Getting big impact from big data

David Court

New technology tools are making adoption by the front line much easier, and that's accelerating the organizational adaptation needed to produce results.

The world has become excited about big data and advanced analytics not just because the data are big but also because the potential for impact is big. Our colleagues at the McKinsey Global Institute (MGI) caught many people's attention several years ago when they estimated that retailers exploiting data analytics at scale across their organizations could increase their operating margins by more than 60 percent and that the US healthcare sector could reduce costs by 8 percent through data-analytics efficiency and quality improvements.[1]

Unfortunately, achieving the level of impact MGI foresaw has proved difficult. True, there are successful examples of companies such as Amazon and Google, where data analytics is a foundation of the enterprise.[2] But for most legacy companies, data-analytics success has been limited to a few tests or to narrow slices of the business. Very few have achieved what we would call "big impact through big data," or impact at scale. For example, we recently assembled a group of analytics leaders from major companies that are quite committed to realizing the potential of big data and advanced analytics. When we asked them what degree of revenue or cost improvement they had achieved through the use of these techniques, three-quarters said it was less than 1 percent.

[1] See the full McKinsey Global Institute report, *Big data: The next frontier for innovation, competition, and productivity*, May 2011, on mckinsey.com.

[2] To learn how marketing functions in Google's data-driven culture, please see our forthcoming interview with Lorraine Twohill, the company's head of marketing, on mckinsey.com.

In previous articles, we've shown how capturing the potential of data analytics requires the building blocks of any good strategic transformation: it starts with a plan, demands the creation of new senior-management capacity to really focus on data, and, perhaps most important, addresses the cultural and skill-building challenges needed for the front line (not just the analytics team) to embrace the change.[3]

Here, we want to focus on what to do when you're in the midst of that transformation and facing the inevitable challenges to realizing large-scale benefits (exhibit). For example, management teams frequently don't see enough immediate financial impact to justify additional investments. Frontline managers lack understanding and confidence in the analytics and hesitate to employ it. Existing organizational processes are unable to accommodate advancements in analytics and automation, often because protocols for decision making require multiple levels of approval.

If you see your organization struggling with these impediments to scaling data-analytics efforts, the first step is to make sure you are

[3] See Stefan Biesdorf, David Court, and Paul Willmott, "Big data: What's your plan?," *McKinsey Quarterly*, March 2013; and Brad Brown, David Court, and Paul Willmott, "Mobilizing your C-suite for big-data analytics," *McKinsey Quarterly*, November 2013, both available on mckinsey.com.

Exhibit

How to accelerate your data-analytics transformation

Take advantage of advancements in analytics

Deploy **targeted analytics solutions** from software and services providers

Adopt **self-service analytics tools** and the explosion of external data sources

Employ **machine learning and automation**

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Mobilize the organization

Focus on 1 to 2 areas in the organization

Redesign workflows and jobs to leverage automated analytics

Launch **a cultural transformation** through training, competitions, and communications

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Big impact from big data

Source: McKinsey analysis

doing enough to adopt some of the new tools that are emerging to help deal with such challenges. These tools deliver fast results, build the confidence of the front line, and automate the delivery of analytic insights to it in usable formats.

But the tools alone are insufficient. Organizational adaptation is also needed to overcome fear and catalyze change. Management teams need to shift priorities from small-scale exercises to focusing on critical business areas and driving the use of analytics across the organization. And at times, jobs need to be redesigned to embrace advancements in digitization and automation. An organization that quickly adopts new tools and adapts itself to capture their potential is more likely to achieve large-scale benefits from its data-analytics efforts.

Why data-analytics efforts bog down before they get big

As recently as two or three years ago, the key challenges for data-analytics leaders were getting their senior teams to understand its potential, finding enough talent to build models, and creating the right data fabric to tie together the often disparate databases inside and outside the enterprise. But as these professionals have pushed for scale, new challenges have emerged.

First, many senior managers are reluctant to double down on their investments in analytics—investments required for scale, because early efforts have not yielded a significant return. In many cases, they were focused on more open-ended efforts to gain novel insights from big data. These efforts were fueled by analytics vendors and data scientists who were eager to take data and run all types of analyses in the hope of finding diamonds. Many executives heard the claim "just give us your data, and we will find new patterns and insights to drive your business."

These open-ended exercises often yielded novel insights, without achieving large-scale results. For example, an executive at one automaker recently invested in an initiative to understand how social media could be used to improve production planning and forecasting. While the analysis surfaced interesting details on

customer preferences, it didn't provide much guidance on how to improve the company's forecasting approach. Executives can often point to examples such as this one where early efforts to understand interesting patterns were not actionable or able to influence business results in a meaningful way. The upshot: senior management often is hesitant about financing the investments required for scale, such as analytics centers of excellence, tools, and training.

Second, frontline managers and business users frequently lack confidence that analytics will improve their decision making. One of the common complaints from this audience is that the tools are too much like black boxes; managers simply don't understand the analytics or the recommendations it suggests. Frontline managers and business users understandably fall back on their historic rules of thumb when they don't trust the analytics, particularly if their analytics-based tools are not easy to use or are not embedded into established workflows and processes. For example, at a sales call center, staff members failed to use a product-recommendation engine because they didn't know how the tool formulated the recommendations and because it was not user friendly. Once the tool was updated to explain why the recommendations were being made and the interface was improved, adoption increased dramatically.

Finally, a company's core processes can also be a barrier to capturing the potential of sophisticated analytics. For the "born through analytics" companies, like Amazon and Facebook, processes such as pricing, ad serving, and supply-chain management have been built around a foundation of automated analytics. These organizations also have built big data processing systems that support automation and developed recruiting approaches that attract analytics talent.

But in more established organizations, management-approval processes have not kept up with the advancements in data analytics. For example, it's great to have real-time data and automated pricing engines, but if management processes are designed to set prices on a weekly basis, the organization won't be able to realize the full impact of these new technologies. Moreover, organizations that fail to leverage such enhancements risk falling behind.

Adopting new technologies to scale impact

Few areas are experiencing more innovation and investment than big data and analytics. New tools and improved approaches across the data-analytics ecosystem are offering ways to deal with the challenge of achieving scale. From our vantage point, three hold particular promise.

First is the emergence of targeted solutions from analytics-based software and service providers that are helping their clients achieve a more direct, and at times faster, impact on the bottom line. An emerging class of analytics specialists builds models targeted to specific use cases. These models have a clear business focus and can be implemented swiftly. We are seeing them successfully applied in a wide range of areas: logistics, risk management, pricing, and personnel management, to name just a few. Because these more specific solutions have been applied across dozens of companies, they can be deployed more readily. Collectively, such targeted applications will help raise management's confidence in investing to gain scale. There's still a need for a shift in culture and for a heavy emphasis on adoption, but the more focused tools represent a big step forward.

Second, new self-service tools are building business users' confidence in analytics. One hot term gaining traction in the analytics world is "democratization." Getting analytics out of the exclusive hands of the statistics gurus, and into the hands of a broad base of frontline users, is seen as a key building block for scale. Without needing to know a single line of coding, frontline users of new technology tools can link data from multiple sources (including external ones) and apply predictive analytics. Visualization tools, meanwhile, are putting business users in control of the analytics tools by making it easy to slice and dice data, define the data exploration needed to address the business issues, and support decision making. Companies such as American Express, Procter & Gamble, and Walmart have made major investments in these types of tools to democratize the use of analytics.

Hands-on experience (guided by experts in early go-rounds) helps people grow accustomed to using data. That builds confidence

and, over time, can increase the scale and scope of data-informed problem solving and decision support. A technology-hardware company, for example, deployed a set of self-service analytics and visualization tools to improve the decisions of its sales force. The new platform helped the company to conduct customer analytics and to better identify sales and renewal opportunities. Since implementing the tools, the tech company has generated more than $100 million in new revenue from support and service contracts.

Finally, it's becoming much easier to automate processes and decision making. Technology improvements are allowing a much broader capture of real-time data (for example, through sensors) while facilitating real-time, large-scale data processing and analysis. These advances are opening new pathways to automation and machine learning that were previously available only to leading technology firms. For example, one insurer has made major strides using analytics to predict the severity of claims. Automated systems instantly compare a filing with millions of claims records, cutting down the need for human intervention. Another analytics program can vastly automate search-engine optimization by predicting the type of content that will optimize engagement for a given company and automatically serving up content to capture customers.

Beyond new tools: Adapting the organization

The challenges we outlined above demand some new actions beyond the tools: more focus, more job redefinition, and more cultural change.

Focus on change management

Democratization and the power of new tools can help overcome frontline doubts and unfamiliarity with analytics. However, in addition to gaining confidence, managers need to change their way of making decisions to take advantage of analytics. This is the heart of the change-management challenge—it is not easy, and it takes time. The implication is that to achieve scale, paradoxically, you need to focus. Trying to orchestrate change in all of a company's daily decision-making and operating approaches is too overwhelming to be practical. In our experience, though, it's possible to drive adoption and behavioral change across the full enterprise in focused areas such as pricing, inventory allocation, or credit management.

Better to pursue scale that's achievable than to overreach and be disappointed or to scatter pilots all over the organization. (One-off pilots often appeal to early adopters but fail to cross the chasm and reach wider adoption or to build momentum for company-wide change.)

Leaders should ask themselves which functions or departments would benefit most from analytics and deploy a combination of new targeted solutions, visualization tools, and change management and training in those few areas. One telecommunications company, for example, focused on applying analytics to improve customer-churn management, which held the potential for a big bottom-line impact. That required the company to partner with a leading data-storage and analytics player to identify (in near real time) customers who would churn. Once the models were developed, a frontline transformation effort was launched to drive adoption of the tools. Moreover, customer-service workflows were redesigned, user-friendly frontline apps were deployed, and customer-service agents received training for all of the new tools.

Redesign jobs

Automating part of the jobs of employees means making a permanent change in their roles and responsibilities. If you automate pricing, for instance, it is hard to hold the affected manager solely responsible for the profit and loss of the business going forward, since a key part of the profit formula is now made by a machine. As managerial responsibilities evolve or are eliminated altogether, organizations will have to adapt by redefining roles to best leverage and support the ongoing development of these technologies. At the insurance company above, claims managers no longer process all claims; instead, they focus on the exceptional ones, with the highest level of complexity or the most severe property damage. Again, focus is required, since job redesign is time consuming. And it can be taken on only if the automated tools and new roles have been developed and tested to meet whatever surprises our volatile world throws at them.

Build a foundation of analytics in your culture

People have been talking about data-driven cultures for a long time, but what it takes to create one is changing as a result of the new tools available. Companies have a wider set of options to spur analytics engagement among critical employees. A leading financial-services

firm, for example, began by developing competitions that rewarded and recognized those teams that could generate powerful insights through analytics. Second, it established training boot camps where end users would learn how to use self-service tools. Third, it created a community of power users to support end-users in their analyses and to validate findings. Finally, the company established a communications program to share the excitement through analytics meet-ups, leadership communications, and newsletters (which were critical to maintaining long-term support for the program). Creative adaptations like these will help companies to move beyond the hope that "we are going to be a big data company" and to root cultural change in realistic action.

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New technologies, with their ease of adoption, point toward the next horizon of data analytics. For a glimpse of what the future might hold, consider what's happening now at a leading organization that has adopted an innovative approach to embedding analytics capabilities within its businesses.

The company started with early-stage centers of excellence and a small corps of analytics specialists tackling business cases in bespoke fashion. Today, it rotates business leaders into a new type of analytics center, where they learn the basics about new tools and how to apply them. Then they bring these insights back to their respective business. They don't become analytics specialists or data scientists by any means, but they emerge capable of taking analytics beyond experiments and applying it to the real business problems and opportunities they encounter daily.

We foresee the day when many companies will be running tens or even hundreds of managers through centers like these. That will accelerate adoption—particularly as analytics tools become ever more frontline friendly—and create the big impact that big data has promised. ○

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