Democratic Analytics: A Campaign to Bring Business Intelligence to the People

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Abstract

Getting people to interact with business intelligence (BI) data directly and create their own customized reports builds a more collaborative workplace. Easy-to-use analytics software can be the basis for this powerful, collaborative enterprise. Instead of isolating analytics inside IT departments, BI should be pushed into all business units in an organization where competitive advantages may be achieved by having business analysts and decision makers work together to uncover hidden value with data analysis.

This article shows how two organizations—the cities of Charlotte and Pittsburgh—have succeeded in putting BI into users' hands, including decision makers and business analysts. It also describes how collaborative efforts led to more streamlined public services, impressive cost-cutting efforts, and vastly improved communication between citizens and their smarter local governments.

Introduction

You can lead decision makers to knowledge, but you can't make them learn.

That's the situation for all too many IT staffers who deliver analytics to business leaders—unless they happen to know the business stakeholders well enough to present information in a way that resonates, or unless they already understand the kind of data that appeals to supervisors and managers. In other words, an analyst's proximity to a decision maker is a critical and often overlooked aspect of the rise of analytics inside an organization.

The best analytics work creates a collaborative environment among colleagues in an enterprise. Powerful insights found in the data are most apparent when

they're shared among those who can best exploit the information. Who knows which people need the insights? It's almost always those who work most closely with the data—*not* someone in IT. BI can be the foundation for collaboration, creating a common ground for business knowledge, ideas, and action, but only if it is integrated into the fabric of the decision maker's world. By isolating analytics work in IT, that possibility is lost.

All too often, BI operations remain the domain of an elite cadre of data warehouse gurus and database administrators (DBAs) who alone can work with the data. This situation fails to deliver full BI value because it fosters a narrow relationship between IT and the person or group requesting the analysis. Furthermore, it's a wasteful process to go to IT, hat in hand, and ask for new BI insight. Most managers become frustrated while waiting for a response from an overtaxed IT staff to write queries or deliver custom reports. By the time the information finally arrives, it's not always what the decision maker had in mind, and a time-consuming iterative process begins—which only adds to the manager's frustration and extends IT's workload.

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The obvious solution to this problem is to make BI easier to use. Business analysts, subject matter experts, and even managers themselves need software that lets them access a myriad of data sources, query the information, and develop personalized reports to help make critical business decisions.

By pushing analytics deeper into an organization, you create an opportunity for innovation to flourish through collaboration. With more people in more departments accessing and analyzing more data and sharing their

observations, enterprises will generate new ideas about everything from novel product designs to razor-sharp cost-cutting programs. The closer the data analyst is to the decision maker, the sooner these new ideas can be grasped, approved, and implemented. In other words, the enterprise that pairs trusted analysts with savvy decision makers is more innovative and nimble than enterprises that keep their BI operations buried under layers of IT processes and people.

Without proximity to analytics tools, the person in charge trusts the data less and may make choices based on gut feelings—often with disastrous results. No one knows this better than Boston Red Sox fans; the team lost a chance to go to the World Series in 2003 when manager Grady Little kept Pedro Martinez pitching during a Yankee rally late in the game. Analysts knew the club's ace and future Hall of Famer lost effectiveness after he threw 100 pitches, which he had surpassed when Little made his data-free decision. The Yankees pounded Martinez and won the championship. The ESPN sports network ranks Little's blunder as number 12 on its list of 50 "great moments" in league championship baseball (Neumann et al, 2007), and Little lost his job as a direct result of that decision.

On the flip side are decision makers who are willing to make unprecedented choices because they personally know and trust the subject matter experts who make the information crystal clear. Perhaps the greatest example of this is Dr. John Snow's famous 1854 map that visualized the geography of the cholera epidemic ravaging London. He used this map to convince the city's vestrymen to remove the handle of the public Broad Street water pump, which Snow had determined through data analysis was the source of the cholera plague. Edward R. Tufte (1997) said the good doctor "constructed a graphical display that provided direct and powerful testimony" that swayed the decision makers and, it's argued, stopped the disease in its tracks (Tobler, 1994).

The difference between gut- and data-based decisions is faith in the importance of the data as well as trust in the people delivering the information. Little, who was extremely popular with players, had an intuitive

management style learned from 16 years running minor league clubs, where access to data was minimal. Boston was his first major league job as a manager, and although the team's front office was awash in analytics, the coaches on the bench with Little, like him, were not number crunchers. It was easy for Little to go with his instincts instead of the facts. In contrast, Dr. Snow was a well-known medical professional who had previously studied other epidemics, and the vestrymen who were making critical decisions for Londoners respected and trusted him. His standing with the decision makers was as important as the frightening data he presented to them.

It's a Who-You-Know World

Most data-driven decisions do not have such momentous either/or results that go down in history. They can, however, have a profound impact inside an organization.

Take, for example, the city of Charlotte, North Carolina. According to Jim Raper, the manager of data administration for the city, about five years ago his team decided that IT "would not be in the reports business." Up to that point, he says, departments would submit requests to the data warehouse group and ask for a customized look at the data. The IT team would duly go off for about a week and create it.

However, he says, a disappointed department head often would send the new report back to IT because it was not what he thought he'd asked for. Sometimes it needed a different look and feel; occasionally, different data would be added to the mix. Despite numerous advances in the prototyping and requirements planning that IT has in its arsenal of tools, the back-and-forth and give-and-take between requestor and IT is normal for most enterprises.

Although IT's work methodology might be considered best practices for the process, "it eats everyone's time," Raper says. Faced with dissatisfied users and an endless future of writing custom reports, Charlotte's analytics group rethought its role inside the IT department.

"We changed our philosophy for doing analytics," he says, offering an analogy. "We decided to teach others how to

fish. We stopped catching, cleaning, cooking, and serving fish to users. Instead, we taught them how to do it."

Raper adds, "We believe it's more effective to produce reports and information as close to the decision makers as possible. Business analysts know their managers better and their chances of getting the job done right for their boss are better than an IT expert who doesn't work that closely with the manager."

As a result of the new philosophy, the city invested in easy-to-use desktop and server analytics software from companies such as Microsoft and Tableau Software (the company I work for) for deployment inside several business units. IT's job was to ensure that the data the analysts needed would be clean, available, and easy to access. Only on rare occasions would IT staff step in and help with a particularly thorny problem. Otherwise, the business units would be on their own.

As Raper points out, there's a big difference between the deployment of software and its adoption among users. Initially, the new software was rolled out to the city's purchasing department, and for the first year other departments resisted the new approach for creating their own customized reports. To spark interest in the new software, in 2008 Raper's group started what they called a BI "Olympiad" for the city of Charlotte—a contest among 11 teams inside eight of the local government's business units. The competing teams used the new tools to mine a single data set—in this case, the passenger list from the Titanic. Each team had 24 hours to create an analytics dashboard laden with information gleaned from the passenger list. The results would be judged by an analytics expert from the University of North Carolina at Charlotte. The prize was a steak dinner.

The Olympiads were an overwhelming success. First, says Raper, the business analysts, who generally toil in obscurity, got recognition inside and outside their departments, which was major morale boost. Second, they were able to learn best practices for developing custom reports. Also, the contestants agreed to participate in future BI Olympiads every other year. More important, the analysts formed their own cross-department BI community, which

meets on a monthly basis to exchange ideas, explain new techniques, share query tactics, and discuss insights into the data. The city's collaborative BI community now has more than 100 members.

The BI Democracy

Further north, in Pittsburgh, Pennsylvania, the innovation and performance manager for that city, Chuck Half, says that pushing analytics out into his organization and outside IT has paid benefits quickly. For one thing, department heads are able to get customized reports faster and in the way they want them.

As in Charlotte, IT permits access to the data, but users develop their own reports with easy-to-use tools. For example, when a Pittsburgh resident applies for permits to upgrade a property, three databases from different departments are involved: permitting, code enforcement, and taxes. In the past, a resident would go to the department for the permit and then to the code enforcement bureau to get signoffs on the construction work. More often than not, they'd skip visiting the tax group. As a result, if a given property was delinquent on its taxes, it would go unnoticed and the city would permit and approve the work.

Today, Half says, the city uses a report generated by a business analyst that scoops up all the data in real time about a specific property once a permit is requested. If back taxes are owed, the system will not grant the approval for work to commence until the taxes are paid. A significant side benefit, Half argues, is that now three separate departments are working together in a more streamlined fashion, "and all have a single version of the truth."

The new, more democratic use of analytics throughout the city has led to other improvements. Previously, city officials would meet with constituents who complained about how their 3-1-1 calls were being handled, and the encounters would often devolve into a "bitching" session with citizens deriding the city for the lack of response to requests to fix everything from potholes to broken street signs. Now, armed with a 90-day customized report written by a departmental business analyst, officials can show exactly what work has been done—down to a specific street address if necessary.

As a result, Half says, "Having the data available and letting everyone review it effectively changed the tone of the meetings for the better. Instead of hours of frustrating finger-pointing, we now have a better, more effective community conversation."

Analytics has fostered better interdepartmental communication, *and* it has raised the level of understanding and involvement of city residents. Pittsburgh's mayor also has the city publish its BI reports for everyone to see on its Managing for Results Reports Web site (see http://www.pittsburghpa.gov/pittmaps/mfr.htm).

Although it's unusual for a politician, Pittsburgh's mayor also works with his own analytics dashboard. He uses it to prepare for meetings with department heads. For example, he can see which neighborhood generated the most 3-1-1 calls and what issues they relate to. Then he can prioritize decisions about repairing the city's infrastructure based on suggestions from citizens and not just when a project happens to land on a department's work schedule—which makes for both good planning and politics.

Power to the People

Easy-to-use analytics software delivers more profound effects as it reaches deeper into an organization. People want to teach others what they've learned about the data they've mined or about the way they analyzed it; as a result, knowledge is spread. "It's what the military would call a force multiplier," says the city of Charlotte's Raper.

Because the software "is deceptively easy to learn," Raper says people who would not normally work directly with data now get to delve into it—without an expert intermediary blocking the view, as it were. For example, Tableau has a feature that suggests a specific way to visualize certain types of data. Unlike an Excel spreadsheet that simply supplies a "wizard" with an array of output styles, Tableau can match the best graph to depict, say, time-based data while choosing a different view for geographic

values. People who didn't believe they could generate persuasive BI reports are now able to do so quickly.

Raper says he witnessed this firsthand when a young business analyst used Tableau to look at data from the vehicle maintenance department. The data was new to him and he was relatively new to the software. However, within 15 minutes, the answer "just jumped out of the data at him," Raper says. The young analyst saw that the city had long been using a fuel additive to its fleet of trucks, but the value of the additive—increased gas mileage—was unfounded. He showed the information to his decision maker, who canceled the use of the additive and saved Charlotte $50,000 annually.

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Separately, the city's sanitation department had been ringing up overtime labor charges for years. Raper says the routing of waste disposal trucks seemed an intractable problem. However, one analyst, sitting with his BI tools, figured out the optimum paths for the fleet to take on its morning runs, dramatically reducing overtime headaches.

Analysts are not the only ones who work with the tools. Pittsburgh's Half says managers in the 3-1-1 and public safety departments use it. For example, the 3-1-1 manager generates his own custom reports in less than five minutes, an impossible feat when working directly with the SQL tools on the data warehouse—even for someone on the IT staff.

Communicate, Collaborate

Although there are clear benefits to enterprises that distribute BI software to more people, the real power of analytics may reveal itself to an organization through collaboration based on analytics. CEOs across multiple

industries are pushing their companies to create collaborative environments to leverage information; they understand that they can best exploit the hidden potentials buried in the data when it is viewed and shared by many people.

Fred Hassan, former CEO of Schering-Plough Corp. (now part of Merck & Co.), believes this of collaboration:

> [Collaboration is] critical in any innovation industry because nobody has a monopoly on know-how. Those that can reach out and work with others will always do better than those that either don't have the right mindset when it comes to working with partners, or who are not curious in the first place in terms of reaching out and getting to the best information or talent wherever that might be. You have to have a collaborative mindset starting from the top, and then very clear processes for each individual collaboration partner. (PricewaterhouseCoopers, 2009, p. 17)

In summing up how the surveyed CEOs saw managing in these turbulent economic times, Pricewaterhouse-Coopers researchers reported, "CEOs believe that the only way to mitigate risk and realize opportunity is through collaboration with many different stakeholder groups and gathering better information about the critical drivers of business" (p. 39).

Chuck Half says his mayor has put a priority on cross-department communication and collaboration. "It's one of the side benefits of using BI in multiple units," he says.

In Charlotte, the city's senior management is pushing for more collaboration as a result of experiencing the value that BI brings. The city manager and his four assistant senior managers have all embraced collaboration "because they had seen the quality of the analysts work and they wanted more of it."

In fact, next year's BI Olympiad in Charlotte is already in the planning stages. It will test which teams collaborate the most effectively to solve the theoretical business problem. Raper says the ongoing success of the Olympiads—as well as proven value of BI for the

city—has "raised the bar of what we expect to see from our collaboration event."

The city is also raising the bar for pervasive analytics inside organizations. Starting in 2011, the IT department began adding something new to its disk image for every new PC: Tableau Reader, a free application that lets anyone view analytics generated from the software. After a typical three-year refresh of machines, every city worker will have access to BI.

Conclusion

We're more than a few years away from a time when anyone anywhere can fire off complex analytical queries and generate personalized, one-of-a-kind reports from an enterprise data warehouse, but we are much closer to that day than ever before. The unstoppable ubiquity of information in businesses of all sizes is creating an enterprise democratization movement up and down company org charts to explore and analyze the data.

This confluence of interests to analyze data could very well be the intellectual platform upon which enterprises create collaborative environments for their workers and partners. It remains to be seen whether BI will become the software platform to support collaboration initiatives. Certainly, there will need to be front-end analytics tools that are easy to learn and use. Without widespread use of analytics across an organization, collaboration efforts will be ineffective. Ultimately, that means cutting out the IT middlemen. In the long run, as Raper says, it also means teaching everyone in the enterprise how to fish the deep pools of enterprise data for knowledge that can be effortlessly and immediately shared with the right people.

It is realistic today to bring analytics much closer to the decision maker. Software exists that lets anyone—managers and staff alike—use BI in ways previously restricted to highly trained experts inside IT. As such, BI is no longer seen as the privilege of the few. Rather, it's now become a necessity of the many. ■

References

Neumann, Thomas, Mike Philbrick, and David Schoenfield [2007]. "The 50 greatest moments in LCS history," ESPN, October 12. http://sports.espn .go.com/espn/page2/story?page=LCSmoments/071008

PricewaterhouseCoopers [2009]. "12th Annual Global CEO Survey: Redefining success," p. 17.

Tobler, Waldo [1994]. "Snow's Cholera Map," National Center for Geographic Information and Analysis. http://www.ncgia.ucsb.edu/pubs/snow/snow.html

Tufte, Edward R. [1997]. *Visual Explanations: Image and Quantities, Evidence and Narrative*, Graphics Press, p. 30.