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TDWI E-Book

Forward-Looking Business Intelligence

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PREDICTIVE INTELLIGENCE TAKES BI INTO THE FUTURE

Demand for predictive intelligence is fundamentally changing the way information is consumed and used in business.

Business intelligence (BI) futurists like to use a simple framing device to illustrate what they say is The Big Problem with BI: the rearview mirror. Traditional BI tells me where I've been; at best, it tells me where I am *now*. What I'd really like to know, they argue, is where I'm going.

This isn't a new idea. BI practitioners use it today much as they used it a decade ago.

Only *this* time around, something's qualitatively different. This time around, we have the makings of a powerful forward-looking mirror. Chalk it up to the self-service-empowered end user. There's also the advent—at long last—of powerful *and* easy-to-use discovery and analysis tools; of interfaces that combine smarts (in the form of built-in analytic algorithms and functions, along with guided self-service features) with an all but *delectable* visual appeal. Also deserving credit: a newly

ubiquitous, inescapably *immersive* user experience (UX) for BI and analytics—one that's context aware and adaptable, but also roughly continuous, from the enterprise desktop to the mobile client.

Most of all, chalk it up to the evolution and maturation of predictive analytic technology.

Predictive analytics used to be the purview of statisticians. Now, with a little guidance and help, it can be the playground of self-service-empowered business users, too.

“Over time, BI just got pigeonholed as ‘reports and dashboards.’ Reports and dashboards are important. It's great to have them, and it's wonderful they're so pretty, but what are they really telling me? They're telling me what's happening right now, or they're telling me what happened in the past,” says Jane Hendricks, product marketing manager for BI and predictive analytics for IBM Corp.

“People are looking for the next iteration of this. They're looking for that view into the future, and a meaningful view of the future that may be informed by the past but isn't stuck with it,” she points out. “Predictive analytics can give you that. It allows you to inject this view of the future to really broaden your view of the data without you, the business user, really knowing that's what you're doing.”

It isn't as if predictive analytics is new, either, Hendricks allows. What's new is a UX that intelligently integrates guided self-service capabilities with attractive and informative visualization capabilities. Today's tools can actually make context-aware recommendations with respect to the selection of algorithms or functions. What's also new is ubiquitous connectivity: users have mobile access to BI and analytics from airports, elevators, and other unplugged settings.

For a decade or more, Hendricks argues, BI and predictive analytics evolved in parallel. To the extent that BI tools incorporated or exposed predictive analytic capabilities, they tended to be half measures: functions or algorithms that could only be used in highly specific, tightly controlled use cases. The reverse was the case when predictive analytic tools tried to cater to business users. These tools were designed primarily for statisticians, actuaries, or rock-star analysts—and it showed, Hendricks maintains. “These two analysis types were

happening in isolation. You had one group doing all these gorgeous reports and you have another group sitting in a back office, using different statistical techniques, coming up with predictive models,” Hendricks explains.

“What IBM is doing really well is taking that wall of isolation between these two worlds and breaking it. [IBM's] emphasis is on making sure that they're benefiting from one another.” She dubs this new mashup of BI and predictive analytics “predictive intelligence.”

Demand for predictive intelligence is fundamentally changing the way information is consumed and used in business, Hendricks notes. “Everybody wants it, from the executive all the way down. The executive wants the predictive intelligence. They want to put it into all the decisions [that are] made at all levels of the organization. They don't want to spend time slicing data all day long. They want the data to tell them what's important.

“For the business analyst, it's being able to get that very detailed understanding of what's going on by slicing and dicing. For system managers, it's looking at how that happens in a very disciplined way: How can I integrate that into my operational systems [with] flexible deployments? How can I take predictive intelligence to mobile? They're really looking at both control and dissemination at the same time.”

Predictive intelligence is likewise changing the long-standing relationship between IT and the line of business. “Analysis is becoming more of a line-of-business function versus an IT role, [such that] IT is really more concerned about making sure [predictive intelligence is] integrated into operations, accessible to users, and controlled,” she says. “The line of business—they know what they need. They know what they don't know and they want to get the answers by themselves. They don't want to have barriers, they don't want to have silos. There's not enough time to ask somebody to do something for you. Given that drive, technology needs to accommodate that without losing all the good things that have been put in place, like governance and information security.”

Good governance doesn't go away, however; it's as important as ever. For certain kinds of discovery or analysis, raw or unprepared (“ungoverned”) data might indeed be useful.

However, as a basis for a predictive intelligence that can be used to inform or to drive the overwhelming majority of business decisions, good governance is absolutely essential, she argues. “With our predictive technology, how we’re bringing together the best of both BI and predictive analytics, I think governance is one place where BI really shines. It’s making sure that you know where [data is] coming from, that it matches other things, that you have the tools to make sure it’s of consistent quality,” Hendricks says.

“To kind of throw data management and data governance out the window and say it doesn’t matter, that’s a tall order. What’s the end goal? The end goal is to support organizational business objectives. You can do that best by providing [users] consistent, reliable data.”

What about statistical or analytical governance? Can inexperienced users be trusted to choose the correct algorithms or functions and/or apply the appropriate controls to a statistical analysis? Just as important, can inexperienced users meaningfully or reliably *interpret the results* of a highly complex statistical analysis?

“It depends on the tool quite a bit. There are a lot of things out there that are a little too open [for inexperienced users], where they can do anything, and without [expert] guidance, most certainly somebody can get themselves into trouble. They might think they understand the current situation. They understand ‘Here’s the data,’ and they may even have [formulated] the question correct[ly], but they don’t necessarily have the statistical background to interpret the results,” she concedes.

IBM’s approach emphasizes a guided, self-service experience that makes suggestions about, provides context for, and (depending on context) restricts the use of certain algorithms and functions, she explains. “The way we approach it, we put that intelligence into the tool itself. We have a number of automated algorithms that actually look at the data. An IBM tool is smart enough to look at what you’re trying to do and select the most appropriate thing to do. There’s the guidance, the how-tos, here’s the steps you take,” Hendricks indicates.

“I think the goodness is actually building that intelligence into the technology so that the user doesn’t have to worry about it.”

This begs a question: Are the IBM tools Hendricks describes so smart they can’t benefit from the expertise of (or be used by) data scientists or rock-star analysts? Categorically not, she insists.

“The tools that are most effective allow for collaboration between a business user and the rock stars, so [that] even if the business user is getting started or finding insights, they should be able to take what they’ve done, show it to the rock star, and have them be able to either augment it, check it, or refine it without all the work being lost and having to start over,” she says.

“The way that we do it is it’s the same tool that works for the business user and the rock star. So somebody who’s maybe an intermediate user, a non-rock star, they may be relying almost exclusively on automated techniques and so on. The rock star can see what’s underneath the automated techniques; they can see what actual algorithms are being run, they can modify them, they can refine them, they can set extra partitions, weight this, weight that, and nothing is lost,” Hendricks points out. “The results being fed into the system are just made that much better, as opposed to having to scrap everything and start over again with a blank slate. That’s how we do it.”



FOUR WAYS TO ILLUSTRATE THE VALUE OF PREDICTIVE ANALYTICS

By Fern Halper

Questions after a recent Webinar on predictive analytics weren't about the technology but rather how to convince an organization (and its senior executives) about the value of predictive analytics value. Here are four suggestions to help you get started.

My new (and first!) TDWI Best Practices Report was published recently. It is called *Predictive Analytics for Business Advantage*. In it, I use the results from an online survey together with some qualitative interviews to discuss the state of predictive analytics, where it is going, and some best practices to get there. You can find the report [here](#). The Webinar on the topic can be found [here](#).

There were many great questions during the Webinar, and I'm sorry I didn't get to answer them all. Interestingly, many of the questions were not about the technology; rather, they were about how to convince the organization (and the senior executives) about the value in predictive analytics. This jives with what I saw in my research. For instance, "lack of understanding of predictive analytics" was cited as a key challenge for the discipline. Additionally, when we asked the question, "Where would you like to see improvements in your predictive analytics deployment?", 70 percent of all respondents answered "education." It's not just about education regarding the technology. As one respondent said, "There is a lack of understanding of the business potential" for predictive analytics, as well.

Some questions from the audience during the Webinar echoed this sentiment. For instance, people asked, "How do I convince senior execs to utilize predictive analytics?" and "What's the simple way to drive predictive analytics to senior executives?"

and “How do we get key leaders to sponsor predictive analytics?”

There really is no silver bullet, but here are some ways to get started:

- **Cite research:** One way is to point to studies that have been done that quantify the value. For instance, in the Best Practices Report, 45 percent of the respondents who were currently using predictive analytics actually measured top- or bottom-line impact or both (see Figure 7 in the report). That’s pretty impressive. There are other studies out there as well. For instance, academic studies (i.e., Brynjolffson et al., 2011) point to the relationship between using data to make decisions and improved corporate performance. Industry studies by companies such as IBM suggest the same. Vendors also publish case studies, typically by industry, that highlight the value from certain technologies. These can all be useful fodder.
- **Do a proof of concept:** However, these can’t really stand alone. Many of the end users I spoke to regarding predictive analytics all pointed to doing some sort of proof of concept or proof of value project. These are generally small-scale projects with high business impact. The key is that there is a way to evaluate the impact of the project so you can show measurable results to your organization. As one respondent put it, “Limit what you do but make sure it has an impact.” Think through those metrics as you’re planning the proof of concept. Additionally, someone in the organization is also going to have to become the communicator/evangelist to get people in the organization excited rather than fearful of the technology. One person told me that he made appointments with executives to talk to them about predictive analytics and show them what it could do.
- **BI foundation:** Typically, organizations that are doing predictive analytics have some sort of solid BI infrastructure in place. They can build on that. For instance, one end user told me about how he built out trust and relationships by first establishing a solid BI foundation and making people comfortable with that and then introducing predictive analytics. Additionally,

success breeds success. I’ve seen this countless times with various “new” technologies. Once one part of the organization sees something that works, they want it too. It grows from there.

- **Grow it by acting on it:** As one survey respondent put it, “Analytics is not a magic pill if the business process is not set up.” That means in order to grow and sustain an analytics effort, you need to be able to act on the analytics. Analytics in a vacuum doesn’t get you anywhere. Another way to show value is to make it part of a business process. That means getting a number of people in the organization involved.

The bottom line is that it is a rare company that can introduce predictive analytics and have it succeed quickly out of the gate. Are there examples? Sure. Is it the norm? Not really. Is predictive analytics still worth doing? Absolutely!

Fern Halper, Ph.D., is director of TDWI Research for advanced analytics, focusing on predictive analytics, social media analysis, text analytics, cloud computing, and other “big data” analytics approaches. She has more than 20 years of experience in data and business analysis, and has published numerous articles on data mining and information technology. Halper is co-author of “Dummies” books on cloud computing, hybrid cloud, service-oriented architecture, service management, and big data. She has been a partner at industry analyst firm Hurwitz & Associates and a lead analyst for Bell Labs. Her Ph.D. is from Texas A&M University. You can reach her at fhalper@tdwi.org, or follow her on Twitter: @fhalper.



FORWARD-LOOKING BI: THE INTELLIGENCE ENTERPRISES WANT MOST

Traditionally, business intelligence (BI) has looked backward at what has happened. In today's marketplace, enterprises need to look ahead. From predictive to prescriptive intelligence, we look at what businesses need most with David Clement, product marketing manager for IBM Business Analytics.

TDWI: What are the different kinds of intelligence customers are looking to glean?

David Clement: Customers are looking at descriptive intelligence (what is happening now) and predictive intelligence (what is going to happen next). Ultimately, the goal is to get to prescriptive intelligence—what should I do and what will that do to my business. Forward-looking business intelligence is the way to go beyond descriptive intelligence—which has long been a staple—to predictive intelligence, which, in turn, paves the way to prescriptive intelligence.

How does forward-looking business intelligence help decision makers and lower risk?

Combining past, present, and future views of one's data side by side allows analysts, department managers, and executives to make better, more informed decisions. By aligning with company goals and business plans, business users become more dependent and responsive to the data being used to validate their decisions.

Although gut feel and experience are always going to play a role in how data is used to improve business choices and direction, validating those choices has become more important and liability has gone up. Backed by organizationwide data systems that articulate the position and predictive insights

of the business prerogatives, using business intelligence and predictive analytics adds value and competitive advantage and lowers the risk of bad decisions.

What is the difference between data mining and predictive analytics?

Data mining provides the methodology for getting predictive intelligence out of your data from a technical perspective. Predictive analytics is a type of analytics and data mining is what a business user, business analyst, or data scientist actually does. Data mining at its essence is about finding the natural patterns, relationships, and outcomes within your data. Predictive analytics is more than just using algorithms and understanding models. For organizations, it's about being able to use the results of data mining to effect positive business outcomes.

What are businesses looking to get help with?

Revenue generation is critical to a business. However, understanding how best to drive revenue growth can be arduous. Lines of business are looking to have precise awareness of their operations, and technology factors play a larger role than ever in maximizing this responsiveness to growing the business. Today's small-to-large businesses have much more in common in terms of their needs to identify market trends, understand customer behavior, tackle inefficiencies sooner, make sense of the explosion of data to stay ahead of the competitive curve, and make impactful and smarter decisions that align with company goals.

What are some of the strengths that IBM business analytics software provides today?

IBM helps organizations align with strategic vision. Business users are becoming more technology savvy and their needs are becoming much more complex and demanding. If they choose to implement a solution on their own, it can be a silo, not compliant and not accessible to critical centralized data.

Predictive indicators are a competitive differentiator in multiple scenarios. For example, utilizing the IBM Cognos Business Intelligence platform, predictive indicators can be distributed to extend the value in the investment to other parts of the organization.

IBM strengthens the importance of establishing a solution that is flexible and can meet the needs of multiple departments, and scale across the enterprise.

From a small business to a large enterprise, what is the best way to adopt predictive analytics alongside one's BI solution?

Business intelligence provides companies with a complete enterprise view of their operations and the benefit of cost savings using one platform, often using one vendor's BI solution. However, one platform can lead to compromises between IT and the business; they must balance cost savings with delivering key capabilities.

Customers are finding that a stack-centric mentality and single-vendor platform don't address an organization's needs for a complete portfolio of analytic capabilities. IBM's forward-looking BI bundle delivers the capabilities businesses desperately need with cost savings leveraging one integrated, open platform. Adoption is much simpler for business users when they are able to use the technology with ease and provide departments and decision makers with the right information in the right formats that make their information understandable.



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