

ANSWERING THE BIG QUESTIONS

Defining big data — and the ways to harness the information for success

by SUSAN REDA, EDITOR

Hilary Mason began working with data years before the job title “data scientist” appeared. The former chief data scientist at Bit.ly and data scientist-in-residence at Accel Partners describes herself as “an evangelist for reasonable thinking toward data.”

She’s not, however, a fan of the term “big data.”

“I have trouble with the phrase because no one really knows what it is and how big it has to be to be ‘big,’” she says. Mason, who founded a consultancy called Fast Forward Labs, considers herself to be a practically minded individual. “I like to find ways that people can learn things from data that they would not otherwise know and that help them inform their business in some way.”

In the face of the big data blitzkrieg that has overtaken retail conversations, it’s a candid point of view that’s not far from the goal many companies have for big data: Define it in a way that makes sense for the business and then harness it for success. The challenge is getting to that point.

“Big data has just passed the top of the hype cycle and is moving toward the trough of disillusionment,” says Jeff Roster, research vice president with Gart-

ner Research, who insists that’s “not a bad thing. It means the market [is] becoming more realistic about how big data can be useful for organizations ... big data will become business as usual.”

Roster says the disillusionment stems from ill-preparedness. “The problem is not big data. It’s organizations that haven’t really understood the fundamental transformation that is all around them.” It will take time, but he believes “big data implementations will move from being systems of innovation to mission-critical systems of differentiation.”

Research released last month by Accenture

Analytics bears that out. The findings, based on a global survey of 4,300 decision-makers, found 82 percent agreed that big data provides a significant source of value for their companies, but more than one third (36 percent) indicated that their company had not completed and weren’t currently pursuing a big data installation.

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Looking exclusively at retailers' responses, 58 percent described big data as "extremely important" to their organization; 36 percent called it "important." Nearly 70 percent said that the impetus for big data is to maintain competitiveness, and 82 percent agree that big data is changing the way they interact with and relate to customers.

Retailers cited analyzing customer behavior (56 percent), bringing together different data sources (49 percent) and improving personalization (48 percent) as the top three reasons for using big data.

With *The Futurist* projecting the volume of data to increase 44 times over the next six years, it's imperative that retailers get their arms around what big data is, what it means for their organization and how they plan to wrestle it to the ground in search of relevant insight.

DEFINING BIG DATA

Ask three people what big data is and you're likely to get very different responses. David Dorf, senior director of technology strategy for Oracle Retail, says the phrase "big data" first began to gain "buzz" status around five years ago. "It has come to represent the exponential growth of data and the complexity of analyzing it," he says.

He starts with what has become the generic definition for big data — volume, variety and velocity. "Retailers have always dealt with big data in the sense that they handle thousands of [products], hundreds of stores and a steady stream of transactions," he says.

"What's new is the variety of data. Some of it is highly formatted transactional data, but increasingly it's coming from sources such as a Twitter stream where there is natural language that's hard to understand using systems. The other thing that has changed is the velocity. Data is coming at us at a much faster pace."

Retailers have been in the big data game since the 1970s, says Jill Puleri, worldwide retail industry leader for IBM Global Business Services — they just didn't call it that. She defines big data as broad data.

"It takes in all the different elements needed to understand consumer behavior, including weather, the economy and numerous outside

influences," she says. "With an understanding of broad data, retailers can begin to offer more personalized and targeted offerings and promotions."

Gary Drenik, CEO of Prosper Insights & Analytics, has made a career out of blending retail data with external data, including consumer behavior, economic data and government surveys. He insists it's about having the right information to drive smarter decision making and cautions against relying too heavily on unstructured data.

"A narrow focus will provide a narrow view," Drenik says. "Some estimates claim that as much as 50 percent of the data derived from social media is inaccurate — offshore click farms have made a business of inflating social media numbers. In other words, it's no better than the proverbial coin flip."

EMBRACING DATA AND ANALYSIS

Coming to terms with a corporate definition of big data may be the easy part. Turning insights from data into competitive advantage, though, requires a willingness to embrace change. Several industry experts concede that many retail companies don't do a good job with the information they already have, so the idea that a business will be able to develop those competencies by investing in high-end analytics tools doesn't hold up.

Lori Schafer, executive advisor for SAS Institute's retail practice, acknowledges that big data is useless without the ability to collect, analyze and execute on it.

"Before a company can start down this path, executives need to honestly assess whether they're running an organization that's data-driven," she says. "Does the company make decisions based on point-of-sale and customer relationship management data? Are there people on staff who are trained in fact-based decision-making? If the answer is no, that's what needs to happen first."

"You can't go into calculus if you haven't completed algebra," she says. "The technology works, but you need good data and a culture that accepts data-based decision-making."

Another hurdle too many companies still need to clear: Data resides in numerous silos across organizations. "There's POS, web, mo-

bile and call center data, and it's typically in different places and not leveraged," says Lori Mitchell-Keller, senior vice president of SAP's Global Industry Business Unit for Retail. "There are technologies, such as SAP's in-memory database, that allow businesses to bring those different data stores into one and take advantage of the power of the data, but if they haven't applied that technology ... they end up having a bunch of data here and a bunch there, and it can't be effectively mined for insight."

The power of big data, she says, is not generating more reports — it's about fewer reports that provide a better view of business objectives.

FIRST STEPS

Drenik contends that retailers need to start by identifying key business objectives an organization would like to achieve through data.

"Typically, business executives want some insight about the future ... Do they hope to gain insight into marketplace economic conditions, customer behavior, competitors' customers, spending plans, etc.?"

Similarly, Schafer would expect companies to begin by determining what aspect of the business they hope to improve through the use of big data. "Is there a need to improve supply chain and logistics?" she asks hypothetically. "If so, what specifically do we need to know about timing or global economies that can help to affect a positive business outcome?"

"No retail executive has ever said 'I need more reports and more mounds of data,'" says Kevin Sternecker, CMO of e-commerce platform provider OrderDynamics. "What they

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need is help to understand what to do with the data they have and what recommendations can be made based on given insight and conditions."

John Squire, president of OrderDynamics, picks up on that thought. "Too many retailers got caught up in the 'big' aspect — thinking that if they put all the data together in one repository the decision will be apparent. It's

not true. They need a detail-oriented view. They need to ask themselves what decisions they need to make and then work backward to determine what can be done to move the business forward."

Dorf comes at it from a slightly different angle. Having seen some early big data success stories emerge on the marketing side, he suggests

that one of the key things a retail CIO needs to think about is coordination with the CMO. "They have to be aligned on the definition of big data, they have to agree to a data-driven culture and they have to understand who owns what," he says. "Neither of them can operate alone."

And users must learn to trust data. "People don't like being told to do something from a black box," Dorf says. "Executives need to establish early on how insights from data will be applied to the business, and everyone has to be on board."

Still, can retailers tap into the power and the opportunity of big data if they don't have someone with a background in statistics or data analytics to do the heavy lifting?

NECESSARY SKILLS

Big data is not just about feeding numbers into a server and waiting for it to spit out

insights. It requires skilled human resources who understand technology, marketing and business and can interpret data from a broad knowledge base.

Some retailers have begun hiring data scientists, but that's a highly specialized degree. Typically, marketing executives and IT support staff don't have the requisite background and experience for sourcing and analyzing the right data sets.

Mason says that when people look to hire data scientists they tend to over-emphasize the need for someone with a Ph.D. in statistics. "What a retail company needs is someone who is empathetic and perceptive," she says, "someone who can do the math and tell you what you need in the context of your ... decision."

Sternecker agrees. "Retail executives are at a disadvantage with a blank sheet of paper. They need help translating what they're thinking into real insight that can inform decision-making. Mapping between business and technology is a hard skill set to find. You need someone who can shift from 'We need more revenue, more profit, more free cash flow' to 'Here's the action we need to take.'"

"There are predictive tools available that can identify relevant patterns and feed them to the user," says Mitchell-Keller. "It's not realistic to think that every retail company can afford to hire a data scientist. Much of this gets better over time — the more they tap into the insights and make data-based decisions, the more confident users become."

MEASURING SUCCESS

By now it's become a familiar refrain: It's not about the size of the data, it's about the relevancy and the timely access to appropriate analytic insights.

"Retailers have a lot of content," Puleri says. "When they marry that with the

outside resources — the weather, etc. — the notion of context begins to take shape." She cites a coffee retailer that recently worked with IBM to gain a better understanding of the sometimes subtle differences in performance that exist between stores, with an eye toward better forecasting and maximizing promotions. They found that weather affected what consumers were drinking, as did barista turnover and gas prices — to name just a few.

"If they were looking only at sales history and didn't take into account the outside factors, they would have missed the nuggets of data that affected future decisions," Puleri says.

Companies that connect with customers via the Internet can capture enormous amounts of data about customer behavior and thus have a sizeable advantage on the big data front. Amazon, Zappos and others are endlessly mining data with an eye to better interpreting shopper behavior and serving up more relevant offerings. But Internet pure plays are not the only ones that can claim success.

The Kroger Co. has emerged as a big data rock star: Chairman Dave Dillon calls data analytics the company's "secret weapon." While the Cincinnati-based grocer had been using data analytics for years to boost customer loyalty with personalized coupons, the company recently worked with several vendors to create a single infrastructure for the enterprise. With

the resulting real-time analytics, Kroger has been able to improve operational efficiencies and enhance the customer experience.

Working with OrderDynamics, Brooks Brothers.com connected inventory, marketing and website data to reveal a \$2.3 million sales opportunity and modify purchase plans to better meet demand. U.K. fashion retailer T.M. Lewin, another OrderDynamics client, created an

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MAKING IT RELEVANT

If the holy grail of big data is identifying meaningful insight from relevant data for better informed business decisions, Pier 1 Imports CIO Andrew Laudato is a determined crusader.

Laudato is knee-deep in a beta project with Microsoft Azure Machine Learning, a fully managed cloud service for building predictive analytics solutions. Using Azure ML, Pier 1 and its partners can build data-driven applications to forecast and change future outcomes — in a matter of hours.

"We've been doing traditional business intelligence for some time," Laudato says. "It's about understanding what happened and what you can glean from that information to aid decision-making. ... What we're moving toward now is data mining and predictive analytics across an omnichannel enterprise."

Pier 1 is using Azure ML to predict what customers are most likely to buy next. "The end game is to make sure that when our sales associates interact with customers, it's in sync with their needs," he says.

TO THE CLOUD

The decision to work with Microsoft Azure ML was a no-brainer for Pier 1, which has a long-standing relationship with the software

powerhouse. What sealed the deal was the opportunity to work with a cloud-based solution specializing in advanced analytics and predictive analysis. The pilot environment combines Azure ML models with Microsoft's Power Business Intelligence reports and visualizations.

Laudato's partner in the quest is big data specialist MAX451, which has built an Azure ML solution to predict a customer's future product selection, purchase and delivery preferences.

"One of the things we've done with Pier 1 ... is to combine Power BI with Azure ML to provide a visual way for folks like marketing teams to be able to see how their advertising and email campaigns are performing," says MAX451 CEO Kristian Kimbro Rickard. "It allows the users to quickly come up with fresh insights and take action on it."

"In the past, businesses relied on rational, structured databases. That's no longer the case — there's a lot of unstructured data like social and behavioral data that businesses need to be looking at so they can understand their customers better," Rickard says.

"Being able to pull in all the data [and] glean some insight about that, ask questions, serve it back to the users in a format that is easy

to understand and gives them the tools needed to predict shoppers' next most logical purchase ... is very powerful stuff."

SO FAR, SO GOOD

A few months in, Laudato is upbeat, noting that Pier 1 has begun testing customized email marketing campaigns. He's especially pleased with the speed with which Pier 1 can now process data.

"The ability to dive into the data quickly and gain insight is one of the most exciting benefits," he says. "The second is the ability to adapt on the fly because the output of this analysis can move into our BI and from there into a direct campaign. Getting the data out of the cloud and back into an operational format in a timely fashion is invaluable."

Laudato is reluctant to say exactly when the project will transition out of the pilot phase.

"There's a lot of opportunity ahead of us," he says. "Ultimately, it comes down to improving the omnichannel experience so that it's seamless for shoppers. Whether a customer is on our website, on their mobile device, in our stores ... or on a call with a customer relations associate, we want them to have a great Pier 1 experience."

— Susan Reda

integrated view of its e-commerce business — including data from the website, marketing and operations, customers and products — to see what was happening across the business as well as receive guidance on specific actions it could take to affect growth and improve the online customer experience.

Nike CEO Mark Parker has cited big data analytics as essential to his brand's ability to do more for customers. The sporting goods powerhouse is using data and technology to better understand customers, improve market-

ing efforts and fine-tune its data-driven strategies. The credo at Nike: Information equals competitive advantage.

Big data appears poised to emerge from the "trough of disillusionment" to become a critical resource for business leaders who need to make more informed decisions. Companies that consistently use data to guide their decision-making — i.e. those that have a culture of evidence-based decision-making — are already among the first to qualify success with big data. **STORES**