

**CASE STUDY  
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REPORT**

DATA & ANALYTICS CASE STUDY ROLL-UP REPORT

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# Lessons from *Becoming a Data-Driven Organization*

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# Lessons from *Becoming a Data-Driven Organization*

## Introduction

The case studies gathered and presented here tell, in a sense, a single story. It's the story of a "management revolution," brought about by the widespread adoption of big data and analytics in both the public and private sectors.<sup>1</sup> In these dispatches from the front lines of that revolution, we see four strikingly dissimilar organizations — a health care system, a bank, a major industrial company, and a municipal government — in the process of becoming data-driven. (The organizations are Intermountain Healthcare, Nedbank, GE, and the city of Amsterdam.) We see them struggle and, to a greater or lesser extent, succeed at using analytics to improve the quality and variety of their products and services, engage in new and deeper ways with patients, customers, and citizens, and transform the way they operate. And crucially, we see them use data and analytics not just to improve productivity and make their operations more efficient, but also to change their fundamental business models.

A leading character in this story is technology. Quite simply, there would be no data and analytics revolution without easily accessible, increasingly inexpensive computing power: the cloud, the Internet, and powerful, versatile software and algorithms. Yet technology is only part of the story. People are equally important. The leaders who mobilize their organizations to embrace and fulfill the promise of analytics, the frontline people who experience how analytics are changing their roles and responsibilities, the data scientists and IT engineers who do the hard work of collecting, classifying, organizing, and deploying staggering amounts of information — they all help us gain a better understanding of the scope and meaning of this revolution.

The technology and the people who deploy it also need a process or system of rules to guide how people create and use information. Rules help transform the noise of disordered information into legible signals with the power to sharpen and deepen the focus on the customer (broadly defined), and in



the process improve health outcomes, the customer experience, the realization of business value, and civic life and engagement.

*MIT Sloan Management Review* has prepared and presented these case studies to show how the analytics revolution is currently transforming organizations as well as the economies and societies in which they operate. This transformation is occurring at every level, from the microeconomic to the macroeconomic, from the way individual stores stock their shelves, to the way manufacturers and their customers connect to realize new forms of value, to the way economies and societies function.

At the same time, these case studies reveal that many organizations struggle mightily just to get a handle on the data they have. And once they've located, collected, classified, and organized the data, they must then manage the processes needed to ensure its timeliness, accuracy, completeness, and reliability. Integrating data into decision making can be another fraught step, especially among managers accustomed to acting on gut instinct, intuition, and experience. Organizations and their leaders need considerable fortitude and persistence — not to mention a judicious blend of patience and impatience — to do the grinding, unglamorous work that is the foundation of successful analytics initiatives. That's a big ask, and it helps explain why so many such initiatives fall short of expectations.

These reports from the front offer a distinctive view of the organizations that are realizing, or aiming to realize, the promise of analytics. As disparate as they are, they share a few key success factors, and they have also faced common hurdles and reaped the benefits that flow from perseverance and dogged adherence to their digital vision. That vision, shaped by each organization's senior leaders and elevated by those working most closely with the data, focuses not merely on using digital technology to make the existing organization better but using it to transform the organization along three crucial dimensions: improving the customer experience; overhauling operational processes; and designing and executing new, digitally powered business models.

## How the Data-Driven Organization Takes Shape

The data-driven organization can be pictured as a pyramid that rests on a base of well-governed data, partnerships, and sustained commitment from leadership and employees alike. With that foundation in place, the organization can move to the next level, where it treats data as a core asset that is an essential element of strategy, fashions its data into commercial offerings, and uses it to deepen the engagement of employees and customers. Then finally, as the organization's data and analytics capabilities mature, they can underpin innovative new business models — models that alter, sometimes radically, power arrangements within the organization.

## Mastering the Basics of Information Management

Many organizations have been slow in compiling, classifying, and organizing the data sitting in siloes and dark corners. It's "a boring, boring job," says Ger Baron, Amsterdam's first-ever chief technology officer. "But very useful!" He ought to know. The Netherlands' capital has 12,000 different datasets, and even they can't tell him everything about the city. For example, no one knows exactly how many bridges span Amsterdam's famous canals, because the city's individual districts have not centralized their infrastructure data.

That story underscores the challenges organizations face in the realm of data governance, or the methods and rules that organizations use to assure the quality of data, manage it, integrate it into business processes (see the sidebar, "Process Innovation Comes in Different Shapes and Sizes," page 5), and manage its risks.

Mobilizing and motivating an organization to conduct a data inventory can, as Baron implies, be a significant challenge for senior leaders. It's tough to persuade people to undertake a tedious, laborious job, especially when the payoff seems distant or insubstantial. So leadership needs to recognize and celebrate small wins along the way.

## PROCESS INNOVATION COMES IN DIFFERENT SHAPES AND SIZES

Organizational leaders must decide who will be responsible for data governance. They must determine who will define and disseminate a common vocabulary around data, specify who has access to what data and how and with whom they can share it, and establish how the entire organization can use that data to create value. Some cutting-edge organizations have created data councils, composed of leaders from across the organization, to address such questions. The work of data councils involves mapping workflows, assigning ownership and accountability for key deliverables, defining and enforcing the cultural norms for the use of data in decision making, and measuring what data and analytics contribute to organizational performance. Without such councils to make these and similar high-level decisions, organizations may find it difficult to sustain their analytics initiatives, much less take them to the next level.

The council's first job is to create a common language for data. The language of data is, like any other language, a social construct, and it's the job of the data council to define and enforce the social norms around that language, to ensure not just clear communication but organizational cohesion. But even defining data can be a stiff challenge. Although it may seem obvious that data simply means raw information, people involved in analytics can attest that many of their colleagues don't really understand the term. Does data mean numbers? Social media postings? Location information? Customer activity? Readouts on machine performance? It is all these things and more, but many people have trouble grasping that a single concept can span so many different categories. Without that understanding, it's all but impossible to sell, price, or even describe data and analytics product offerings.

When that understanding is achieved, though, language can expand listeners' view of the world. Jeff Liberman, COO of Spanish-language media company Entravision Communications Corp., based in Santa Monica, California, was baffled when he first heard Franklin Rios, the driving force behind the company's Luminar analytics unit, deliver a board presentation about big data. He simply didn't see its relevance to the broadcast business where he

Process innovation is as varied as the organizations that use analytics to change the way they do business. At GE, the sales process has changed as the nature of what GE is selling has changed. More and more of its customers are buying not machines but the stream of information generated by machines, and sharing the value created by that information. This shift means that procurement is no longer the sole preserve of the COO — the CIO is now a customer as well, and needs to be present at the negotiating table.

Intermountain Healthcare (IMH) is changing how and when its medical staff cares for patients. For example, drawing on information revealed by analytics, IMH's obstetrics department has slashed the number of induced labors it performs, while its endocrinology department has cut the incidence of diabetes in patients who have had their gallbladders removed.

Analytics is even changing the process of city management, as we see in Amsterdam, where data helps city leaders find new ways sort and collect waste, manage street lighting, control traffic flows, and protect the 55% of its citizen who live in flood zones.

had spent his professional life. "I was thinking as a broadcaster, saying, 'How am I going to use this?'" Liberman recalls. "Then I said, 'Wait a second, I have to take off my broadcaster's hat and start looking at this as just a flow of information.' It just really clicked at that point." The point is that leaders should not underestimate the power of language to make the subject of data "click" in the minds of users.

In addition to finding a common language, those responsible for data governance must also create definitions of success that are consistent with the organization's data strategy. Consider Intermountain Healthcare Inc. (IMH), a system of 22 hospitals and 185 clinics in Utah and Idaho, headquartered in Salt Lake City. Whether or not he knew it, IMH chief of surgery Mark Ott was socializing a new definition of success when he met with surgeons at IMH's flag-

ship hospital and showed them data that proved that their postoperative infection rates were in line with national averages. “You think you’re great,” he told them, “but compared to other hospitals in the country, you’re average.” Such blunt language, especially directed at people with as much professional pride as surgeons, can help promote thinking about data as a source of truth, however painful the truth may be. And it can be a powerful force for improving the experience of customers — or in this case, patients.

Data governance also entails determining what data matters in a given context. That’s what Caesars Entertainment Corp., the Las Vegas-based international gaming company, discovered when it tried to develop a scorecard to promote and advance its initiative to make its hotels, casinos, and other properties more energy efficient and environmentally friendly. Contention quickly arose over the specific information to include in the scorecard.

Some stakeholders thought the scorecard should highlight progress toward cost-reduction and financial goals — which led to debates over whether to track energy consumption or cost savings. Some stakeholders then asked if it was fair to compare older buildings with newer ones built to greener specifications. What about buildings located in hot climates? Was it fair to compare them with buildings in more moderate zones without adjusting for temperature differences?

Other organizations will be sure to confront similar questions as they deliberate what to measure and what purpose the measurements should serve. The answers will vary according to the organization’s strategy and goals, but in any case, it’s up to senior leadership to arrive at a common data language and manage the debate over what to measure — that is, over what data matters most.

In addition to establishing a common language for data, nearly every organization has to close gaps in data quality, as IMH learned when it started to present surgeons with data about their patients’ health outcomes. IMH discovered that data listing a patient as under the care of a particular doctor was sometimes incorrect because the doctor’s partner was seeing that patient. This inconsistency risked

undermining physicians’ trust in the data, which in turn posed a risk to the company’s efforts to promote data-driven decision making. In response, IMH encouraged physicians to trust the data by allowing them to see patient data and challenge it.

Categorizing data is another challenge. Amsterdam’s Baron has to pin down the definition of a bridge, which varies from one district of the city to the next. WellPoint (now called Anthem), a leading U.S. provider of health care benefits and insurance, has had to reconcile definitions of emergency-room visits that varied across the 14 regions it serves. And a leading central bank has had to harmonize the widely varying terminology that various bank departments used to refer to the different categories of private-sector institutions under their purview.

Unstructured data can also be a headache. Vince Golla, social media director at Kaiser Foundation Health Plan, one of the largest health care providers in the United States, tells of running an experiment to measure its members’ satisfaction with the parking facilities at the organization’s many locations. For 30 days, he and his team searched Twitter for mentions of Kaiser Permanente. Problem was, most people usually refer to Kaiser Permanente just as Kaiser, and as a result, the Twitter search threw up confounding references to Kaiser rolls, Kaiser beer, and the English rock band Kaiser Chiefs. “It required a little work to sift the wheat from that chaff,” Golla says, with some understatement.

Heavily siloed organizations have their own set of data problems. Wayne Fleener, a data scientist and senior manager in General Mills’ Consumer Insights group, encountered resistance when he set out to discover what his organization knew about its customers since no one had a data diagram that mapped out where data was or how it was being used. “People felt threatened because I was coming into their role and questioning them,” says Fleener. “So there was a lot of resistance, and ‘Are you trying to take over what I’m doing?’ I had to keep saying, ‘No, I’m just trying to help you do things better.’” While sifting through thousands of datasets that referenced the company’s Cheerios cereal, Fleener discovered that some data



sources spelled “Cheerios” all the way out, and others spelled it “chrs.”<sup>2</sup> Resolving such discrepancies is a job for a team of “data stewards,” who spend much of their time reviewing reports of such terminological inconsistencies every time they run a data refresh.

Jeanne Ross, research director of the MIT Sloan Center for Information Systems Research, believes that many organizations need a “data dictator” to resolve issues such as definitional inconsistencies. As she said in an interview with *MIT Sloan Management Review*, they need “somebody who says, ‘This is how we will define sales, this is how we will define returns, this is when we will register revenue, and we are all living by this rule. Until we do that, we don’t have data that’s useful for most kinds of analytics. We can still go out and buy demographic data and probably learn something quite useful. But if we want to know how to avoid stock-outs in our stores or what products are of greatest interest to a particular customer segment, we’re going to need the data cleaned up.’”<sup>3</sup> Not every company has the will and resources to make that kind of commitment.

Ultimately, effective information management requires the intervention of people guided by rules, norms, and culture, none of which are static. It’s often tedious, painstaking work and requires a significant investment in human and financial resources.

## The New World of Data Partnerships

Anyone involved in a data and analytics initiative soon learns that they can’t go it alone — data and analytics applications inevitably drift across departmental and organizational boundaries, requiring collaboration within and between organizations to reach their full potential. At IMH, for instance, endocrinologists partnered with data scientists and one another to learn how best to manage patients with diabetes.

The most consistently successful physicians shared with their colleagues the methods they used to help patients maintain low blood-sugar levels, ranging from motivational tools to regular calls from the physician’s team. This information-sharing partnership

## HOW DATA DRIVES PRODUCTIVITY IMPROVEMENT

Data and analytics offer a means of boosting the stubbornly low productivity growth rates that bedevil economies in the developed world. Improving productivity in the oil and gas industry presents a special problem, because much of the industry’s domain knowledge resides in the heads of engineers now approaching retirement age. “The engineers in the field have 20, 30, 40 years of experience — they’re like pumping-unit whisperers,” says GE’s Holsey. “They can walk up to a unit, and they can hear it creak and groan and grind and understand the stress points.” GE is applying its Predix platform to replicate that knowledge, replacing the ears and experience of veteran engineers with sensors and data flows. The challenge is only partly technical, though — the toughest part for GE may be convincing engineers to trust that Predix’s data is as reliable as an engineer’s hard-won savvy.

Nedbank, meanwhile, is using data and analytics to improve the productivity of its branches. It has developed a database known internally as 4-Cubed, so-called because it affords four different views of customer profitability — by product, customer, region, and channel. One of the benefits of that four-dimensional view is that bank managers can now accurately allocate profitability among its branches, allowing them to determine which branches are profitable and which are doing too little business to justify remaining open.

enabled IMH’s physicians to care so well for their diabetic patients that those patients now face no higher risk of heart disease than the general population.

Data partnerships also extend beyond the walls of the organization. Amsterdam relies heavily on the Amsterdam Smart City initiative, a public-private platform, to address many issues of urban life. The initiative encompasses projects across eight categories: smart mobility, smart living, smart society, smart areas, smart economy, big and open data, infrastructure, and living labs. Early wins include replacing most of the city’s parking meters with a pay-by-phone app; an initiative to improve crowd control and traffic flow at large gatherings like the SAIL Amsterdam Festival, which brings more than a million visitors to

## BUILDING BETTER RELATIONSHIPS WITH DATA

More sophisticated pricing strategies can enable companies to strengthen relationships with key customers. By shifting to outcome-based pricing, GE has forged tighter bonds with many of its industrial customers, working with them to capture savings opportunities created by data and analytics.

As part of its Smart City initiative, Amsterdam is using information from insurance companies to pinpoint areas of the city with large clusters of people with depression. Many of those areas were not receiving services proportionate to their incidence of depression, but the city can now target its interventions and step up service provision to the most affected areas.

When employees see how data can help them do their jobs better, they soon become data evangelists. Nedbank learned that lesson when it began supplying its relationship officers with enhanced, in-the-round data about their customers. Empowered with personalized information that enabled them to proactively offer advice and services, the relationship officers were able to engage more deeply with their clients while advancing the bank's strategy — and their own careers. The result: more engaged employees and more loyal, satisfied customers.

Amsterdam to view traditional wooden sailing ships; and Rain Sense, which examines where rain falls in the city to help reduce the effect of flooding on traffic flow. (See the sidebar, "How Data Drives Productivity Improvement," page 7.)

At Nedbank Group Ltd., the fourth-largest bank by revenues in South Africa, the company's card-acquiring business developed a commercial offering, Market Edge, for its merchant business customers that included a suite of analytical tools integrating the customers' own client data with historical, demographic, weather, and other data to which the bank had access. Each Market Edge offering is tailored

to and co-developed with each Nedbank customer to address their particular business needs. (See the sidebar, "Building Better Relationships With Data.")

Meanwhile, GE's Industrial Internet offerings are transforming sales agreements into partnerships as the company migrates away from a licensing-based pricing model for its Predix platform to a subscription model. Rather than charging a fixed price for, say, a turbine, GE sells a hardware, software, and service solution whose value is determined in part by whether a customer reaches a certain level of savings in operational costs. If that level is achieved, GE gets a cut. "If we improve, say, [a customer's] power consumption by X, we get \$1; by Y, we get \$1.50," says Ron Holsey, a senior executive at GE Oil & Gas. A crucial aspect of these agreements is that GE and its customer must work together to realize those savings — they become co-creators of value. And that itself changes GE's relationship with its customer.

Engaged customers can be a company's most effective sales force. To win new business, GE runs scores of pilot programs with customers in the oil and gas industry to demonstrate how Predix can improve asset performance, increase efficiency, and cut downtime — a crucial issue in an industry where a single idle well can cost millions of dollars a day. Successful programs generate positive word of mouth and convince oil and gas engineers (a conservative group, reluctant to try anything new that isn't empirically supported and low-risk) to find out what Predix can do for them. "To get anywhere in the oil and gas industry, we need help selling," says one GE executive. "We need customer voices out in the industry with success stories, or we're just not going to come to the table with the credibility that we need. So we need to inspire our customers to want to do that."

Data can also turn businesses and their vendors into partners. When IMH decided to overhaul its electronic health records (EHR) system, it chose to work with Cerner Corp., a leading EHR vendor. IMH's leadership team liked Cerner's careful attention to the secondary use of data for back-end analytics as well as its clinical transaction system, which helped clinicians make better patient-care decisions. But IMH wanted

to retain its own data management and analytic systems, a condition that called for increased coordination between the organizations. Cerner set up shop in offices next to IMH's main medical facility and relocated some of its top development talent to Utah.

As a result of their close work together, IMH and Cerner partnered to win a huge contract to provide health care services to the Department of Defense and are brainstorming new products based on IMH's data management services and data warehouse framework.

In each of these cases, data and analytics fundamentally altered the scope, depth, and quality of the engagements between and among organizations and individuals. Rather than one party buying what the other is selling, they are working together, supported by data, to create value for both sides.

Yet even the closest partnerships have their points of contention and conflict. A handful of forward-looking companies are starting to explore the possibility of gathering, developing, and exploiting IoT data from not only their own physical assets but also those of their customers and vendors. In some cases, customers and vendors do not hesitate to share their data, viewing data sharing as a low-cost, low-risk way to acquire analytics capabilities. But as companies as different as GE and Luminar have learned, customers and vendors can be difficult to sell on the concept, because it suggests a loss of autonomy, a compromise of trade secrets, or the giveaway of a valuable asset. In the public sector, data sharing can raise troubling issues, even when the data concerns something people want to get rid of: garbage. When AEB Amsterdam tried to improve its waste stream by having citizens separate recyclables into different colored bags, it had to confront public concern that the city might be spying on its residents through their trash.

Data partnerships, and data sharing more broadly, are creating important new sources of business value but at the same time generating new and as yet unanswered questions regarding data ownership, data accessibility, and data rights. To the extent that companies rely on data sharing for business value, who will manage the risks that accompany such dependence?

## HOW DATA ENHANCES SALES, PRICING, AND PROCUREMENT

Nedbank used to track customer profitability by channel or product line but was unable to pull that data together to obtain a full view of each customer's profitability. Data and analytics have enabled that holistic view, which gives bank managers a powerful new tool to increase customer engagement and satisfaction. For example, managers can now identify their best customers and offer price incentives on products such as home mortgages and other credit products.

In a much different domain, data and analytics have enabled IMH to negotiate significant pricing concessions from suppliers of key surgical equipment. Most of its surgeons who performed bowel surgeries were using one of two surgical staplers. Although analytics revealed that the performance characteristics and reliability of the staplers were nearly identical, one cost \$600 more than the other. Yet most surgeons were firm in their preference for the more expensive device. Armed with data demonstrating the close similarities of the two devices, IMH executives were able to talk the supplier of that device into matching its competitor's price. "I said, 'Either you lower your price to the competitor price, or we're taking you off the shelf,'" says Mark Ott, IMH chief of surgery. "And they immediately lowered their price." And saved Intermountain \$235,000 a year.

## Treating Data as a Core Asset

Organizations can use data to improve virtually anything they do, but a relative handful of standout organizations are using data in highly intentional, systematic ways to address strategic challenges and react to — and in many cases anticipate — sweeping changes in the markets they serve.

What these organizations have in common is that they view data as a core asset. Their leaders are convinced that analytics can improve their ability to innovate and give them a competitive advantage. They support the systematic use of data in decision making and strategy throughout the organizations they lead. These organizations don't just use analytics to address tactical and operational issues or to support basic reporting and marketing — with

## DATA-DRIVEN PRODUCT INNOVATION

Heavy equipment manufacturing was once pretty much the whole ballgame at GE. Today, though, heavy equipment is just part of its offering, which is evolving into a total solution for heavy-equipment users.

Luminar, for its part, is its parent company Entravision's engine for transforming itself from a 20th-century media company into a 21st-century data provider. Many of its product innovations spring from the suggestions of its customers — an example of the co-creation that data and analytics enable. Luminar's Franklin Rios describes meeting with Entravision's customers to discuss media buys, only for the customers to enlist Luminar's support in other marketing initiatives. "The requests had nothing to do with media," Rios says. "They were purely to do with driving better efficiency, or purely for them to know what the market penetration was in a particular DMA [designated market area], and what a 2% or 3% lift could mean to them, and how the competition was stacking against them for the Latino consumer."

a strong push from their leaders, they've taken the next step up and are using analytics to allocate resources and create new products and business models. (See the sidebar, "How Data Enhances Sales, Pricing, and Procurement," page 9.)

Today, GE views its competencies around data and analytics, as well as its various Internet of Things offerings, as central elements of its new digital business identity. Data is changing what GE sells, who sells what they sell, and how they sell, in addition to expanding the range of buyers to whom they sell. IMH, a pioneer in the use of data and analytics to improve health outcomes and lower costs, has long believed that data is core to operational decision making and strategic planning. The City of Amsterdam is now using data, its own as well as that of myriad partners, to improve municipal management, and in the process has been named Europe's most innovative city.

Like many large financial institutions, Nedbank is striving to use data to improve its operations and customer focus and achieve strategic goals. All these organizations are, to varying degrees, organizing their activities around the use of data.

For instance, IMH made a data-driven, strategic decision to perform cardiovascular operations (surgeries and catheterizations) at only four of its hospitals. By concentrating expertise at those facilities, IMH has sharply cut response times to treat ST-elevated myocardial infarctions (STEMI) — heart attacks that follow the sudden, complete blockage of coronary arteries. Research has shown that up to 15% of people who suffer STEMI die within 30 days of the event, but survival rates improve if patients receive treatment to unblock the artery within 90 minutes of arriving at the hospital. IMH tracks each STEMI event at its hospitals and shares its measurements with its surgical teams, who use the information to boost their response times. As of 2014, the median response time had been cut to 57 minutes — dramatically lower than the national average of 90 minutes — leading to a marked improvement in health outcomes, with 96% of STEMI patients surviving longer than 30 days after hospitalization.

## Commercializing Data and Business Model Innovation

Virtually every power user of data and analytics is discovering the commercial potential of the information they're collecting, generating, and analyzing (see the sidebar, "Data-Driven Product Innovation"). All the companies covered in this series — GE, IMH, and Nedbank — are beginning to commercialize data, related analytics, or a software platform. GE's cloud-based Predix software platform is a standout example. Originally developed to provide GE's own machine operators and maintenance engineers with real-time information to schedule maintenance checks, improve efficiency, and reduce downtime, Predix is now available to GE's channel and technology partners as well as other customers who can use the platform to build their own set of bespoke analytics.

Like Predix, virtually all efforts to commercialize data and analytics are built from the foundation of a prior

internal application. Nedbank's Market Edge began life as an innovative way for the bank to develop value-added services to differentiate its credit- and debit-card offerings. The products that IMH is brainstorming with Cerner spring from the analytics developed to improve clinical care at IMH's own facilities.

Bringing those commercial ventures to scale is a pressing question for senior leaders. Do they do it from the inside? That choice inevitably entails deep and difficult changes to functions such as sales and finance, as GE discovered while commercializing the Predix platform. Or do they scale up from the outside? Entravision chose that course when it set up its Luminar analytics unit as a freestanding division, with a separate P&L and its own sales teams. In either case, the scaling effort will blur inter- and intra-organizational boundaries — Luminar's sales teams, for example, now join Entravision's teams on sales calls to some advertisers.

Partnerships can serve as a powerful tool for scaling commercial offerings. By joining forces with its small-business clients to improve their performance and fine-tune their strategy, Nedbank builds a following for its consumer analytics offering while enhancing customer satisfaction and engagement. GE, as we have seen, partners with its industrial customers to boost their efficiency, with revenues determined by the savings generated by its analytics.

Organizational constraints, however, can impede efforts to scale commercial analytics offerings. Sometimes other organizational priorities take precedence, while in other cases the organization simply lacks the capabilities needed to bring a product or service to scale.

Nedbank encountered several of these challenges when trying to scale Market Edge, the analytics product for its merchant customers. The internal product team recruited 12 salespeople from its card division to sell Market Edge to merchants but soon learned that despite receiving specialized training, the salespeople were simply not comfortable discussing the product with their clients. Leaders of the scaling campaign have realized that they'll need to recruit a whole new sales team for Market Edge — the current sales force

## TOWARD DATA-DRIVEN STRATEGIC PLANNING

While GE provides the classic example of how data and analytics are having a profound and far-reaching effect on corporate strategy and spurring changes in an organization's very identity, other organizations are experiencing this transformation as well.

WellPoint, for example, is using analytics to bring about a shift in the U.S. health care industry's pricing model, from fee-for-service to outcome-based payment. It's pursuing this goal in part by giving physicians easy-to-use data about their patients with chronic medical conditions so that the physicians can give them more effective care. That data-driven care is reducing emergency-room visits, a major contributor to rising health care costs, while increasing physicians' incomes. That's a powerful way to turn someone into an analytics evangelist.

Data and analytics are also transforming Intermountain Healthcare into a data-driven organization. Progress has been fitful at times, in part because many doctors weren't accustomed to integrating data technology into everyday medical practice. "It was really a decision made on faith at first, that if we invested in the systems, we would see results," says Brent Wallace, IMH's chief medical officer.

That faith is proving well-founded. As they grow more familiar with the technology, IMH's obstetricians have cut the number of induced labors after seeing data that shows the intervention rarely leads to better health outcomes. Physicians are changing post-operative care for patients recovering from gall-bladder surgery, based on data showing that stabilizing patients' post-operative insulin levels can reduce the incidence of diabetes. And shared data that ranks surgeons on the quality of their outcomes is spurring the entire surgical staff to raise their game.

just isn't fit for purpose. At the same time, the Market Edge team has run up against resource constraints, because a concurrent program to retool the bank's IT infrastructure has slowed the drive to move commercialization effort beyond the pilot stage.

GE is using data and analytics to refashion several elements of its business model, including service de-



livery, its sales force, and the way it prices equipment. It has created a huge software division to support Predix (its new cloud-based platform to host and analyze asset productivity data), develop new machine data applications, and bring together a community of customers and developers (see the sidebar, “Toward Data-Driven Strategic Planning,” page 11). The industrial giant is committing \$1 billion to install sensors on jet engines, gas turbines, and other machines, connect them to the cloud, and analyze the resulting flow of data to find ways to boost machine reliability and productivity.

## Conclusion

The case studies discussed in this report reveal the emerging opportunities with data, along with related challenges: The contours of the “management revolution” are taking shape. Those companies that are winning with data are mastering the data they have access to, co-creating business value from that data, and in some instances, elaborating their business models to take advantage of these new possibilities.

A 2015 *MIT Sloan Management Review* survey of 2,719 managers in organizations around the world found that the chief barrier to creating business value from analytics was not data management or complex modeling skills. Rather, the main obstacle was translating analytics into business actions — or, as one survey respondent put it, “developing middle management skills at interpretation.”

There are ways to close that gap, notably formal training and experiential learning. But mindsets also have to change. To become effective analytics consumers, managers must learn to distinguish between facts and data. Facts are immutable; data can be spun and massaged to support the preconceptions of the interpreter — a deeply ingrained cognitive tendency known as confirmation bias. A line from Paul Simon’s song “The Boxer” neatly sums up confirmation bias: “A man hears what he wants to hear and disregards the rest.”

In the Nedbank case study, local merchants thought they knew who their best customers were, but data

offered a different view. Surgeons at IMH thought they were above average until data showed them otherwise. GE’s Oil & Gas customers believed they knew best how to manage their wells and rigs, until data showed them more productive ways. For managers accustomed to making decisions based entirely on their own experience and intuition, there is a tendency to believe that they are the right people with the right information at the right time. It is noteworthy that managers changed their minds and behavior in each of these cases when counterintuitive data was introduced into a business environment in which they trusted the people presenting the data and were prepared to trust the data itself.

In order to create business value from data, it may not be sufficient for the right information to be received and trusted by the right person at the right time; the right information must also have the right salience to the right person. In an era of information overload, the ability to identify the right information from other information remains a critically important management skill. Blending data and experience in decision making is not a balancing act; neither is a substitute for the other.

Organizational leaders can take a page from the legendary Alfred P. Sloan, who, when faced with unanimous support from his General Motors executive team for one of his decisions, responded: “I propose we postpone further discussion of this matter until our next meeting, to give ourselves time to develop disagreement and perhaps gain understanding of what the decision is all about.”

Data will often underdetermine a course of action, if only because data is subjective in nature; how data is created, weighted, and analyzed is the product of many individual decisions that can introduce personal or political biases. Data-based evidence is often weighed with experience, bolstered with faith, and buffeted by politics. As analytics becomes a more common path to business value, experience, belief, and politics as well as luck will continue to play crucial roles in determining what kind of business value can be derived from data.

## REFERENCES

1. The term “management revolution” was applied to this data phenomenon by Andrew MacAfee and Erik Brynjolfsson in 2012. See A. MacAfee and E. Brynjolfsson, “Big Data: The Management Revolution,” *Harvard Business Review* 90, no. 10 (October 2012): 60-68.
2. W. Fleener, M. Fitzgerald, “General Mills Builds Up Big Data to Answer Big Questions,” *MIT Sloan Management Review*, May 29, 2015. [www.sloanreview.mit.edu](http://www.sloanreview.mit.edu).
3. J. Ross, D. Kiron, and R.B. Ferguson, “Do You Need a Data Dictator?” *MIT Sloan Management Review*, August 28, 2012, [www.sloanreview.mit.edu](http://www.sloanreview.mit.edu).

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