

TECH Practices

By Kristine M. Brands, CMA

Data Visualization and Discovery

Twenty years ago the movie “Disclosure,” based on Michael Crichton’s thriller novel, showed a corporate executive (played by Michael Douglas) investigating a corporate fraud. Since the company blocked him from accessing its computer system’s records, which he needed in order to prove the fraud, Douglas’s character gained access to a virtual reality machine to obtain the incriminating information by displaying it as a hologram. This story’s 1994 vision is the new reality of a data analysis innovation that’s changing the face of data analysis and presentation: Data Visualization (dataviz). This column examines the emerging field of dataviz, how it manages Big Data sets and streamlines preparation and presentation of information for decision makers, and how it helps management accountants leverage information and data to improve data analysis.

What Is Data Visualization?

Dataviz is the presentation of information in graphical or pictorial form, such as dashboards, interactive reports, and interactive presentations. Data collection, analysis, and presentation are rapidly

moving beyond electronic spreadsheets, the analytical tool that revolutionized accounting analysis when VisiCalc was introduced in 1979. Think of summarizing a vast amount of a data theme as a picture from internal and external information sources. Dataviz tools can handle much larger data sets and create linkages and relationships by creating multi-dimensional pictures using underlying information from a company’s knowledge base and external sources like the Internet. Because information is transformed into a visual image that you can see, it’s easier and more efficient to grasp and understand the information’s meaning and relationships rather than trying to decipher information by reading spreadsheets full of numbers.

Previous *Strategic Finance* columns have examined the explosive growth of Big Data as it is driven by the trifecta of volume, velocity, and variety to generate enormous amounts of data and information. The sheer volume of information can overload management accountants and hamper them from being able to organize business information in clear and meaningful reports for the organization’s decision makers. The inability to summarize

information in relevant contexts prevents decision makers from being able to draw critical insights that could be used to add value to an organization’s operations. Dataviz tools get to the heart of large data sets’ inherent business intelligence by collecting and analyzing disparate information and then rendering it in a visual form of patterns and relationships.

The visual display triggers the “Aha!” moment faster, and, because the picture is linked to underlying knowledge, users can interact with the information by exploring linkages. For example, FlightAware’s interactive Live Flight Tracker (<http://flightaware.com/live>) has a database of nearly 400 million flights that can summarize current flights in an interactive display (see Figure 1). Clicking on one of the flight icons allows the user to drill down into the flight-tracking map to see a flight’s status and progress—information that is updated in real time.

From Visualization to Discovery

While spreadsheets contain simple data visualization features such as charts and graphs, there are limitations to using them for dataviz. These include con-

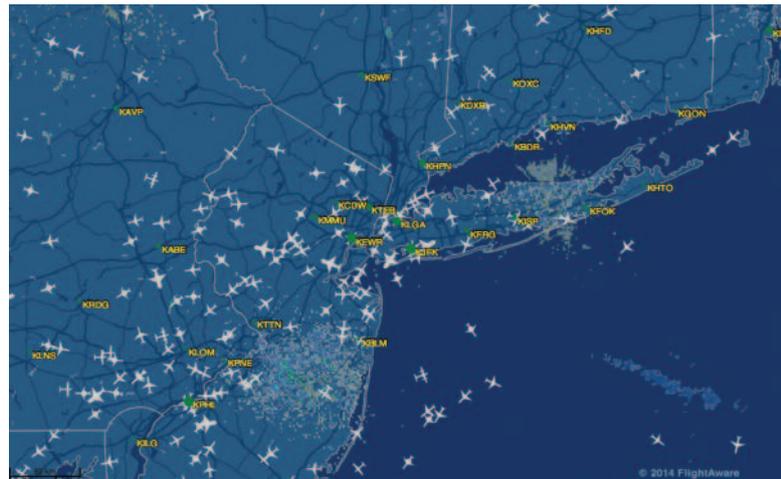


straints on the amount of data that spreadsheets can process (like Big Data), limitations to processing data sources generated outside the organization, and lack of functionality that allows users to interact with the data. Without interactivity, users can't explore the data to make discoveries about the information and to understand the data's story. For example, Jeremy Clopton, senior managing consultant at BKD LLP, plotted on a map the relationship of the proximity of a company's vendors to one employee's home to identify a potential conflict of interest. The target employee's home wasn't near any vendors, but the map showed another employee-vendor conflict 50 miles away from the company's headquarters. The vendor was a casino, and further review uncovered a multiyear fraud in collusion with the employee to defraud the company.

The Age of Employee Data Geeks

Dataviz is emerging as a data analysis business tool and has implications about the way companies will analyze data in the future. The results of a recent survey of business decision makers conducted

Figure 1: Flight Aware's Interactive Display



SOURCE: FLIGHT AWARE LIVE FLIGHT TRACKER (HTTP://FLIGHTAWARE.COM/LIVE)

by Wakefield Research for SAP found that 86% of the participants believe that all employees will have to become "data geeks" in the very near future because they will need data analysis skills to evaluate data for decision making. Less than a third of the participants believe that their organizations are adequately leveraging data, and nearly two-thirds confess that they have no plans to integrate data visualization into their processes to overcome that problem. More than 90% of the participants believe that using data visualization to present information significantly reduces the time for individuals to make decisions compared with using traditional analytical tools because of the clarity of the information presentation. Dataviz unlocks the meaning of information through pictures and allows exploration of its linkages and patterns much faster than trying to interpret static worksheets and graphs.

The Future Is Now

The introduction of spreadsheet analysis more than 30 years ago dramatically changed accounting and financial analysis. Longtime members of IMA® can remember the days of the 10-key adding machine and the tedium of redoing analysis without the benefit of spreadsheet models or being able to explore data patterns and linkages. Fast-forward to today and imagine the new world of data visualization that provides tools that can collect, analyze, and process disparate data to provide richer insights into business information through pictures. The future is now. **SF**

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