadership come together to make visual analytics and data discovery happen. This includes evangelizing the value of analytics and illustrating success via company newsletters, spotlights, or town hall meetings. Some organizations create a center of excellence that advances analytics excellence and provides resources to employees.

STEP SEVEN

ESTABLISH BALANCED DATA GOVERNANCE TO SUPPORT DISCOVERY

Data governance is more than just protecting sensitive data. Rather, it includes all the actions and procedures that ensure decision makers have the best and most appropriate data for their roles and requirements. Business users who just want access to data so that they can move forward with their analytics are never going to be excited about governance, which implies putting restraints on what they want to do. Yet governance is essential to the organization as a whole, particularly as BI and visual analytics discovery spread to mobile users and those in diverse locations. It is one of the pillars of a strong analytics culture that values data assets.

The initial focus of data governance usually is—and should be—on protecting the data in accordance with regulations and privacy policies. This is a fairly straightforward requirement that needs to be met to avoid legal difficulties and public embarrassment. Although data governance differs from data security, the two areas intersect so it is important that organizations ensure that respective rules, policies, and processes work together.

However, in many ways it is equally important that data governance policies take steps to improve and protect data quality, as well as ensure that data models and data-rich content such as dashboards and visualizations are up to the organization's standards. The last thing organizations want is more data chaos. This will defeat the purpose of having better technologies; users will lose confidence and go back to their spreadsheets. Therefore it is vital that data governance include a "stewardship" responsibility for overseeing and advising users about data and content quality and how to improve and protect it.

TDWI Research advises as a best practice forming a governance committee composed of leadership stakeholders and data stewards from business and IT. In most organizations, IT is put in charge of data governance and stewardship, which can unfortunately turn governance into just another point of friction between business users and a "too controlling" IT. A governance committee composed of both business and IT can improve communication, which is vital to the development and enforcement of policies, rules, and accountability. In addition, many organizations are appointing chief data officers (CDO) to lead the data governance effort.

Regardless of the approach, data governance is essential as organizations evolve toward treating data as an asset and managing and preserving their own data capital. Together, business and IT can arrive at a balanced governance approach that protects data assets but is not unnecessarily restrictive.

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As part of its Business Analytics solutions, Oracle offers integrated technology products for analytics, data visualization, enterprise performance management, big data, data discovery, advanced analytics, and more. [Oracle BI 12c](#), the foundation of Oracle's analytics offerings, allows people across the organization to leverage a single integrated platform for self-service visual data discovery and quickly find answers to pressing business questions while in the office or on the go.

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ABOUT THE AUTHORS

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ABOUT TDWI RESEARCH

TDWI Research provides research and advice for data professionals worldwide. TDWI Research focuses exclusively on business intelligence, data warehousing, and analytics issues and teams up with industry thought leaders and practitioners to deliver both broad and deep understanding of the business and technical challenges surrounding the deployment and use of business intelligence, data warehousing, and analytics solutions. TDWI Research offers in-depth research reports, commentary, inquiry services, and topical conferences as well as strategic planning services to user and vendor organizations.

ABOUT TDWI CHECKLIST REPORTS

TDWI Checklist Reports provide an overview of success factors for a specific project in business intelligence, data warehousing, or a related data management discipline. Companies may use this overview to get organized before beginning a project or to identify goals and areas of improvement for current projects.