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WHAT'S YOUR BLOCKCHAIN STRATEGY?

IT'S TIME TO PLOT OUT A PLAN.

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The High Cost of the Actions We Don't Take

DURING THE THIRD SEASON of HBO's brilliant series *The Sopranos*, Carmela Soprano, played by Edie Falco, visits a psychiatrist. The psychiatrist pushes Carmela to recognize her accountability as the wife of murderous mob boss Tony Soprano.

Here is an edited version of the exchange:

Dr. Krakower: *You'll never be able to feel good about yourself, you'll never be able to quell the feelings of guilt and shame that you talk about as long as you're his accomplice.*
Carmela: *You're wrong about the accomplice part, though.*
Krakower: *Are you sure?*
Carmela: *All I do is make sure he's got clean clothes in his closet, and dinner on his table.*
Krakower: *So, enabler would be a more accurate job description for you than accomplice. My apologies.*
Carmela: *So, you think I need to define my boundaries more clearly, keep a certain distance, not internalize my...*
Krakower: *What did I just say?*
Carmela: *Leave him.*
Krakower: *Take only the children, what's left of them, and go.*
Carmela: *I would have to get a lawyer, find an apartment. Arrange for child support...*
Krakower: *You're not listening. I'm not charging you, because I won't take blood money. And you can't either. One thing you can never say is that you haven't been told.*

Krakower's insistence that Carmela own the unwashable stains of enablement should have special resonance for anyone in a position of influence today, no matter how starkly different the details of your life may be.

Most of us don't actively promote hatred and violence, or aim to keep others down, or purposefully contribute to a less hospitable world. But we do strap on blinders. We rationalize, deflect, and deny. We follow the easier path. And we own every choice we make. The greater our power, the greater the weight each choice carries.

We can choose not to engage in improving the world. We can seize on every advantage available to us and our companies without thought to the consequences. We can act as if the planet and the global economy are not among our most critical stakeholders. We can join the crush of others who are just hoping to play out the string: keep our heads down, meet our numbers, collect our bonuses, and abdicate long-term responsibility to the next generation.

But when we make those choices, we do violence against the future.

The alternative is to have the courage to accept a more difficult reality: The only way we can protect what we love is by actively pursuing a stable, just, and sustainable world. Every action has a consequence. Every inaction perhaps even more so.

One thing you can never say is that you haven't been told.

Paul Michelman // @pmichelman
Editor in Chief
MIT Sloan Management Review

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Uber Hits a Pothole

When Uber, Lyft, and other ride-hail companies made their debut in U.S. cities, many of us marveled at the ease and speed with which you could order a car with a few taps on a mobile device. In short order, the companies had millions of regular users, many of whom turned away from traditional taxis and public transit. Recently, Uber, still a private company, had a market value of about $70 billion.

But a New York City Council's decision in August 2018 to put a yearlong freeze on the number of ride-hail vehicles (pending analysis of their overall impact) reflects a shift in sentiment. Although Uber and its competitors have promoted their services as a way to reduce the number of trips people take in private cars, some believe that the services may actually worsen traffic problems (and reduce public transit ridership, along with the revenue needed to support it). An article in *The Economist* ("New York Wants to Put Limits on Ride-Hailing Firms Such As Uber and Lyft," Aug. 2, 2018) cited a study by transportation analyst Bruce Schaller, who found that in 60% of the instances when people use ride-hail services, they would otherwise have walked, biked, used public transportation, or not taken the trip at all. A more detailed analysis of the data was published on Streetsblog NYC ("Uber and Lyft Are Overwhelming Urban Streets, and Cities Need to Act Fast," July 25, 2018).

Reading Between the Lines

Hedge funds and financial managers have used text analytics and customized algorithms in recent years to scour through public filings and press releases for information that could cause a stock to move up or down. In many instances, it has helped them see small changes early — before other investors know.

Similar tools are being developed to help corporate managers spot internal problems before they become full-blown crises. In an article published in *The Atlantic* ("What Your Boss Could Learn by Reading the Whole Company's Emails," September 2018), Frank Partnoy, a law professor at the University of San Diego, describes how HR departments are beginning to experiment with language analysis software to gauge employee morale, regulatory compliance, and other critical attitudes and behaviors. For example, KeenCorp, a Dutch company that operates in this market, sells programs that, Partnoy says, enable managers to scan email anonymously and build "heat maps" that can point them to potential problems. En-japan, a Japanese recruiting firm, is experimenting with a tool that can search Slack messages in real time for keywords and emojis to learn how employees and teams are feeling.

Obviously, such monitoring raises issues of privacy and trust. Even if the information is aggregated and stripped of anything that could identify individuals, Partnoy says, "the scanning … will be viewed as intrusive if not downright Big Brotherly."

Soul-Searching at Facebook

There's no question that recent controversies involving Facebook — notably, the abuse of user data by third parties like Cambridge Analytica and Facebook's failure to prevent Russian hackers from using its platform during the 2016 election campaign — have put the company and its founder, Mark Zuckerberg, on the defensive. Last spring, Zuckerberg was grilled for nearly 10 hours by U.S. congressional committees about the company's data-collection and privacy policies. He also fielded questions at the European Parliament.

The big issues for many people are how Facebook allowed its platform to be manipulated by bad actors — and what it will do to rebuild public trust. In a July interview, Kara Swisher, executive editor of Recode and host of the Recode Decode podcast, pointedly asked Zuckerberg to speak to those concerns.

In the early years, the emphasis was on building "something that is useful and enduring," Zuckerberg explained. "In retrospect," he said, "I do think it's fair to say that we were overly idealistic and focused on more of the good parts of what connecting people and giving people voice can bring." Now that it's clear that outsiders are plotting new ways to abuse privacy and inflict damage, Facebook is beefing up its security and counterterrorism capacity. In Zuckerberg's view, "We know we need to get this right."

The 2018 Richard Beckhard Memorial Prize

The editors of *MIT Sloan Management Review* are pleased to announce the winner of this year's Richard Beckhard Memorial Prize, awarded to the most outstanding *MIT SMR* article on planned change and organizational development published from fall 2016 through fall 2017.

RICHARD BECKHARD

One of the founders and architects of the field of organizational development, Professor Richard Beckhard was a member of the MIT Sloan School of Management faculty for more than 20 years. A longtime friend of *MIT Sloan Management Review*, Beckhard was known for his efforts to help organizations function in a more humane and high-performing manner and to empower people to be agents of change.

His books include *Organizational Development: Strategies and Models*; *Organizational Transitions: Managing Complex Change*; *Changing the Essence: The Art of Creating and Leading Fundamental Change in Organizations*; and his autobiography, *Agent of Change: My Life, My Practice*.

The prize was established in 1984 by the faculty of the MIT Sloan School of Management upon Professor Beckhard's retirement. It was renamed the Richard Beckhard Memorial Prize after his death on Dec. 28, 1999.

THIS YEAR'S AWARD goes to the spring 2017 *MIT SMR* article "The Corporate Implications of Longer Lives," by Lynda Gratton and Andrew Scott.

This article explores the impact of longer life spans both on employees and on the policies and practices of organizations. The authors found that the traditional work-life stages, progressing from full-time education to full-time work to "hard stop" retirement, no longer apply to much of today's workforce. With longer life expectancies, men and women may want or need to be productive for longer, which will necessitate more (and different) life stages and continuous learning. Yet, as the authors point out, most corporations are out of sync with those needs.

Gratton, a professor of management at London Business School, and Scott, an LBS professor of economics, offer a framework and recommendations to help organizations rethink the arcs of employees' careers and allow for more flexibility and change.

The authors suggest that, rather than adhering to linear career models that emphasize the accumulation of financial assets, employers must incorporate "intangible" factors into the equation and should, for example, pay attention to employees' needs for "productive assets" like skills and knowledge, "vitality assets" like health and work-life balance, and "transformational assets" like self-knowledge and diverse relationships. Those assets will depreciate if people don't have the opportunity to actively build and maintain them throughout their careers, Gratton and Scott explain.

In choosing this article, the judges said Gratton and Scott brought a fresh and valuable perspective to a critical challenge facing organizations today. In particular, they saw the authors' conclusion — that it's time for companies to rethink their HR practices to reflect the changing workforce — as having major implications for recruitment, retention, learning, training, compensation, promotions, and retirement, affecting how companies will design jobs for people into their 70s and beyond. In the judges' view, the article's core thesis was well-aligned with the thinking of Richard Beckhard, and "he would have jumped at the opportunity to advise on implementing such changes."

This year's panel of judges consisted of the following distinguished members of the MIT Sloan School of Management faculty: Erwin H. Schell Professor of Management John Van Maanen, adjunct associate professor of operations management Zeynep Ton, and retired senior lecturer Cyrus Gibson.

The Winners

Lynda Gratton and Andrew Scott

Authors of:

"The Corporate Implications of Longer Lives,"

MIT Sloan Management Review, Volume 58, No. 3 (spring 2017): 63-70
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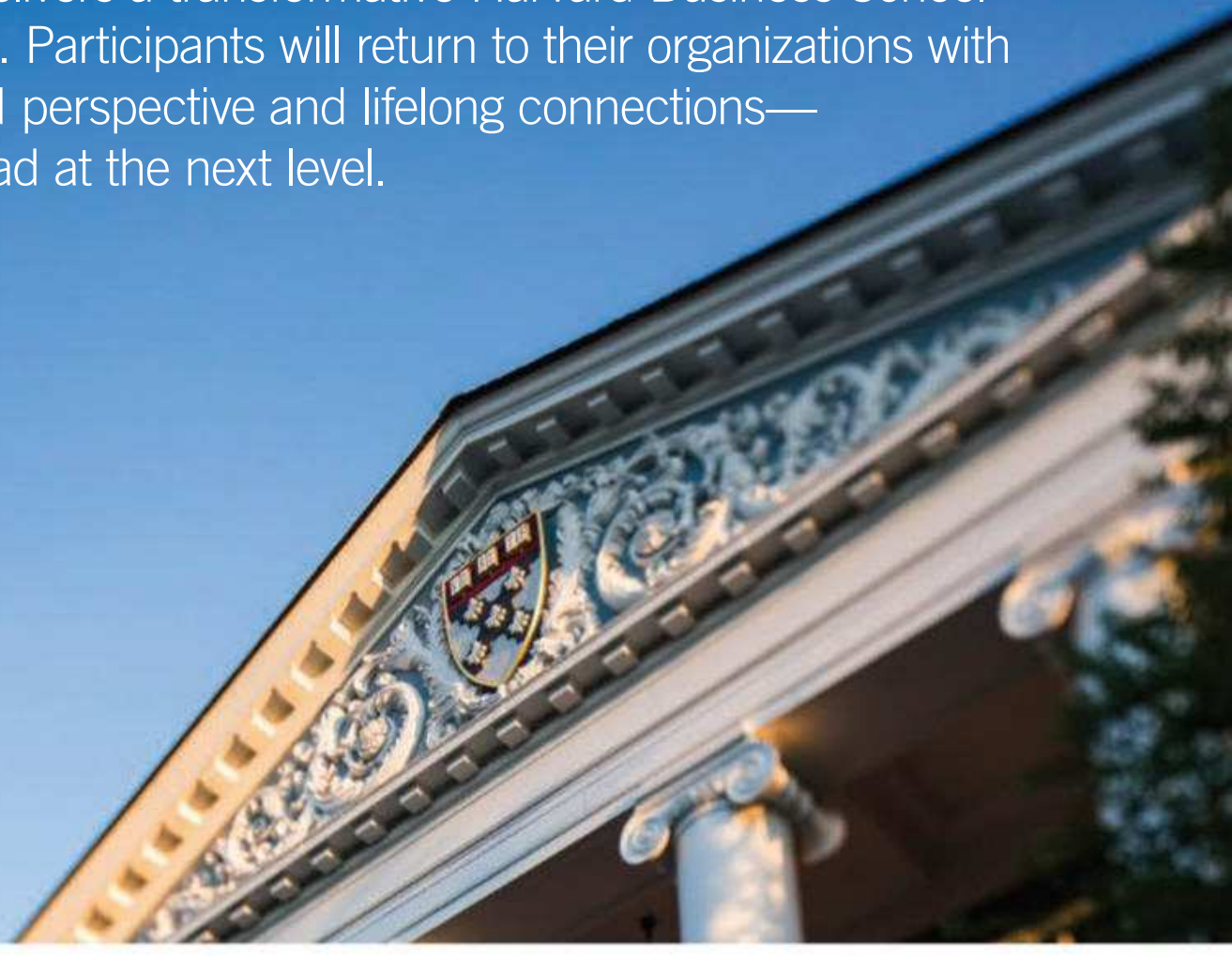

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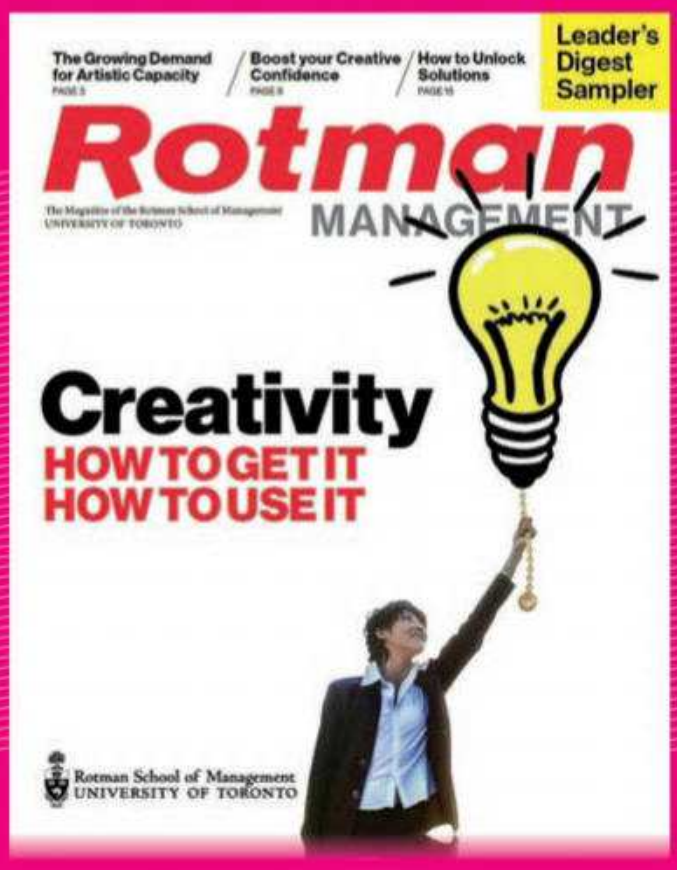

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INSIDE

THE NEW WORLD OF WORK

AI Isn't the Death of Jobs

Research suggests that using AI to innovate will have a positive impact on employment.

BY JACQUES BUGHIN

When pundits talk about the impact that artificial intelligence will have on the labor market, the outlook is usually bleak, with the loss of many jobs to machines as the dominant theme. But that's just part of the story — a probable outcome for companies that use AI only to increase efficiency. As it turns out, companies using AI to also drive innovation are more likely to increase head count than reduce it.

That's what my colleagues and I recently learned through the McKinsey Global Institute's broad-based research initiative aimed at understanding the spread of AI in economies, sectors, and companies. We polled 20,000 AI-aware C-level executives in 10 countries to compile a sample of more than 3,000 companies (mostly large), identified distinct clusters within that pool, and ran a variety of scenarios on those clusters to project the effects of AI on employment, revenue, and profitability.

This research and analysis suggest that although AI will probably lead to less overall full-time-equivalent employment by 2030, it won't inevitably lead to massive unemployment. One major reason for this prediction is that early, innovation-focused adopters are positioning themselves for growth, which tends to

AI Isn't the Death of Jobs (Continued from page 9)

stimulate employment. (See "How AI-Based Innovations Drive Employment.")

Here's how we expect things to play out in the five clusters of companies we examined.

Enthusiastic innovators. Pioneering companies that make early investments in AI and embrace the disruption it can create in the quest for advantage adopt a full range of AI technologies and use them to bolster innovation and efficiency. These "enthusiastic innovators" are analogous to what sociologist and communication theorist Everett Rogers called "early adopters" back when he coined the term — they're intrinsically motivated to use new technology to shape and open markets. While this approach is potentially complex in the short term, our analysis shows that by 2030, the profitability of enthusiastic innovators will grow 8% faster than that of the average company on an annual basis, their revenue will grow 4% faster, and their head count will rise 2.2% faster.

Currently, only about 2% of the sample companies qualify as enthusiastic innovators, but by 2030, we expect that figure to grow to 12% and account for 20% of total revenue of companies across all the clusters. Companies in this cluster include many digital natives: Google, for example, is using AI to drive innovations in search and to pursue efficiency by reducing the energy consumption of its servers. They also include a lesser number of conventional companies: Chinese insurer Ping An Insurance, for instance, has launched a variety of CEO-sponsored AI initiatives aimed at topline growth and has hired more than 600 data scientists to support these ventures.

Careful innovators. Companies that are somewhat slower than enthusiastic innovators to invest in AI and spread adoption balance the risks of jumping into the new technology too quickly against the competitive threats they may face from more aggressive early adopters. These "careful innovators" often focus their transformational initiatives more narrowly, mostly within their industry of origin — either because they are locked into legacy systems or because they see less opportunity elsewhere. Our analysis suggests that, by 2030, the profitability of careful innovators will grow 3% faster per year than at the average company, and head count will rise almost 1% faster.

By 2030, careful innovators will account for about 12% of all companies and 14% of the overall company revenue. These companies tend to be the incumbents in business-to-business (B2B) or less digitally mature sectors, rather than digital natives. Volvo Cars, for example, recently pegged 4% to 5% of its annual revenue to deploying new electric car innovations, many of which will be enabled by the focused application of AI.

Efficiency leaders. Like enthusiastic innovators, "efficiency leaders" are early adopters and use AI intensively; however, their primary focus is profitability — they rely on AI to boost efficiency and replace labor. Our analysis shows that, by 2030, the head count of efficiency leaders will fall roughly 3% faster per year than average, and their profitability will grow nearly 5% faster. But their revenue will grow only about 1% faster. The small amount of topline growth that efficiency leaders will capture stems from the market share gained by passing some of their cost savings on to customers.

By 2030, efficiency leaders will account for approximately 8% of companies and about 9% of overall revenue. In general, these are digitally savvy companies in industries such as banking, insurance, and manufacturing that are seeking to reduce the costs associated with manual processes. For example, in 2010, after Parkdale Mills, the largest buyer of raw cotton in the U.S., retooled its long-shuttered South Carolina plants with smart robotics, it was able to reduce its staff by more than 90%.

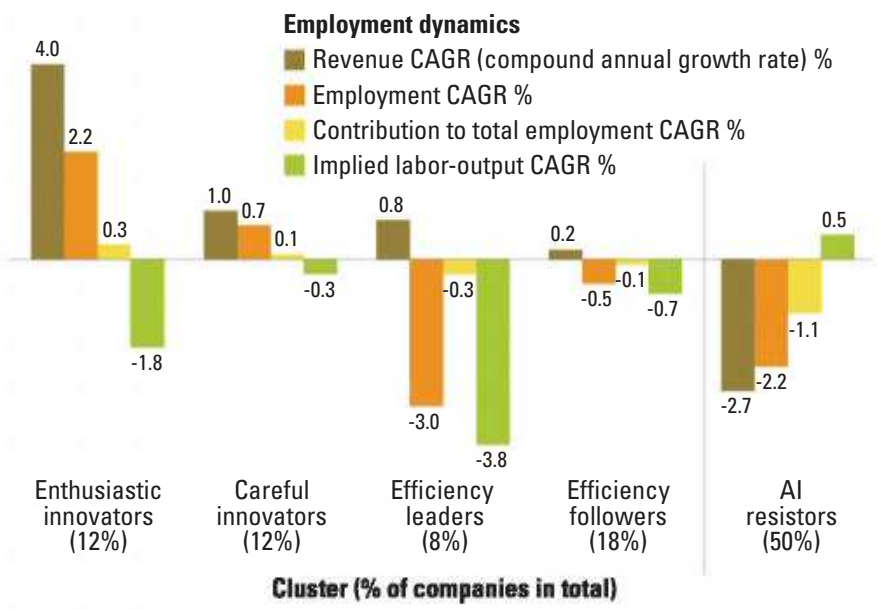
Efficiency followers. Other companies focus their AI efforts on efficiency but adopt AI very slowly. Consequently, the profitability of these "efficiency followers" will grow only 0.2% faster than average annually, and their head count will fall 0.5% faster.

Efficiency followers represent the second-largest cluster of companies in our sample: 18% of companies, accounting for 19% of the overall revenue. These companies are found in every sector, but they are less prevalent in high-tech and other AI-advanced sectors, such as media and financial services. They tend to use digital technologies for process optimization but usually have not used them for business reinvention.

AI resistors. The companies in our last group, the "AI resistors," either don't invest in AI at all or do so on a very limited scale (in one function, for example, or with a narrow set of

HOW AI-BASED INNOVATIONS DRIVE EMPLOYMENT

Here are the performance and employment shifts we expect to see through 2030 for five types of companies.



Source: McKinsey Global Institute. Estimates are for 2018-2030 for OECD countries, showing the average scenario. Contribution is based on revenue size of each cluster by 2030.

technologies). Their revenue will shrink 2.7% faster annually than the average; their revenue share will go from 50% of all companies to 39% by 2030. Moreover, their cumulative profitability will fall 12% faster than average by 2030. The head count of AI resistors will fall 2.2% faster than average annually — a result of their limited employment prospects.

AI resistors are, by far, the largest cluster of companies, representing half of our sample. These companies may be daunted by the complexities and costs of AI, or they may be locked into legacy strategies or systems.

Although this is the only cluster that will grow its labor output compared with the average of all companies, AI resistors may actually have the least favorable employment prospects of the five clusters. Because of the profitability pressures they will experience, they will likely have to cut costs — particularly, head count — over the long term. So their outlook for jobs may be even more troubled than our analysis indicates.

Putting It All Into Perspective

As we compare the five clusters in terms of revenue, profitability, and employment, it's important to consider a couple of things.

First, in the average scenario, the overall effect of AI between now and 2030 is significantly less substantial than you might expect. For instance, the impact on the labor/output ratio is about a 1% drop each year. This is not much different from the trend in labor productivity reported by the Organisation for Economic Co-operation and Development from 2001 to 2010.

Second, employment macro-dynamics will depend on AI activity within sectors and economies. More companies using AI to innovate will bolster overall head count. More AI resistors and companies pursuing AI solely for efficiency will reduce the number of employees in an industry or economy.

So, it's not an inevitable conclusion that AI will ratchet up unemployment, as many have suggested — at least between now and 2030. The outlook is more nuanced than that. Job losses will arise as the result of automation, as the labor-output ratio evolution suggests. But what often gets overlooked is that job losses are also a risk of companies' inability or unwillingness to use AI for innovative purposes, which leads to lower revenue and profit — and a lower absolute need for labor.

As is so often the case, the future is malleable. We forge tomorrow's path with our actions today.

Jacques Bughin *is a senior partner in the Brussels office of the management consulting firm McKinsey & Co. and a director of the McKinsey Global Institute. Comment on this article at http://sloanreview.mit.edu/x/59429.*

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THE NEW WORLD OF WORK

Four Ways Jobs Will Respond to Automation

The level of threat to a given profession depends on two factors: the type of value provided and how it's delivered.

BY SCOTT LATHAM AND BETH HUMBERD

There is no question that automation is changing the nature of work. But are the robots really coming for your job?

One of the most popular narratives is that low-paying jobs are doomed, while college-educated professions will remain largely untouched. Analysts often focus on wages and education as the primary predictors of job evolution, along with organizations' potential to increase efficiency and reduce costs by changing or cutting jobs. But our research points to a more nuanced explanation.

Four Ways Jobs Will Respond to Automation (Continued from page 11)

A review of the academic literature and public discourse on automation revealed limited consideration of risks by profession. So we did our own comparison, coding 50 professions (including many from our literature survey) according to the type of value jobholders delivered and the skills they used to deliver it, to create a framework that helps workers assess what kind of threat automation poses for them. We identified four paths of evolution — jobs will be disrupted, displaced, deconstructed, or durable — and found that value is more predictive of change than wages, education, efficiency, cost, or other factors.

Counter to popular belief, it's not necessarily blue-collar or non-college-educated workers who will be most threatened by automation in the coming decades. Our analysis suggests that a plumber may see less disruption than a legal professional. Simply instructing everyone to engage in continuous education and skill development is remiss. Workers must understand the four paths of job evolution — and the factors behind each path — if they hope to adapt.

Understanding the Four Paths

A jobholder uses a core set of skills to deliver value in some form to a recipient — either externally to a customer or within an organization. Jobs evolve as those consumers' perceptions of value fluctuate along two dimensions: core skills and delivery mechanism, or what we call value form.

For some jobs, core skill sets include a specific knowledge base or craft. Others involve people skills and the ability to build relationships rather than technical expertise. Skills that can easily be standardized, codified, or routinized are most likely to be automated. Those that involve hands-on or real-time problem-solving are less so, because developing tools sophisticated enough to handle such ambiguity is either too cost- and labor-intensive or technologically out of reach. For example, while an electrician's skills may seem vulnerable to automation, the application of those skills varies widely according to the unique circumstances of every client. This degree of customization would be difficult to automate.

A skill set provides value only when it is delivered to a recipient, however, and the delivery mechanism may be transformed. Here's an example: A professor's core skill set is expertise in a certain domain. Such expertise has traditionally been delivered to consumers (students) through in-person classes. However, online platforms and massive open online courses, or MOOCs, offer new vehicles through which learning can occur. The core skill remains the same, but technology is shifting the value form as adaptive software and virtual tutors offer highly personalized instruction and support to growing numbers of students with diverse needs. And computer-directed learning will continue to improve with the increasing sophistication of automation and AI.

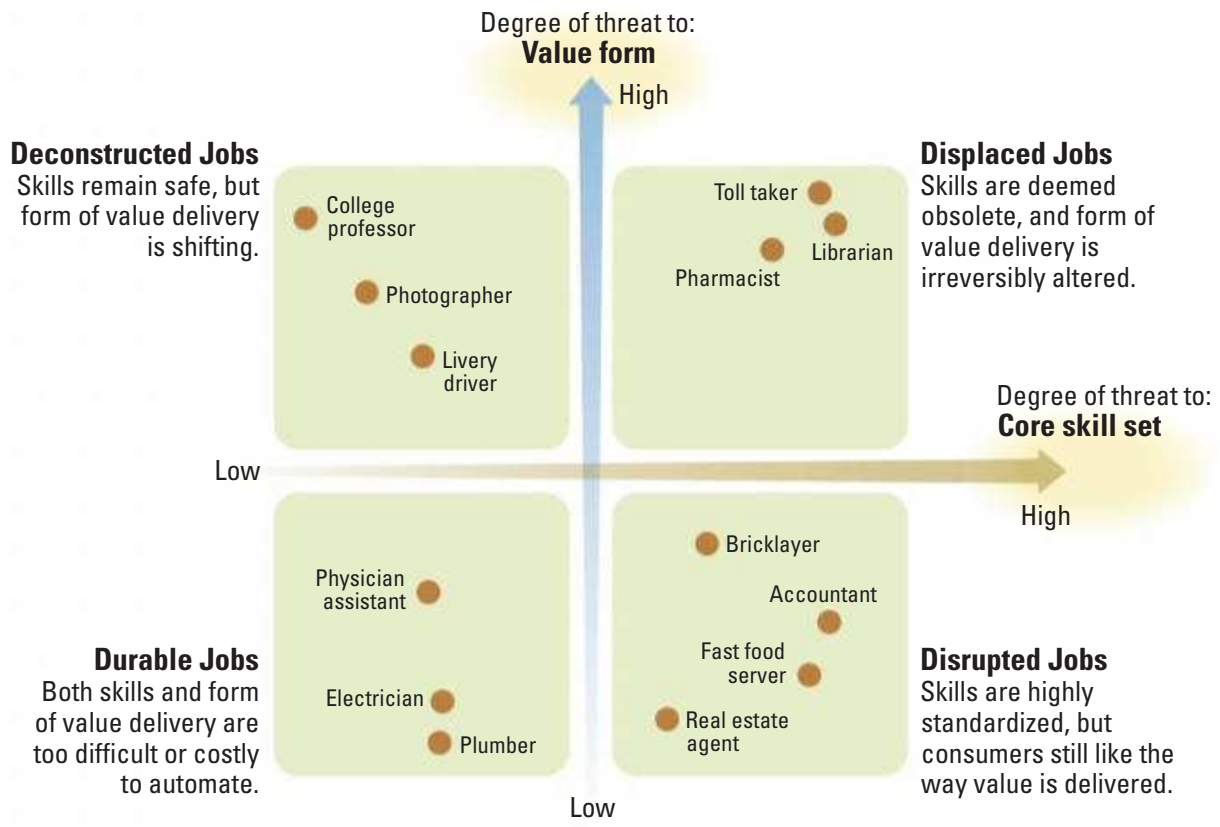
We identified the four ways automation will affect jobs by separately assessing the degree of threat to each profession's core skill set and value form. (See "Which Professions Are Most Vulnerable to Automation?") Here, we'll describe those paths to evolution and suggest strategies for navigating each one.

Disruption. Disruption occurs when the skills in a job are highly standardized yet the consumer prefers to receive value in the same form. It typically follows a reduction in the production costs of goods or services due to increased efficiency. For example, fast-food workers' core skill sets are highly threatened by the implementation of self-ordering stations and apps where customers place their own orders. Food preparation in this setting is also highly standardized and may eventually be automated as well, disrupting workers in both checkout stations and kitchens. Although these workers' skills are threatened, the consumer will continue to receive the same value form — fast food prepared consistently and quickly.

Some highly skilled professionals, such as real-estate agents and legal professionals, are experiencing similar disruption from house-hawking robots

WHICH PROFESSIONS ARE MOST VULNERABLE TO AUTOMATION?

Threats should be assessed along two dimensions: How replaceable are the core skill sets? And how much of a shift is there in the way value is delivered?



and the automation of document reviews and other routine legal tasks (although the more nuanced work of advising clients and negotiating in court requires human lawyers, at least for now). Accountants — another example — are seeing the automation of company ledgers and other types of financial data. Value form is not threatened because consumers still need access to their financials, but the skills used to generate those financials are vulnerable.

Finding transitional roles in which human involvement remains necessary is one adaptive solution. As large-scale automation continues to spread, consumers will have to learn to interact with nonhuman providers and adopt new routines. Disrupted workers can function as a bridge, ensuring that value is delivered to end users in its current form as processes are automated. For example, bricklaying robots are much faster and possess more stamina than their human counterparts. But for now, human bricklayers are necessary to complement and safeguard the robots' abilities, read blueprints, and do corners.

Displacement. With displacement, the core skills of a job are deemed obsolete and the value form is irreversibly altered. Toll takers and telephone operators have already experienced displacement, but even highly skilled professions are not immune. Take pharmacists. They fill prescriptions, deliver them to consumers, and answer questions at brick-and-mortar pharmacies. Yet as more prescriptions are filled online and delivered through the mail, the value form and core skills of human pharmacists are increasingly fulfilled by automated processes. Other jobs facing displacement include librarians (for similar reasons) and software developers (because the skill of writing code is easily standardized, and thus value form has shifted away from in-house development to open platforms such as the cloud).

Retraining is often recommended for displaced workers, but that doesn't always mean more formal education. They should focus on quickly acquiring the most relevant skills in an area with a relatively stable value form. In a volatile job market, lengthy programs that require years to complete (such as extra bachelor's degrees) are likely not the best approach. Micro-credentialing programs — competency-based certifications, mini-degrees, and digital badges — deliver qualifications more quickly and offer more options on the path to a degree along with a sense of accomplishment as individuals obtain marketable skills fast. We suggest targeting high-growth sectors that need workers. A timely example is cybersecurity — a rapidly growing field where trained workers (who can qualify through certificate programs) are in demand.

Deconstruction. In the case of deconstruction, the core skill set remains safe, but the value form is threatened. Take, for example, taxi or limo drivers, or anyone who operates a car service. Livery drivers' skills are central to the value delivered to customers — getting from point A to point B safely and efficiently. While those skills may be threatened by driverless automobiles at some point, human drivers will likely be a necessity in the near term. Yet the value form has already shifted. Traditionally, the value of livery transportation was offered as part of a centralized fleet — drivers were employed by a handful of taxi management companies within a city. Now, the same value is being delivered by Uber, Lyft, and others in the decentralized sharing economy. Photographers and professors are facing similar deconstruction. Their skills remain important, but consumer delivery preferences are changing.

When facing deconstruction, adapt your skills to new value forms. While this sounds easy enough, the biggest impediment is resistance to change. It is well-documented, for example, that many faculty resist online education as a new model for sharing knowledge and expertise with students. Livery drivers would be wise to adjust to evolving transportation norms instead of following these professors' lead. When a new value form becomes central to consumers' expectations, you have a choice: acclimate or fade into obsolescence.

Durability. Often lost in workforce analyses is the fact that many jobs will remain unchanged for the foreseeable future, including some lower-wage jobs. We refer to jobs as durable when neither the core skill set nor the value form is under significant threat. Electricians and plumbers are highly durable professions because the work is rarely routine and the cost to develop a technology that could deliver value in the same form — hands-on problem solving — is excessive. Another example is the physician assistant. The skills associated with this job — medical training, insurance industry insight, bedside manner — will likely become more important as broader technological advancements require fewer doctors to treat more patients. Doing much the same work for less money, physician assistants may just disrupt the role of doctors.

The key for people in durable jobs is to avoid complacency by keeping an eye on tomorrow. Consider whether consumers' future preferences are more likely to threaten your profession's core skill set or its value form. Be aware that any job (including those discussed here) could drift from one evolution path to another over time. Thus, the framework we've described is a tool to be consulted regularly, even if your job is durable now.

IT'S DIFFICULT TO TELL which jobs will be disrupted, displaced, deconstructed, or durable further down the road, but we believe that the basic framework presented here will hold up to changing times. While others have acknowledged that automation will affect jobs in different ways, our focus on jobs as a function of value creation offers an explanation of the underlying dimensions

Four Ways Jobs Will Respond to Automation
(Continued from page 13)

at play. Understanding core skills and value form as the key units of analysis will help jobholders of all types respond to workforce changes currently underway — and tackle those that are impossible to predict.

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THE NEW WORLD OF WORK

How AI Can Amplify Human Competencies

Advanced systems will continue to help people do their jobs better instead of replacing them.

KEN GOLDBERG, INTERVIEWED BY FRIEDA KLOTZ

KEN GOLDBERG, professor and department chair of industrial engineering and operations research, UC, Berkeley

Though artificial intelligence systems are already becoming a part of daily life, recent debates about AI and the future of work have gained a sense of urgency. The late Stephen Hawking worried that humans "couldn't compete, and would be superseded" by machines, while Tesla founder Elon Musk has suggested that competition in AI could lead to World War III. *The Economist* reported earlier this year that nearly half of the jobs in 32 developed countries surveyed by the Organisation for Economic Co-operation and Development (OECD) were vulnerable to automation, declaring, "a wave of automation anxiety has hit the West."

Ken Goldberg, professor and department chair of industrial engineering and operations research at UC Berkeley, is pushing back on all of that. Instead of embracing the notion that robots will surpass humans and replace us in the workforce (a concept referred to as "singularity"), he argues for "multiplicity" — a hybrid view of how new technologies and people might work in partnership toward human goals. To an extent, he says, this is how AI is already starting to function.

MIT Sloan Management Review correspondent Frieda Klotz spoke with Goldberg about a future in which AI is a complement, not a threat, to workers. What follows is an edited and condensed version of their conversation.

MIT SLOAN MANAGEMENT REVIEW: **What areas of robotic technology is your lab currently working on?**

GOLDBERG: We're developing robot software for tasks as wide-ranging as warehouse order fulfillment, home decluttering, and robot-assisted surgery. What's common to all the work we're doing is the idea of algorithms and learning for robots, improving our ability to analyze data and examples and then use that to build control policies — or models — for how robots can move.

The area I've been working on for 35 years is robot grasping — how to reliably pick up objects. It's easy for humans, but it's a problem for robots. Basically, every robot is still a klutz, and that's a big challenge if you want to develop one that will declutter a home or pack boxes in a warehouse.

Can you talk about your concept of multiplicity?

GOLDBERG: People keep saying we're on the verge of a transition, the singularity, when computers will take over. There's a sense that AI is a magical technology that's going to transform industries and replace humans, putting people out of work. But we're not anywhere near that point.

There are really good technologies and many interesting developments, and in some domains machines can be better than humans. Machines are very good at precision; they're very good at calculating numbers and pattern recognition. But there are several domains in which machines, and especially robots, don't excel. The most advanced robotic grasping technique isn't as deft as a 3-year-old! I'm concerned that people have expectations that are out of line with the current reality — and that these will distract us from what we should be worrying about and planning for. That's what led me to multiplicity, the idea that we'll see new partnerships between teams of humans and machines. Most of the systems that we use actually arise from human interaction. And this is already happening every day — for example, when by clicking on results, we give Google's search algorithm feedback that it then uses to refine future results.

Multiplicity requires diversity. If you look at a body of thinking called ensemble theory, you can prove that diversity is helpful

for a machine learning system. The relationship is something you can formulate mathematically. That's really exciting, because it's consistent with what we're starting to find about groups of humans: that if you have a diverse group of people, you get better, more creative ideas, more insights, and better outcomes.

We'll see different kinds of diversity, then — not just between people but with people and robots putting their efforts together.

GOLDBERG: Exactly. Qualities like intuition, empathy, creativity are all very human — we're very good at looking at holistic situations, generalizations — and we can blend those qualities with the precision that machines provide.

We should be celebrating this, because it literally leads to better decisions and better processes.

In the next few years, how might robotics not be as useful as people expect?

GOLDBERG: People claim that we're going have autonomous trucks, which would eliminate truck driver jobs. They say this about Uber or Lyft drivers too, but this is not going to come to pass.

We will make some progress; you can drive for good stretches on the freeway today with a robotic system. But there are so many complexities about driving in a city or a suburban environment that make it much harder, especially if you're in a truck, because there are narrow and winding streets to navigate. We're going to need human truck drivers for the foreseeable future — for the rest of my lifetime and my kids' lifetimes.

Another example is that some claim there's no future for journalists. Computer systems take data about sporting events and then generate stories, which read reasonably well. That's because they can identify patterns and put numbers and results into those patterns, and it may work to an extent. But machines don't yet have the ability to pick up what is really interesting about a sporting event, the particular nuances of what's going on, or make analogies about what the teams are doing.

Aren't machine learning teams working on these kinds of distinctions?

GOLDBERG: They are, but realistically they are years away from making it happen. What robots are great at are jobs that no one else wants to do — the dirty, dull, and dangerous jobs. I do think we'll have our decluttering robot that can tidy up around our homes in the next 10 years, at a price we can afford. Robots will also excel at tasks like washing windows on skyscrapers.

When it comes to more specialized fields like medicine, some of my work uses data from human surgeons and inferred models to develop robots that can perform suturing or remove fragments — tasks considered tedious by most surgeons. This gives physicians the ability to be focused and present and have more attention for the things that matter most.

What could business leaders be doing to allow these sorts of partnerships to flourish in their organizations?

GOLDBERG: CEOs should appreciate the value of the people who work for them and reassure employees that AI systems can actually help them do their jobs better, instead of replacing them.

AI will be able to perform many of the duller office tasks. Think of the pain points that hinder workers from getting on with the more important parts of their jobs — scheduling meetings, transcribing, taking notes, summarizing and indexing documents. What CEOs should be thinking about is how these tools can enhance the performance of employees.

Is there any risk that you are underestimating machines and their abilities?

GOLDBERG: I could be wrong, of course. But I have not seen any evidence that a computer is capable of innovation and creativity. Robots can be programmed to behave in a way that mimics human inventiveness, but they're unable to innovate spontaneously, to exchange ideas the way people do, to forge truly new insights or designs, and to recognize them as such. Doing this requires a vast understanding of what is normal and what isn't, which we don't know how to formalize.

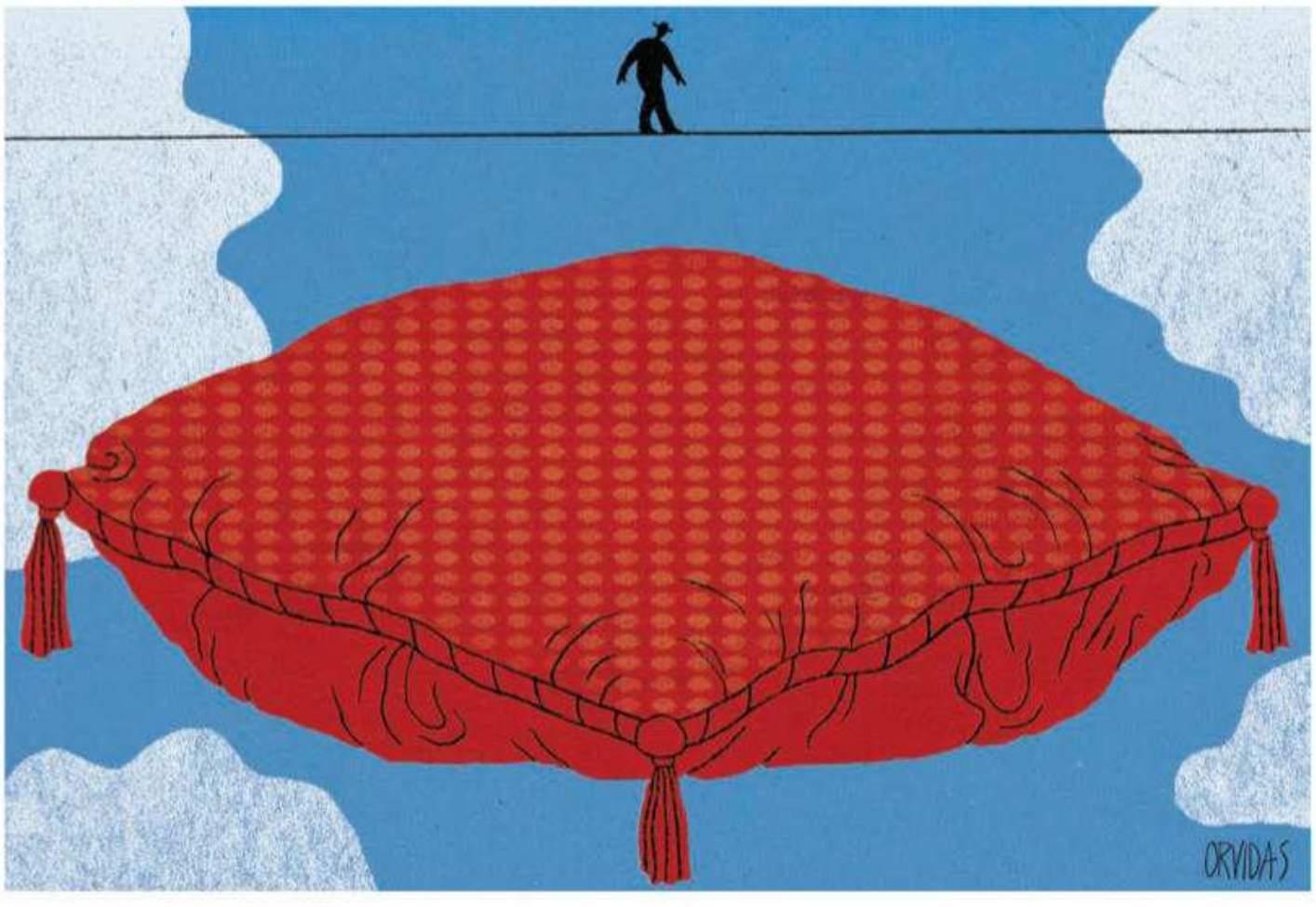
It's one element of the Turing test, which examines whether a machine can keep up its end of an interesting conversation in a way that's indistinguishable from human intelligence. We're not even close; by that measure, we don't have intelligent machines, and we haven't made any progress, really, in 60 years. All the developments in AI are exciting, but that human-level frontier is still as hard to breach as it was decades ago.

Why do you think people have latched onto the idea of singularity when it may not accurately represent technological advances?

GOLDBERG: Even in the beginning of the 20th century, when automation came out, there was talk about robots taking over. It's cyclical.

People say this time is different — the technology is different. Yes and no. The fact is, we do have faster computers, we have a lot more data to work with, and we have made some progress. But in the most important ways, machines are nowhere near surpassing humans.

Frieda Klotz *(@friedaklotz) is a freelance journalist and correspondent for* MIT Sloan Management Review*.* *Comment on this article at http://sloanreview.mit.edu/x/60117.*



[RISK MANAGEMENT]

Platforms Should Be More Than Matchmakers

By identifying and mitigating risks for sellers and buyers, platform businesses can open up new markets.

BY JEFFREY L. SAMPLER

In 2011, Airbnb, the vacation-rental website, learned it wasn't just in the business of pairing up short-term renters with people who had a spare room or an empty apartment. It was also a risk manager — or would have to be if it wanted to continue to grow.

That lesson sprang from Airbnb's hometown of San Francisco. A local woman — she identified herself in a blog post on her experience only as EJ — rented out her apartment via the site and came home to find it ransacked and her jewelry and electronics missing. Her first call, after the cops, was to Airbnb. She said she waited 14 hours to hear back. One of the early responses from the company, according to EJ, wasn't pretty: An Airbnb executive asked her to take down her blog post because the bad publicity might hurt his company.

And that bad publicity did arrive. Within days, media outlets ranging from TechCrunch to *Time* and CNN had picked up EJ's post. Soon, Airbnb's CEO, Brian Chesky, was issuing a public apology. It said, in part: "In the last few days, we have had a crash course in crisis management. I hope this can be a valuable lesson to other businesses about what not to do in a time of crisis." The vandal ended up being arrested, and Airbnb announced a raft of new protections for hosts, including providing $50,000 worth of property insurance. (In 2014, the insurance coverage rose to $1 million.)

Seven years after EJ's misfortune, Airbnb is booming. It raised $1 billion in funding last year and is estimated to be worth $31 billion. I'd credit at least some of that success to the company's realization that it had to think differently about risk and to manage it.

Platform businesses, like Airbnb, the transportation service Lyft, and even the dating site Tinder, often talk about themselves as if they're merely matchmakers (and some of them certainly are that). That's an appealing pitch — when a company is negotiating with a prospective investor. After all, bringing buyers and sellers together online and taking a small cut of their transaction is comparatively cheap and infinitely scalable. That's exactly what investors love.

But any platform business that wants to thrive will have

KEN ORVIDAS/THEISPOT.COM

to learn what Airbnb did: Matchmaking isn't everything. Your success also depends on identifying and mitigating risks for your buyers and sellers; you're a matchmaker *and* a risk minimizer.

Risk in a Sharing Economy

Another name for the platform economy, the one preferred by many proponents, is the "sharing economy." This sharing can be either physical, as with Airbnb or Turo, the car-rental company, or informational, as with Yelp or TripAdvisor. Either way, it leads to business models based on the declining marginal cost of helping others provide and consume goods or services. Where we once had only economies of scale and scope, we now also have economies of sharing.

Outside the financial sector, businesspeople often conceive of risk too narrowly: They think of it as bad things that can happen *to them* — bankruptcy, unpaid debts, supply interruptions, or technical malfunctions. But risk is really uncertainty about outcomes.

For a platform seller, that can mean uncertainty about future earnings or the resources needed to create those earnings. For a platform buyer, it can mean uncertainty about the quality of the product or service being offered or even about the reliability of its delivery. My daughter, more than once, has had an Uber driver abandon a promised pickup.

In traditional businesses, risks to buyers are often managed through social pressure, not corporate policies. I assume my local restaurateur won't poison me and my local auto mechanic won't rip me off, because they're concerned about their reputations. If I have a bad experience, I'll grouse to my neighbors and acquaintances, who are also their customers. Enough complaints, and the risk of bankruptcy becomes real.

But managing and protecting one's reputation is more complicated in an online world, especially when the merchant is a high-profile platform like Airbnb or Uber. A disgruntled customer like EJ can broadcast her story and have it picked up by media outlets nationwide. Sure, platforms like Yelp can help local consumers air complaints, too. But the size and scale of a successful platform business — Airbnb operates globally — creates a multiplier effect: A local problem can morph into national news.

Many platforms encourage suppliers and buyers to review one another, thus creating online reputations. Airbnb has also created a feature called Social Connections, which lets users integrate their social networks into their transactions for extra verification and comfort. By helping hosts and guests manage risk, Airbnb has expanded its market. For a platform company, the quantity and value of goods or services bought and sold will be directly proportional to the amount of risk mitigated.

Trouble With Trust

In any transaction with customers, a company's brand is a surrogate for trust — its reputation writ large. When selecting a hotel, customers typically opt for a brand with which they've had good experiences: comfortable beds, for instance, or tasty breakfasts. Creating those good experiences is largely about controlling quality — promptly replacing worn mattresses and serving up fresh Danishes and doughnuts. But, beyond reviews, how does a platform business create trust when it doesn't control the quality of the asset or experience that's supposed to produce the earnings?

Let's consider how HopSkipDrive, a ride provider for kids from ages 7 to 17, tackles this challenge. Making parents feel safe about the service — reducing risk — is essential to its brand promise.

HopSkipDrive takes many steps to ensure this trust. Visit its website, and a safety tab is prominently displayed. Click there, and you'll find the company's 15-point driver certification process. Among the requirements are that drivers have at least five years of childcare experience. Click again, this time on the CareDriver link, and you'll find pictures and biographies of drivers — a nurse and a nanny among them.

The safety assurances continue once a kid is in a car, with HopSkipDrive providing smartphone updates to parents on the route taken and the speed driven. Once the child is dropped off, a text message summarizes the ride. Without assurances like these, parents would naturally assume the worst about potential drivers.

Our tendency to assume the worst doesn't just apply to people who want to cart around our kids. It's a problem in any transaction where there's information asymmetry between the buyer and the seller, where one party knows more than the other.

Nobel laureate and economist George Akerlof famously described this as the lemons problem that inhibited the used car market. In an article published in the August 1970 issue of the *Quarterly Journal of Economics*, Akerlof pointed out that when considering a used car, a buyer can't really know its underlying condition. Was it in a wreck? Has the seller regularly changed the oil? Because buyers can't know, they assume the worst. They're then willing to offer only low prices, and that, in turn, drives all the sellers with good cars out of the market, exacerbating the lemons problem. Akerlof has written that once he began pondering used cars, he realized that "asymmetric information was potentially an issue in any market where the quality of goods would be difficult to see by anything other than casual inspection."

Platforms Should Be More Than Matchmakers
(Continued from page 17)

One can have a successful platform business and not worry about the lemons problem or mitigating buyer risk, but that market will necessarily be limited. Think about how Craigslist operates. It unites buyers and sellers of goods that are mainly easy to inspect and impractical to ship long distances, like used furniture. Though it operates internationally, it has separate sites for each major city. If I'm a student living in Houston and searching for a used bookcase, I'm unlikely to care about listings from Los Angeles or even Dallas. Craigslist has succeeded by staying simple: It offers up bare-bones listings and doesn't do much to mitigate risk. You won't find someone selling costly collectible art there.

Still, Uber's recent difficulties show the peril of defining a platform provider's role *too* narrowly. The company appears to have focused on growth to the exclusion, for a long time, of the safety concerns of passengers and regulators and the equity concerns of drivers. In the wake of physical assaults on passengers by drivers, hacks of its computer systems, and even a pedestrian death caused by a driverless car it was testing in Arizona, Uber has a major trust problem, and its momentum has slowed as a result.

As Uber is discovering, sustainable growth in the sharing economy can be achieved only if risk is shared in ways that all parties to a transaction feel are safe and equitable.

Three Mandates for Growth

Old-fashioned matchmakers — whether the kind who kindled romances or those who brokered paintings by van Gogh and Vermeer — understood that their reputations were only as good as their last match. So, they also appreciated that their real work occurred before the first date or auction.

Companies hoping to grow platforms must approach their markets the same way. No one expects a platform provider to anticipate every form of risk, but as a market develops, a company must identify and mitigate the new forms of risk as they emerge. It must also act as a regulator, establishing rules of engagement, and an arbitrator, resolving disputes. All three tasks — matchmaking, regulating, and arbitrating — are key to opening new markets.

Again, witness Airbnb, which began by offering spare beds in urban apartments. Its rental listings now include mansions and yachts. Someone who owns a mansion doesn't want to end up like EJ.

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[COMMUNICATION]

Improving Communication in Virtual Teams

Five strategies boost performance.

BY N. SHARON HILL AND KATHRYN M. BARTOL

As collaborative technologies proliferate, it is tempting to assume that more sophisticated tools will engender more effective virtual communication. However, our study of globally dispersed teams in a major multinational organization revealed that performance depends on how people use these technologies, not on the technologies themselves.

We asked team members to rate one another on virtual communication behaviors culled from a growing body of research on virtual teams. Peer assessments focused on five best practices: matching the technology to the task, making intentions clear, staying in sync, being responsive and supportive, and being open and inclusive. (Participants had worked together for some time and had been tasked with improving key business processes.)

MICHAEL AUSTIN/THEISPOT.COM

Individual scores were averaged to determine team scores.

When controlling for past experience on virtual teams and level of technology support available, we found that teams with higher scores on the five behaviors also received higher ratings from their leaders on producing quality deliverables, completing tasks on time, working productively together, and meeting or exceeding goals. Results indicated a linear relationship across the board: For every 10% that a team outscored other teams on virtual communication effectiveness, they also outscored those teams by 13% on overall performance. Although the research focused on dispersed teams, we believe the same strategies can help colocated teams, which increasingly depend on virtual collaboration tools.

Let's look at each of the five behaviors in detail. They may seem basic at first glance, but we've observed that they are often overlooked. When teams are informed of these simple strategies and take steps to implement them, they outperform teams that don't.

1

Match the technology to the task. Teams have many communication technologies at their disposal, ranging from email and chat platforms to web conferencing and videoconferencing. People often default to using the tool that is most convenient or familiar to them, but some technologies are better suited to certain tasks than others, and choosing the wrong one can lead to trouble.

Communication tools differ along a number of dimensions, including information richness (or the capacity to transfer nonverbal and other cues that help people interpret meaning) and the level of real-time interaction that is possible. A team's communication tasks likewise vary in complexity, depending on the need to reconcile different viewpoints, give and receive feedback, or avoid the potential for misunderstanding. The purpose of the communication should determine the delivery mechanism.

Use text-based media such as email when pushing information in one direction. Richer, more interactive tools, like web conferencing, are better suited to problem-solving and negotiation.

So carefully consider your goals. Use leaner, text-based media such as email, chat, and bulletin boards when pushing information in one direction — for instance, when circulating routine information and plans, sharing ideas, and collecting simple data. Web conferencing and videoconferencing are richer, more interactive tools better suited to complex tasks such as problem-solving and negotiation, which require squaring different ideas and perspectives. Avoid trying to resolve potentially contentious interpersonal issues (telling people that they've made a mistake, that they are not pulling their weight, or that they have upset a teammate) over email or chat; opt instead for richer media to navigate sensitive territory. In short, the more complex the task, the closer you should be to in-person communication. And sometimes meeting face-to-face (if possible) *is* the best option.

2

Make intentions clear. Most of our communication these days is text-based. Unfortunately, when text-based tools leave too much to interpretation, common biases and assumptions can cause misunderstandings and lead to unhealthy conflict that hurts team performance.

Intentions get lost in translation for reasons such as these:

• ***People tend to be less guarded and more negative in writing.*** When we cannot see the response of the person receiving the message, it's easier to say things we would not say in person. Emboldened by technology and distance to complain, express anger, or even insult one another, team members can be more negative in writing than they would be face-to-face.

• ***Negativity goes both ways.*** People on the receiving end of written communication tend to interpret it more negatively than intended by the sender. Emotions are expressed and received mostly through nonverbal cues, which are largely missing from text-based communication. Research suggests that recipients of an email that is intended to convey positive emotions tend to interpret that message as emotionally neutral. Similarly, an email with a slightly negative tone is likely to be interpreted as more intensely negative than intended.

• ***People read with different lenses.*** In written messages, we often assume that others will focus on the things we think are important, and we overestimate the extent to which we have made our priorities clear. Unfortunately, it's easy for critical information to get overlooked.

To prevent these biases from causing problems on your team, ensure that you are crystal clear about your intentions. Review important messages before sending them to make sure you have struck the right tone. Err on the side of pumping up the positivity or using emojis to convey emotion and mitigate the tendency toward negative interpretation. Go out of your way to emphasize important information, highlighting parts of the message that require attention, using "response requested" in the subject line, or separating requests into multiple emails to increase the salience of each one.

Improving Communication in Virtual Teams (Continued from page 19)

3 Stay in sync. When team members don't interact face-to-face, the risk of losing touch and getting out of step is greater. This can happen for a number of reasons. First, when teams are not colocated, it's more difficult to tell when messages have been received and read, unless receipt is specifically acknowledged. Second, communication failures can lead to uneven distribution of information among team members. Individuals might be excluded from an important team email by mistake, for instance, leaving them unwittingly in the dark. Third, the lack of frequent in-person contact can create an out-of-sight, out-of-mind effect in which team members become distracted by local demands and emergencies and forget to keep their distant teammates informed. When one team member goes silent, the others are left guessing. Without accurate information, people often assume the worst.

Your team can overcome these challenges by making it a priority to keep everyone in the loop. Maintain regular communication with team members, and avoid lengthy silences. Proactively share information about your local situation, including unexpected emergencies, time demands, and priorities. Acknowledge receipt of important messages, even if immediate action isn't possible. And give people the benefit of the doubt. Seek clarification to better understand others' behaviors or intentions before jumping to conclusions. For instance, check in with your teammate who hasn't responded to your time-sensitive message — maybe it hasn't been received, or perhaps something urgent came up.

4 Be responsive and supportive. The paradox in dispersed teamwork is that trust is more critical for effective functioning — but also more difficult to build — than in more traditional teams. Trust between teammates in the same work space is influenced to a large extent by familiarity and liking; however, in dispersed teams, people must signal their trustworthiness by how they work with others on a task. To help develop trust on a virtual team, encourage everyone to respond promptly to requests from their teammates, take the time to provide substantive feedback, proactively suggest solutions to problems the team is facing, and maintain a positive and supportive tone in communications.

5 Be open and inclusive. Dispersed teams are more likely to have members from different cultures, backgrounds, and experiences. While diversity can result in a greater variety of ideas, which boosts team creativity and performance, virtual communication sometimes discourages team members from speaking up, making it challenging to capitalize on these benefits. Virtual tools reduce the social cues that help team members bond, which can diminish motivation to share ideas and information. People may also hold back when they can't directly observe teammates' reactions to their contributions. In addition, when dispersed teams consist of subgroups at different locations, there is a natural tendency to communicate more within a local subgroup than across the entire team. This can be particularly challenging for leaders, who may be criticized for unfairly giving more attention to local team members.

To reap the benefits of your virtual team's diversity, focus on communicating as openly and inclusively as possible. Involve the whole team in important communications and decisions. Actively solicit perspectives and viewpoints from all team members, especially those in other locations, to demonstrate openness to different ideas and approaches to a task. And when working to resolve differences of opinion, seek to integrate the best of the team's ideas.

The Role of Leadership

Don't assume that everyone on your team is aware of potential pitfalls with virtual communication or of the five key behaviors that improve performance. We suggest creating a team charter that describes how you will work together. Specify technologies the team will or won't use for different tasks ("Don't use email to discuss sensitive interpersonal issues"); standard formats and etiquette for written communications ("Highlight or bold to emphasize action items in emails"); plans for keeping everyone in sync ("Let the team know ahead of time if a commitment or deadline cannot be met"); expected speed of responses to requests ("Acknowledge receipt within 24 hours"); and types of communication that should always be shared with everyone ("Use the 'would you want to know?' rule of thumb"). We've found that clearly conveyed norms do make a difference.

Our research also shows that people with prior experience in collaborating virtually had higher virtual communication ratings. Leaders can rely on those team members to model effective behaviors — and they can model the behaviors themselves — to raise the whole group to a higher standard.

N. Sharon Hill *is an associate professor of management at the George Washington University School of Business in Washington, D.C.* ***Kathryn M. Bartol*** *is the Robert H. Smith Professor of Leadership and Innovation at the Robert H. Smith School of Business, University of Maryland in College Park. Comment on this article at http://sloanreview.mit.edu/x/60108.*

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[RETAIL]

Master the Challenges of Multichannel Pricing

Customers may accept different prices in different channels. But are retailers ready to manage the complexities?

BY WALTER BAKER, GADI BENMARK, MANISH CHOPRA, AND SAJAL KOHLI

BRIAN STAUFFER/THEISPOT.COM

Chances are pretty good that at the precise moment you last shopped in a physical store for your latest washing machine or set of steak knives, the same item was being offered for a different price on the mobile app of *that same retailer*.

For years, customers have been pulling out their phones in stores to see how prices compare with a retailer's competitors. But the phenomenon of looking up how prices of the store *itself* compare in different channels is relatively new. It has become the subject of increased interest since *The Wall Street Journal* reported last November that Walmart has begun charging higher prices for products online than in stores, with the goal of getting more in-store traffic.

We find that for many retailers, prices increasingly vary between online and physical stores. Retailers tend to offer lower prices in the digital space, although there are exceptions, as the Walmart example shows.

Understanding what customers value in each channel and how that affects what they are willing to pay is the key challenge for pricing teams today. Getting it right has a real payoff: In our experience, retailers that effectively price differently across all channels see bottom line growth of 2% to 5%.

Value Perception and Price Sensitivity

Of course, there's no one facet of shopping that all customers value most in all situations. Customers weigh the convenience of immediate availability, the pleasure (or pain) of shopping in a store versus online, and a product's price. They often value different things in different shopping circumstances. Sophisticated pricing strategies need to take these customer-centric considerations into account.

The nuanced question we wanted to consider is this: When are customers more open to price differences, and when are they put off by them?

To figure that out, we surveyed 2,400 customers in the United States (equally divided by gender and across key demographic cohorts) across three product categories: toothbrushes ($3), midpriced sweaters ($30), and flat-screen TVs ($300). We showed people price differences of 5% and 20% for the same item online and offline — sometimes cheaper online, and sometimes cheaper in-store. We asked them whether these price differences were acceptable, and why or why not.

Across the board, people were fine with prices being higher in-store for the same item when they saw value in immediacy, physical proximity, and exclusive availability, although tolerance for the differential varied by how expensive the product was. Respondents expressed an understanding of the higher costs retailers pay to stock items in physical stores.

Some of the details of our findings:

- The majority of people (59%) were comfortable with nonuniformity for a low-ticket item. Over two-thirds (68%) were comfortable with in-store being 5% more expensive for a $3 toothbrush, and 51% were still comfortable when in-store was 20% more expensive.
- For higher-priced items, people were more tolerant of price differences when the item was cheaper online. For a $30 sweater or a $300 TV, 37% and 38%, respectively, were tolerant of a price difference when the item was 20% cheaper online. Few — only 18% and 17%, respectively — were willing to accept that same item being 20% cheaper in-store.
- Broadly speaking, younger people were more accepting of price differences. Some 40% of those younger than 31 were comfortable with the differences, while just 20% of those older than 45 were.
- Women were open to price differences in a midpriced ($30) item. About 30% of women were comfortable with differences in midpriced items while only 20% were comfortable with price differentials for low-end ($3) and high-end

Master the Challenges of Multichannel Pricing (Continued from page 21)

($300) items. Men in our survey tended to be more accepting of differences across the board.

- Amazon Prime members were more tolerant than other consumers of online prices being higher than in-store prices. We think this could be because these customers see the holistic value proposition differently — they more consistently value online shopping's traits of ease of purchase, ease of return, speed, and not having to travel to a store.

Strategies to Win the Pricing Game

Based on our initial research, we advise retailers to approach omnichannel pricing in three ways:

Pricing teams should focus on implementing price differential strategies. Deciding what prices to use for which channels starts with developing business rules that combine "hard facts" about price elasticity and competitive pricing, such as the impact of price change on demand by segment, with "soft facts" such as consumers' willingness to accept price differences by channel. Approaches to elasticity include time-series methods and big data analytics to calculate how a product's price affects demand, accounting for a wide variety of factors including seasonality, cannibalization, and competitive moves.

Pricing teams need to put in place omnichannel pricing programs, actively monitor them, and continuously optimize prices on the basis of what works and what doesn't. Through agile pricing practices, teams can sequence test-and-learn programs that help define pricing boundaries. We've found it's best for these teams to start with a small part of the assortment, pilot the new approach, and then scale what works.

Store employees must be given the right language for talking about price differences. This new horizon of pricing requires a more active pricing communication strategy and an effective method to train store employees. Too often, when asked why a price was different in the store versus what was appearing in the related mobile app, store employees avoided a straight explanation. They'd say, "It's probably just a mistake in the system — they should be the same price," or "They don't tell us why. I'm just a cashier; maybe the manager knows," or "Online and in-store are different businesses, so they price differently depending on what they need to liquidate."

While we haven't yet observed any retailers doing so, we believe that retailers need to train in-store staff in addressing customer questions related to price variance and the value reflected in the price. Customers are often understanding about the higher costs for stocking an item in a physical store and the value of having immediate access to a product. When a customer has a question about a product and asks what the price is, regardless of whether the question is asked in person, on the phone, or via chat, frontline workers need to be both aware of the price difference and equipped to explain its reason. The training should evolve based on what customers are asking and how effective in-store staff is in providing quality, on-brand answers.

Operational challenges in managing price differences by channel need to be worked out. If companies want to be truly customer-centric, they should offer the option for a customer to return a product purchased online to a physical store. In our experiences, customers value choice. Office Depot, for example, is able to refund customers for the product they've returned at the price they paid for it no matter which channel was used to purchase it. Providing this service requires that online customer data be made accessible to staff in the store.

Leadership Needs to Commit

For retailers, getting a sale at a lower price, whether online or offline, can be of value. There are opportunities for upselling and cross-selling, for developing ongoing customer loyalty, and for monetizing the data that customers share. (As a side note, customers we surveyed were not keen on the explicit trade-off of cheaper prices online in return for their data being monetized — that's not a good talking point for explaining price differences.)

Some executives are still uncomfortable with the boldness required to show different sticker prices for the same item in different channels. Yet our field study revealed such price differences to be an increasingly common practice these days, with well-known, high-frequency U.S. retailers posting different prices on the shelf and in their mobile apps for the same item at the same time.

Putting omnichannel pricing into practice is not easy. It can start only with a mindset shift at the leadership level to embrace a license to price differently across channels. Only with committed leadership can omnichannel pricing be a true source of improved performance and growth.

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[INFORMATION TECHNOLOGY]

Is Technical Debt Undermining Your Digital Strategy?

Failing to make the right investments in IT infrastructure can leave your organization with a tangled mess of legacy systems.

BY EDWIN VAN DER OUDERAA, ADAM BURDEN, RAMNATH VENKATARAMAN, TOMAS NYSTRÖM, AND PRASHANT P. SHUKLA

HARRY CAMPBELL/THEISPOT.COM

Organizations can face intense pressure to keep themselves at the leading edge of IT capabilities. Sometimes, however, the need for fast technology solutions forces companies to make short-term programming and systems architecture decisions. In doing so, they accrue and begin to compound an invisible *technical debt* — the price they will one day need to pay to bring IT systems up to date.

As IT software and infrastructure age, and as more features are added to legacy systems, technical debt grows and puts additional fixed operating costs on a company, often diverting precious investment in innovation and new capabilities. Over time, the challenge of connecting and updating these systems becomes overwhelming for IT teams, which makes undertaking significant digital transformations even more difficult.

If they do not address their technical debt, companies will find themselves hindered by an untenable IT environment — a patchwork of hundreds of different systems that slow collaboration and make it difficult to scale innovation.

From Technical Conundrum to C-Suite Challenge

How serious is the problem? Some 70% of the 1,000 C-suite executives surveyed recently by Accenture say technical debt severely limits their IT function's ability to innovate, inhibits their ability to migrate to new technologies, and makes their IT function much less responsive to changes in the market. Technical debt has evolved from a conceptual concern to a very real, widely recognized, and increasingly urgent challenge.

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And given the pace of technological change and industry disruption, companies can ill afford to waste time with big, multiyear IT transformations or accrue more debt with more short-term fixes. This leaves many business leaders at a crossroads. Two-thirds of the executives Accenture surveyed said they would like to replace all of their core legacy systems. But 70% would like to keep their existing core

systems as long as possible — and 50% wish they could have the best of both worlds. In other words, what leaders really want most is to enjoy all the benefits of new information technologies, such as being able to adapt quickly to new situations, while keeping their legacy systems humming.

Fortunately, there is a way for companies to have both through a solution called "digital decoupling" — a process of using new technologies, development methodologies, and migration methods to create a scalable, flexible, and resilient enterprise IT architecture.

To Get Out of Debt, Decouple

As appealing as the idea may be, you can't simply rid yourself of most of your older systems. At the same time, you can't afford to have them interfering with critical new digital systems. The solution is to build new digital systems that enable innovativeness and new business strategies while leveraging critical parts of your old legacy systems. Here is what the decoupling process looks like:

1. Decouple data from legacy systems. Leaders should start by moving data from legacy systems to "data lakes." These are centralized repositories that let you store all of your data — whether structured or unstructured — just as it is. Data lakes allow you to run many types of analytics, as varied as dashboards, visualizations, and big data processing, in order to guide better decision-making.

In its widely reported mission of becoming the Google of Wall Street, Goldman Sachs used this principle to create a new banking platform, Marquee, that pulls data about transactions, markets, research, and emails instantly into a data lake and applies machine-learning algorithms to derive insights and solutions.

2. Decouple applications from the legacy infrastructure. Running applications on your legacy infrastructure can be inefficient because bundled applications incur high computing costs. (It's like having to turn on all the lights in your house when you really need only one.) Decoupling applications from your legacy infrastructure and migrating them to the cloud gives you the flexibility to scale offerings and accommodate different application workloads.

BP's enterprise resource planning (ERP) systems, which gather and disseminate critical management information across the organization, needed to be nimbler, more flexible, and better able to support key business initiatives. So, the company decided to migrate all workloads, including 3,000 line-of-business applications, to the public cloud. BP reduced the time it takes to complete certain jobs from seven hours to three minutes, and overall applications now run 40% faster.

3. Decouple business process systems from one another. Not long ago, all business process systems shared the same infrastructure, service platforms, and protocols — they were tightly coupled. This made sense when computation happened all in one place and systems were bundled together (sales and supply chain, for example) for operational and strategic purposes. But this structure also exposed companies to system-wide outages. If one thing went wrong, the whole system could go down. IT teams, empowered by advances in distributed computing and storage, should opt for smaller, loosely coupled systems that can interact with one another via APIs.

> What leaders really want is to enjoy the benefits of new information technologies while keeping their legacy systems humming.

Ten years ago, a database corruption in one part of Netflix's IT system ground its DVD mail-order business to a halt for three days. The outage served as a seminal IT moment: Netflix decided to move to the cloud. Prior to this change, Netflix's software was tightly coupled and delivered in large releases — meaning that if a software developer broke something, testing stopped and progress halted. One defect could block functionality from all customers.

Today, all of Netflix's search functionality, recommendation systems, business logic, and data processing that supports video streaming for customers run on Amazon Web Services. Netflix has also created a robust backup system to avoid outages and service interruptions, and engineering teams regularly simulate failure and recovery processes (a discipline they've termed "chaos engineering"). This was made possible by moving from the data center to the cloud and adopting a loosely coupled architecture.

4. Decouple IT talent and budgets from traditional silos. Decoupling is a task and a mindset that both IT and non-IT executives must embrace. IT is often too siloed to harness its full potential. By building cross-functional teams that include both business and technology leaders, companies can deliver better business performance. More diverse teams tend to better understand technological and business challenges and come up with more innovative solutions. For instance, a team that includes both customer-facing

Is Technical Debt Undermining Your Digital Strategy? (Continued from page 25)

experts and data scientists can improve e-commerce sales by making more sophisticated use of customer data.

At BNY Mellon, restructuring the organization's IT unit broke down many silos. More than 30% of BNY's IT staff reports to enterprise IT, with the rest assigned to business units to build local applications. This means IT personnel are no longer cordoned off from the rest of the company; they are part of teams and can more quickly lend their IT expertise to solve problems and act on opportunities — at the business unit level — with speed.

A second area where change is needed is budgeting. Instead of focusing on individual projects, budgets should go toward continuous maintenance, upgrades, and improvements of IT systems — but with the caveat that business value be the driver of spending. This not only makes spending more predictable, it also prevents new technical debt from accumulating and allows you to clean up your IT systems so that you can innovate. When business value drives spending, business — not IT — KPIs are used to measure the return on investments on IT, truly decoupling IT from traditional silos and integrating it across business units.

One company that has overcome the pitfalls of technical debt by decoupling is the insurance broker Towergate. The company has grown significantly in the past two decades, with 300 acquisitions that have brought on new businesses and allowed the company to offer knowledge and expertise to serve customers with niche and specialized insurance products. But those deals often came with IT headaches.

"It was like a museum of IT," according to Adrian Brown, the COO of Towergate. "You name it, we had it."

The company found itself saddled with an out-of-date and unstable patchwork of IT systems, applications, and processes, which threatened to impair customer service, employee collaboration, and innovation capabilities. Without a strategic IT integration, the risk of accruing more technical debt ran dangerously high. This prompted the company to embark on a sweeping IT reboot in 2016, which included migrating its infrastructure and applications to the public cloud. The transformation effort focused on four areas: networks, data centers, end-user computing, and support.

The project took just over a year and united 300 businesses, connected 4,500 employees, and resulted in 30% annual IT savings. With an integrated infrastructure, information can move seamlessly throughout the business, and Towergate can provide service on demand, meaning better experiences for customers and employees. The long-term impact of digital decoupling provides Towergate the ability to integrate new acquisitions and chart a path to more ambitious business growth.

When business value drives spending, business — not IT — KPIs are used to measure the return on investments, truly decoupling IT from traditional silos.

Getting Started on the Path to Digital Agility

Companies born before the internet era have an enormous IT challenge — they must reckon with technical debt in their legacy systems and build the agility to compete with digital natives. The scalability, flexibility, and modularity of Amazon's IT systems have been key to the company's ability to vanquish brick-and-mortar retailers. The same could be said for Netflix, Uber, and Airbnb: Nimble IT was a huge asset in disrupting the entertainment, transportation, and hospitality industries. Not having technical-debt-laden legacy systems was a plus, too.

For established companies, the task of improving IT to match or exceed competitors is made easier through digital decoupling. They can use decoupling to obtain the agility of "cloud natives," while building on their enormous wealth of data, accumulated through systems built for another era. In doing so, mature companies turn the apparent disadvantage of their legacy baggage on its head. This will require the full buy-in and support of the C-suite, led by the CEO.

It's time to stop patching and start decoupling.

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[INNOVATION]

Digital Transformation Opens New Questions — and New Problems to Solve

When leaders view technology as merely a source of answers and solutions, they miss opportunities to innovate in bigger, bolder ways.

BY HAL GREGERSEN

In a recent conversation, John Donahoe, the former CEO of eBay who currently runs ServiceNow, told me about the most important phase in a company's digital transformation: the part where you start asking better questions. Instead of seeing new technologies as a means to develop more efficient answers to known problems, managers should view them as opportunities — even requirements — to revisit the problems themselves. They should go back to first principles, Donahoe says, and ask, "Have we identified and framed the core issue in the right way? Instead of solving for X, should we be solving for Y?"

Marc Benioff of Salesforce is thinking along similar lines. At the company's new headquarters in San Francisco, the top floor has been designated an "Ohana" floor. The word, Hawaiian for "family," is a nod to the island culture that Benioff values so much for its spirit of collaborative work and play. One of the biggest uses of this and the company's other Ohana spaces is to host clients for Ignite sessions, where they think at a strategic level about what enterprise software should help them achieve. It's a space where people are prompted to ask big questions that could change how their companies compete.

Given the businesses they are in, Donahoe and Benioff have front-row seats to thousands of companies' efforts to digitize their operations. As they've observed, many management teams begin that journey by asking how they can make back-office functions like help desks and HR information centers more efficient and less expensive through automation. That's the low-hanging fruit; the business case can be made based on near-term productivity improvement alone. Things get much more interesting, both executives believe, after those systems are in place. New information starts flowing, and more intriguing questions materialize. As managers begin to see patterns in users' activity, they often find surprises lurking there. They're inspired to ask, for example: Is there a basis here for us to build a predictive model? If we're worried about retention risk, could seeing patterns in employee HR queries help guide better employee engagement strategies?

That's how breakthroughs happen in many digital realms. Modest questions about how today's problems could be better solved lead to applications of technology with easily foreseeable gains. And experiences with such early applications inspire people to ask more ambitious questions — questions I like to call catalytic, since they knock down mental barriers and channel

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Digital Transformation Opens New Questions — and New Problems to Solve (Continued from page 27)

energy into new, more productive pathways. The most catalytic questions challenge basic assumptions about how a problem has been framed, opening up space for solutions that are more creative.

Think of the first questions raised by business managers as the foundations of the internet of things were laid. In the beginning, most people thought only in terms of the products they had already created and how they could be made "smarter" — like the deeply unexciting but often-invoked example of the refrigerator that knows when to order milk. Some of these innovations were wonderful improvements, as when sensors were added to jet engines, which allowed them to be monitored remotely for signs of wear rather than routinely taken offline for "just in case" maintenance that might be unnecessary. Soon enough, more catalytic questions began to occur to people: What *else* could be better understood through remote, networked sensors? If it is now possible to monitor *anything* inexpensively, what real-time information would be valuable to gather that we don't see and act on today?

Questions are evolving fast in applications of AI, too. As Tom Davenport and Julia Kirby put it in *Only Humans Need Apply*, the tendency has been for managers to ask the same old question about productivity-enhancing technology: How can we use machine intelligence to automate work so we can get rid of expensive people? Now it is dawning on managers to ask a new question: How can we use it to *augment* human strengths — which, in an AI-filled world, will remain the scarce, differentiating strengths that give some companies a competitive advantage. At the Mayo Clinic, Dr. Wyatt Decker, who is in charge of exploring uses of AI across all locations and practice areas, builds on that question: What are the tasks in a research-oriented medical setting that humans find tedious and don't learn much from by performing repetitively? And what are the tasks humans would love to accomplish if only they had greater powers of information consumption, pattern recognition, and computation?

And then there is the realm of cybersecurity — very much tangled up in companies' digital transformation efforts, and the source of one of the best examples I came across in research for my book *Questions Are the Answer*. I interviewed Lior Div, who cofounded Cybereason in 2012 with two other veterans of Unit 8200, the Israeli military's elite cybersecurity unit. Based near my office in Cambridge, Massachusetts, the company produces software that can detect and contain complex cyberattacks in real time.

Cybercrime, as Div well knows, is an underworld full of "unknown unknowns," with its legions of shadowy hackers relentlessly devising new ways of breaching allegedly secure systems. And unfortunately, the numbers are all going in the wrong direction. According to enterprise security company Proofpoint, which tracks cyber threats on a quarterly basis, between fall 2016 and fall 2017 there was a 2,200% rise in phishing — the sending of deceptive messages intended to infect recipients' devices with malware. Almost two-thirds of these messages were set up to install ransomware, which renders all files on a computer inaccessible unless its owner pays a named price. Another quarter were Trojans designed to steal online banking credentials. Analysis by CyberSecurity Ventures predicts that annual global cybercrime costs will rise to $6 trillion by 2021. Since that will make cybercrime more profitable for its perpetrators than the global trade in all major illegal drugs combined, the report claims, we're in for "one of the biggest challenges that humanity will face in the next two decades."

Cybereason's breakthrough came when Div recognized that most of his profession was fixating on a flawed question. Everyone, he says, was working on the problem of how to keep the bad guys out. But notice the assumption embedded in that question — that the bad guys are outside. "The thing is," Div tells me, "they're already *in*. In most organizations, when we are deploying a solution, we find an adversary active in the environment." Once you recognize this reality, a new and critical question emerges: How do you approach security when your enemy is already through the gates and hiding? Such reframing opens up a world of different solutions. Rather than immediately ejecting the bad guys, you might pivot to monitoring what they're doing, finding earmarks of different actors, and piecing together their intent. This strategic approach moves you beyond treating cybercrime as an IT problem and past the hopelessly reactive strategy of building higher walls and slapping on more patches. "The problem we're dealing with," Div says, "is not fundamentally a bits-and-bytes problem; it's *people*. There is an adversary behind the scene with an agenda."

Back in the world of ServiceNow, Donahoe tells me that the genesis of that business was a question that others weren't yet asking. The company makes software that streamlines and improves the quality of internal services to employees within large enterprises — and is seen as the "central nervous system" of digital transformation. The easy example is the one that the company started with: IT services. On any given day in a big organization, hundreds of people encounter repair issues or identify new needs relating to the hardware and software systems they use in their work, and many of these employees need to contact an IT function for assistance. ServiceNow's software automates much of that service experience, allowing the problem to be reported and efficiently putting someone on the case — or enabling the employee with the problem to resolve it through a self-service protocol.

What question gave rise to the company? An important reframing of one that companies were already asking as they looked at

external service issues: "What's a great customer experience?" In an economy where the competition for top talent is fierce, ServiceNow founder Fred Luddy wondered why that same thinking shouldn't go into addressing people's frustrations at work. Why shouldn't people have the same kind of fast and user-friendly access to information in their roles as producers as they have in their lives as consumers? The so-called consumerization of the workplace is by now a well-established trend. But that became possible only after someone changed the central question and asked, "What's a great *employee* experience?"

By now, you may be asking a question yourself: What good does it do to recognize the power of catalytic questions if I don't know how to arrive at them? That is the question that launched my last several years of research, learning from people like Donahoe, Benioff, and Div — and other CEOs of innovative companies, like Rose Marcario of Patagonia, Ed Catmull of Pixar, and the inimitable Oprah Winfrey. The answer I've found comes down to this: You can't summon catalytic questions with the snap of your fingers, but you can establish the conditions in which they will reliably arise.

The tools of digital transformation can help create those conditions for you and your team. If you let them, they can put you in a questioning mode by exposing you to surprising data and possibilities that make you feel less confident you are right, less comfortable, less pressured to transmit information — and more eager to receive.

Hal Gregersen *is the executive director of the MIT Leadership Center and a senior lecturer in leadership and innovation at the MIT Sloan School of Management. He is the author of* Questions Are the Answer: A Breakthrough Approach to Your Most Vexing Problems at Work and in Life *(HarperBusiness, in press). Comment on this article at http://sloanreview.mitedu/x/60121.*

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WHAT'S NEXT WITH BLOCKCHAIN

MANAGERS ARE ACUTELY AWARE that blockchain is here to stay, but few have begun to figure out what that means for their businesses. Amid the excitement, they're looking for guidance on fundamentals: How might they use distributed ledger technologies to shape and support strategy? And while they're at it, should they be rethinking their business and operating models?

The articles in this special report explore those key questions. To begin, Teppo Felin and Karim Lakhani consider how companies can build powerful blockchain applications that align with their distinctive strategies and capabilities — and with the problems they're trying to solve for stakeholders. Then, Andre Dutra and his coauthors Andranik Tumasjan and Isabell M. Welpe take a close look at blockchain-fueled business model innovation in media and entertainment companies, which face a challenge that spans industries: capturing and monetizing value while "going digital."

Both articles provide much-needed grounding. We hope you find them useful. ***– The Editors***

WHAT PROBLEMS WILL YOU SOLVE WITH BLOCKCHAIN?

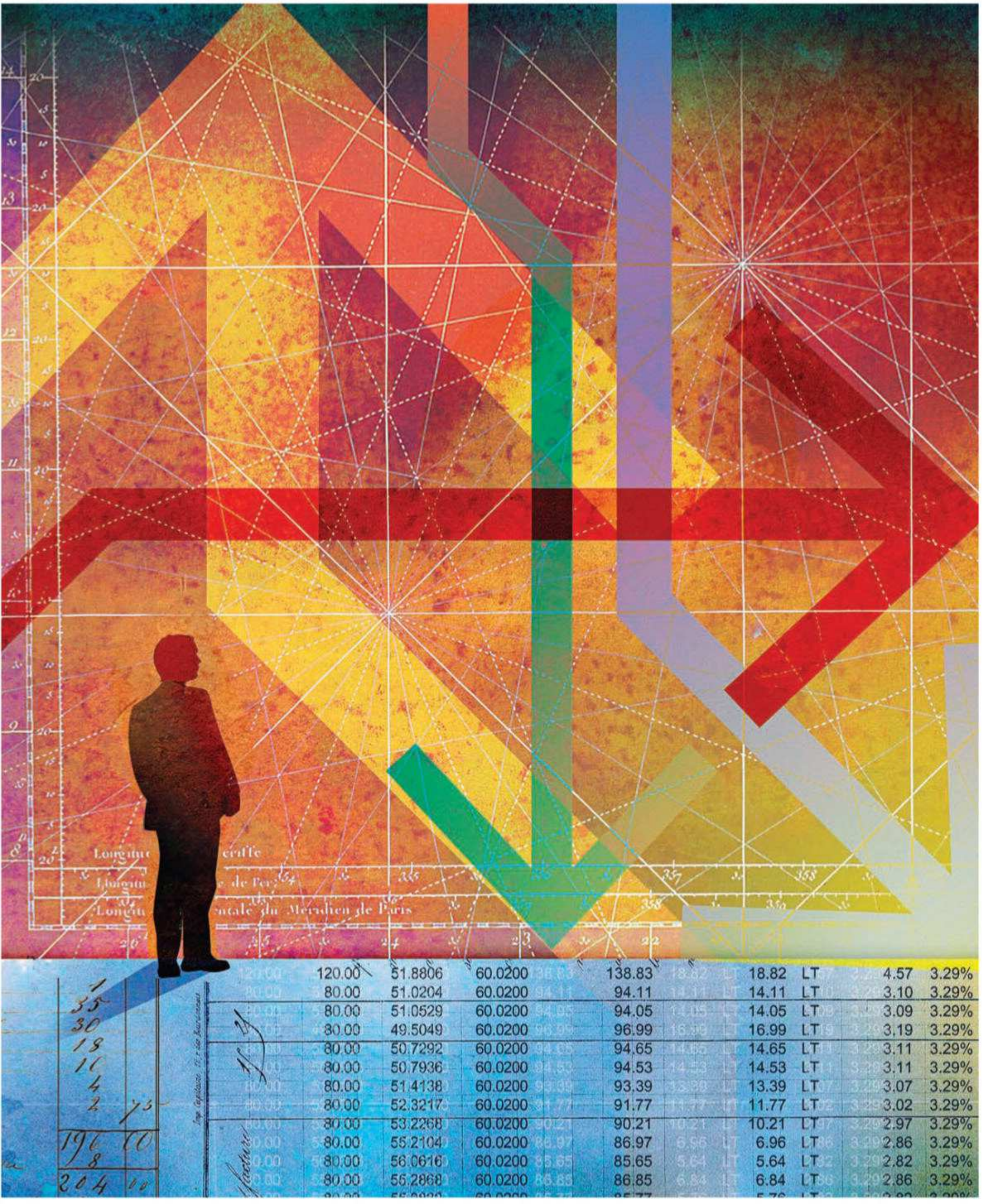
Before jumping on the bandwagon, companies need to carefully consider how ledger technologies fit into their overall strategy.

BY TEPPO FELIN AND KARIM LAKHANI

DISTRIBUTED LEDGER TECHNOLOGIES — collectively known as blockchain — have burst onto the business scene, accompanied by a significant amount of hype.[1] They are widely expected to disrupt existing industries and lead to the creation of new types of companies.

Some of the excitement may indeed be warranted, but only if organizations focus on how these technologies can be used to support their strategy. Without that lens, companies risk making large investments in initiatives that don't create meaningful value.

However, with careful planning, businesses can use blockchain to gain an edge over rivals in a number of ways. It can provide a foundation for powerful applications that will streamline core operations. Distributed ledger technologies can lower transaction costs and make intellectual property ownership and payments more transparent, seamless, and automated. But companies should resist jumping on the bandwagon until they first understand



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THE LEADING QUESTION
How can companies strategically benefit from blockchain?

FINDINGS

- **For both startups and incumbents, distributed ledger technologies can enable new business and operating models.**
- **They can also help companies disrupt existing industries.**
- **To create value, companies need to systematically link blockchain technology with their strategy and capabilities.**

what specific problems they can solve with blockchain — and for whom. How will it help them reach new customers? How can it improve efficiency or transparency in their supply chains? And most important, what will blockchain enable them *to do* that competitors and new entrants *can't do*? Answering these sorts of practical, targeted questions will allow businesses to cut through the hype and create a blockchain strategy that makes sense for them.

To begin, it's critical to understand the basic uses and functionalities of blockchains, which tend to get lost in the buzz. So we will provide a quick primer on digital ledgers before discussing how companies should build powerful problem-solving applications that are uniquely configured to their own strategies.

The Power of a Ledger

The first known ledgers date back some 5,000 to 10,000 years to Mesopotamia, where simple clay tokens and stone tablets were used as markers of transactions.[2] They were a centralized form of record keeping that helped people keep track of things like the price of barley, who bought the barley from whom, or who owned or purchased a piece of land.[3]

Over time, such ledgers formed the basis of wide-scale economic development and activity. They allowed people to gauge who could be trusted, leading to the emergence of reputation, credit, and long-distance trade. Moreover, they helped resolve disputes about goods sold and money owed.

In their simplest form, blockchains are the digital equivalent of the old stone ledgers. They are memory devices — a kind of database — for recording and verifying transactions and terms of engagement. Just like their ancient counterparts, they can record information about any number of things: who owns a specific asset, who bought a particular product from whom, or who has the right to make a certain type of decision. And all of this information can be aggregated to develop insights about, say, the reputations of parties involved or the origins of the supply chain of a particular commodity.

What makes blockchains so powerful, however, is the fact that they are distributed and digital. Rather than having to physically record transactions in one place, any authorized party can be given access to either the entire ledger or specified portions. As transactions take place between parties, the distributed digital copies of the ledger are instantly and simultaneously updated, and the record of each transaction is indelibly recorded through advanced computational algorithms and cryptographic locks. Depending upon the rules of the particular blockchain, participating parties can be either identified or anonymous. The decentralized nature of the ledger means that parties can more easily interact with each other — and have confidence that the record of the interactions will be fully memorialized.

Problems That Blockchain Can Address

In creating a blockchain, organizations need to define the specific problem they are trying to solve. Then they must determine which transactions or interactions the blockchain should capture and who should have access to which portions. (See "Key Questions for Companies Designing Blockchains," p. 36.) Blockchains can be scaled and used to interact with any number of different stakeholders, whether customers, employees, suppliers, or other companies. Verification is a key benefit.

Take the seemingly simple task of verifying someone's educational or employment credentials. A frequent problem employers face is that anyone can claim on a LinkedIn profile or on a CV that he or she completed a degree at a particular university or worked for a particular company. A blockchain identity solution could automatically verify an individual's credentials for relevant third parties.

The types of problems that blockchains can solve are far-ranging, spanning many industries and contexts. Here we will explore just a few common examples.

Paying for contributions to intellectual property. The video game industry offers a useful window into what's possible when you define a problem that a particular set of stakeholders face — and then design a blockchain to solve the problem. In this case, the stakeholders were the people contributing their creativity and smarts to developing games. And the problem was the cumbersome, archaic way in which royalties and rights were managed across the industry.

ABOUT THE RESEARCH

This article builds directly on the authors' respective research and teaching in the areas of strategy and digital innovation, which are fundamental to thinking about blockchain. Teppo Felin has researched and written about problem-solving and open versus closed innovation for several years, while Karim Lakhani has been studying and writing about the challenges and opportunities of innovation contests, digital transformation, and open innovation. The basic framework and examples of this article emerged as the authors developed course materials related to blockchain. They have recently taught courses on blockchain strategy at Oxford's Saïd Business School and on digital innovation and transformation at Harvard Business School.

Developing a video game typically involves production companies and game-publishing houses (such as Sony Interactive Entertainment, Tencent Games, Microsoft Studios, and Electronic Arts), development companies, video game console makers, computer manufacturers, and mobile phone makers, as well as contractors — writers, voice actors, composers, musicians, and so on.

For instance, development of the multibillion-dollar hit *Grand Theft Auto V* (which has grossed $6 billion in revenues between 2013 and 2018), while credited to Rockstar North, a small company based in Scotland, was actually the work of more than a thousand people from many different companies and corporate sub-entities, as well as scores of contractors. To orchestrate all of this, companies have traditionally relied on idiosyncratic agreements and cumbersome one-off payments to compensate their myriad partners. The use of royalties — and the intricacies of how to manage and distribute these payments — has further complicated the picture. Until recently, developers, actors, and other contributors have had little sense of the size of the royalty they might be entitled to. Moreover, the payments often took months or longer to arrive.

Microsoft and Ernst & Young (EY) studied these inefficiencies and designed a blockchain to address the problems and provide transparency.[4] The intellectual property blockchain they created enables companies and individuals to clearly specify, account for, and track the attribution of digital content throughout the network of stakeholders involved in the development and release of a video game. Using the blockchain, authorized participants can see a breakdown of royalty payments — as well as data about sales and distribution — on a real-time basis. The blockchain also allows for the easy creation of "smart contracts," which can specify and enforce rates of payment and other terms. This automates processes that previously were extremely labor-intensive, opaque, and costly. Legal and royalty negotiations can now be simplified with a menu of licensing and revenue-sharing options, and agreements can be implemented quickly and transparently.

Of course, the long-term success of this venture will depend on many factors, such as the incentives for others in the industry to adopt this particular blockchain. (If adoption isn't widespread, the blockchain becomes less powerful.) Still, Microsoft is likely to reap some benefits, as it now can interact more efficiently with the large ecosystem of developers, particularly those who develop games for its Xbox platform.

To be sure, Microsoft and EY aren't the only ones tackling problems related to the management of intellectual property, digital rights, and knowledge work. A plethora of companies have been looking at this area from one perspective or another. In music, for example, Mycelia, a blockchain initiative launched by British musician and record producer Imogen Heap, is attempting to become a digital management platform for musicians, helping them manage contracts, allocate payments, and track their creative works.[5] (For similar examples, see "Blockchain Is Changing How Media and Entertainment Companies Compete," p. 39.)

Establishing history of ownership. In addition to addressing problems related to intellectual property and licensing, blockchain is being used to establish origins and ownership. Consider the diamond industry, which has long been subject to corrupt activity. In western and central Africa, for example, rebel groups have used "blood diamonds" to finance armed conflicts against governments. In response, the diamond industry has attempted to create provenance certification programs. The proper tracking of diamonds could bring much-needed transparency to the industry, ensuring that blood diamonds do not support insurgents' efforts by preventing the gems from entering the supply

KEY QUESTIONS FOR COMPANIES DESIGNING BLOCKCHAINS

By examining what they are trying to do with blockchain, what value they want to capture with it, and which stakeholders they hope to serve, companies can use the technologies to solve strategic problems in a more targeted way.

WHAT ARE YOU TRYING TO DO?	WHAT VALUE DO YOU WANT TO CAPTURE?	FOR WHOM?
• Record	• Information and knowledge	• Customers
• Track	• Attribution and responsibility	• Employees
• Verify	• Access or permission	• Suppliers
• Aggregate	• Decision rights or votes	• Producers or makers
	• Ownership or incentives	• Creditors or investors
	• Reputation and trust	• Governments
	• Contracts	• Citizens
	• Transactions	

chain in the first place. However, these efforts haven't been easy, as paper-based certification systems are prone to fraud and corruption.

London-based Everledger is one company attempting to address this type of problem using blockchain. Everledger offers provenance tracking and verification for a variety of luxury goods, providing new value to industry players and reassuring customers concerned about the source and quality of their goods. It claims to have added more than 1 million diamonds to its blockchain, allowing it to track not only their origination but also the entire chain of custody up to present ownership. Through blockchains, Everledger seeks to reduce the more than $2 billion cost of annual jewelry fraud and bring transparency and authenticity to the diamond trade. Various jewelry companies, including De Beers and Hong Kong-based Chai Tai Fook, have launched similar efforts.

Making supply chains more efficient and transparent. The ability to track provenance can address another type of problem: reducing the amount of inefficiency and lack of clarity in supply chains. In early 2018, the Danish shipping giant Maersk and IBM announced a joint venture to create a real-time digital ledger for global shipping. The cargo, transport, and shipping industry has long suffered from a lack of transparency with regard to the sourcing and timing of shipments, which public ledgers might be able to solve.

Other companies are developing their own distributed ledgers to cover their entire supply chains. Walmart provides a good example. For decades, a critical aspect of Walmart's competitive advantage has been its point-of-sale inventory system, which allows the company to track information about sales in real time so it can quickly adapt its product mix to local needs and trends. However, a distributed ledger will extend this advantage by recording the origins of raw materials and products in the supply chain. This will also allow for more transparent consumer labeling and answer questions about sustainability in a more timely and detailed fashion.

Walmart has already started to use blockchain

to track the provenance of mangoes as they are shipped from Mexico to the United States and to track its pork supply chain in China. The company says its distributed ledger has shortened the time to track produce from six days to two seconds, which helps solve several problems having to do with food safety, customs and regulatory filings, and automated payments.[6] For example, the ability to automatically and systematically track food origins will allow Walmart to quickly identify the source of, say, an *E. coli* outbreak — thereby reducing the potential for a major crisis.[7]

In a similar vein, Chinese online retailer JD.com has begun to pilot the use of blockchain to track its beef supply chain from Australia to China and address the problems of food contamination, misrepresentation, brand erosion, and product theft. More generally, logistics and package delivery companies such as UPS, FedEx, and DHL are actively using distributed ledgers to optimize and create transparency in supply chains and delivery systems so that they can better serve both their business customers and consumers with full origin tracking.

Blockchain and Your Strategy: Three Aspects of Uniqueness

As excitement over blockchain spreads, established players and new entrants across many industries are actively searching for ways to utilize the technologies.[8] But it's worth noting that any new technology — even one that might seem like a radical breakthrough — is a recombination of old solutions and insights. Take Bitcoin. Many of its basic applications (for example, time stamping and cryptography) existed years before its founding in 2008.[9] However, Bitcoin has reconfigured existing technologies and insights in novel ways, thus enabling new forms of problem-solving.

Companies likewise need to understand how to configure, design, and use blockchain technologies in unique ways. Some may be tempted to adopt a wait-and-see attitude regarding blockchain and become late adopters. Understandably, many managers will worry that large investments in the technologies will outpace the gains.[10] That's a valid concern. But blockchains promise to be as fundamental as the internet in shaping how future business will be conducted. Therefore, a wait-and-see attitude could be costly.

Unfortunately, there's no easy answer for how any particular company should utilize or implement blockchain — if there were, everyone would be doing it. So, where should managers begin? In our view, companies can go a long way toward developing the right approach to blockchain by carefully considering three aspects of uniqueness: their strategy, the capabilities they bring, and the problems they can solve for stakeholders. These three aspects are mutually reinforcing, and it's in the interactions between them that companies can create significant value above and beyond what competitors might be doing.

A company's strategy is its distinctive point of view about how to create and capture value — it's the one thing that can't be outsourced.[11] For starters, then, companies need to think their strategy through to ensure it embodies their beliefs and hypotheses about the emergence of new markets and the possibility of new products that have yet to be imagined.

Although companies can create value by cooperating and interacting with others, such interactions should be organized in unique ways. And it's here, at the nexus of uniqueness and cooperation, that blockchains have the potential to generate significant value. For example, partnerships such as the Microsoft and EY blockchain initiative discussed earlier can be seen as a targeted form of "open innovation" that enables different organizations and individuals to take advantage of their respective strengths in conjunction with others.[12] Microsoft brings a vast mix of resources and past gaming industry experience to this collaboration, and EY brings its own set of resources. A joint effort thus can create significant value beyond what either company might be able to do alone. But such partnerships need to be carefully crafted to suit the particular circumstances. Companies must determine what *they* bring to the table and how blockchains can support their strategy in ways that are not foreseen by others, and then design and use blockchains accordingly — whether working alone or in collaboration with others.

Next, the strategy needs to be linked to the company's unique capabilities and resources. Established businesses often develop capabilities over time as they interact with their suppliers, customers, and stakeholders. Small companies and startups often have difficulty replicating these

capabilities (particularly in areas such as marketing, human resources, and finance). Rather than being caught off guard by new entrants, companies should review their existing resources and look for ways to leverage them with blockchain. Understanding one's capabilities is essential to the implementation of blockchain solutions. Again, companies need to bring something distinctive to the table beyond simply "buying" the technology and skills.

Finally, uniqueness relates to the problems that the company is attempting to solve for its customers and other stakeholders. That's where there tends to be a lot of low-hanging fruit and where blockchain technology can potentially be operationalized relatively quickly. Companies should consider how the technology can enable faster, more efficient interaction or increased transparency for their customers or suppliers.

A simple exercise for managers is to carefully list the problems that the company is currently solving or grappling with as they relate to different stakeholders. For each problem, managers can explore in parallel how the previously discussed uses of blockchain (for recording, tracking, verifying, and aggregating) might improve existing practices. Thinking about how various activities can help solve problems — for customers, employees, and suppliers — and carefully unpacking those activities, step by step, will help managers identify blockchain solutions that can generate real value.

The buzz around blockchain probably won't subside any time soon. But companies can get beyond it by taking the time to understand what the technologies are capable of doing and then systematically configuring blockchains in ways that align with their unique strategy, their existing capabilities, and the problems they can solve.

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BLOCKCHAIN IS CHANGING HOW MEDIA AND ENTERTAINMENT COMPANIES COMPETE

Companies are using new applications to rethink their business models and — in some cases — disrupting their industries.

BY ANDRE DUTRA, ANDRANIK TUMASJAN, AND ISABELL M. WELPE

Though blockchain technology began as an innovative digital-currency[1] tool in the financial sector, all kinds of companies are now experimenting with its core capability as a decentralized and secure ledger to manage digital assets more directly and to rethink how they compete in the marketplace.[2] In a recent study, two of us found that more than 1,100 startups were attempting to develop blockchain-based business models in a range of settings, including health care, telecommunications, energy, retail, aviation, real estate, and supply-chain management.[3] So far, there has been no significant impact on the respective markets in terms of revenue and market share, but managers' and investors' expectations for future returns are high, as indicated by the flow of money into blockchain startups.

In particular, several new business models are emerging in the media and entertainment industries, where monetizing value has been — and continues to be — a significant challenge. Newspapers and magazines, for instance, still struggle to monetize value in the face of plentiful free content and limited mechanisms for protecting intellectual property. Advertising revenue, long an important income source for publications, has shifted to social media and search platforms, and media companies must figure out how to compensate.[4] In the music world, to cite another example, digital content distribution via streaming is beneficial to major record labels and top-tier artists. But it isn't commercially viable for smaller

THE LEADING QUESTION

How can blockchain help companies monetize content, optimize processes, and compete against rivals?

FINDINGS

- **Content creators can gain more control over their work and a greater share of the content revenue.**
- **Content aggregators can leverage blockchain technology to handle some processes more efficiently.**
- **For distributors, the threat of disruption is real.**

labels or average musicians, who receive only a tiny fraction of the revenue generated from their music.[5]

Some experts think blockchain may increase the share of revenue captured by content creators and producers by introducing new mechanisms for monetization.[6] However, the current hype about blockchain, the diversity of use cases being proposed, and their potential disruptive effects make it difficult for companies to judge what might be possible for them and what's merely a pipe dream. That's true across industries, but media and entertainment companies are wrestling with this challenge in a way that many businesses can identify with and learn from in an age of digital transformation, so we'll focus on them in this article.

We studied blockchain-enabled business models in 20 startups involved in producing and distributing various types of content — ventures in music, TV and video, publishing, social media, video games, and digital art. In that research and analysis, we identified several applications and business models that are changing how companies manage digital assets and capture revenue. Disruptive business models could have devastating impacts on existing players and should be seen as major threats. However, we found that other models could help incumbent companies become more competitive. So companies can position themselves, we classified the new blockchain-enabled business models as either disruptive or sustaining.[7] (See "About the Research.")

Promising New Applications

At its core, blockchain is a vehicle for organizing and storing data shared among members of a network. Using sophisticated cryptography, verification, and incentive mechanisms, blockchain networks allow participants to agree on what constitutes valid and acceptable transactions; the idea is that no central authority controls the data or ensures consistency. (See "What Problems Will You Solve With Blockchain?" p. 32.) In our research, we identified several blockchain applications that media and entertainment startups are using. Here, we'll focus on applications that were most frequently used by those startups and can also be used in other industries.

Smart property. Many companies are starting to use "smart property" to track and enforce rights for creators of digital content, including music, video, books or articles, or even art. This application relies on blockchain as a secure database. Consider Monegraph, which provides an ownership registration service for digital art using the Bitcoin blockchain, the foundation of the most popular decentralized digital currency. By storing IP information on digital artwork, Monegraph's platform enables artists to define their licensing terms and facilitate transactions with publishers or digital-art buyers. Once their ownership of an asset is recorded in the blockchain, it can be easily accessed and verified by anyone — and cannot be refuted or falsified. This solidified ownership record makes smart property potentially useful in other industries, too, such as real estate and collectibles, where companies need to verify ownership history, simplify asset transfers to new owners, and reduce intermediation costs.

Micropayments. Another popular application, cryptocurrency, facilitates micropayments to content providers. Companies use it for enabling customers to buy and play single songs or videos, for instance, or to purchase permission to read a news article. A blockchain-based startup called Yours operates a digital platform on which authors and other content creators publish their work and charge fees in the form of Bitcoin Cash (a spinoff of Bitcoin). Since transaction costs in Bitcoin Cash are extremely low and no banks or credit card companies are needed to complete a sale, authors can charge as little as a few cents per article and publish and monetize their content themselves. As you can imagine, this capability also holds promise in other contexts — for example, allowing customers to pay for items in vending machines or providing simple financial services in countries with underdeveloped banking infrastructures.

Smart contracts. A third type of application, the smart contract, is used to enforce license terms and dispense payments in financial transactions. For instance, it could allow certain digital content to be published and downloaded at a defined time and price — and could then split the payout among content creators. So, when a consumer downloads, say, a song, the smart contract would automatically kick in, charging the buyer and distributing the revenue in pre-negotiated proportions to the specified stakeholders. Ujo Music, a music software services company, used a smart contract application in 2017

ABOUT THE RESEARCH

In 2017, we conducted qualitative research on 20 blockchain-enabled startups in the media and entertainment industries. Most of them were based in the United States (10) or Western Europe (7); the others were in the Middle East (2) and Asia (1). They all used blockchain to manage or monetize digital content. We gathered information about the companies from press releases, news stories, company websites, blogs, white papers, internet forums, and social media activity, and we conducted interviews with four experts on digital content platforms, distribution, and rights management. We then systematically categorized the collected information, identifying a total of 83 categories and clustering companies based on four factors: target customers (who is being served), value propositions (what is being offered), the blockchain applications being used (how the technology supports the business model innovation), and the value generated (how the company makes money). This enabled us to define the business models, which we evaluated according to their disruptive potential.

in what it claims was the very first launch of an artist's album on a blockchain.[8] Under the contract terms, consumers could buy individual songs from the album online using Ether, a digital currency; as soon as the transaction was recorded, the content owners received their money.

Smart contracts could have a significant impact beyond the media and entertainment industries. In the energy sector, for example, they are being created to manage billing and revenue allocation when consumers charge the batteries of electric cars. The contracts will calculate the amount due, generate invoices, collect the payments using cryptocurrency, and transfer the revenue to the charging station owners.[9] Smart contracts can also be used to simplify settlements between parties in all sorts of areas, including e-commerce and supply chains.

Although the three applications discussed so far may be the most common and versatile, several others address challenges specific to the media and entertainment industries. One is blockchain time-stamping, which allows photographers and other creators of digital artwork to register proof of copyright quickly and inexpensively so that they can protect their creations from unauthorized use on the internet. Time-stamping is a simplified version of smart property. It doesn't track ownership changes, but it does confirm that the creator owned the asset at a specific point in time. Another application that we refer to as "blockchain content ledger" records digital content information like asset metadata and social media transactions. It is a direct extension of smart property. Indeed, once a blockchain is used to store ownership information, it can also be used to hold additional information about the content. For music, this might include the songwriters, performing artists, publisher, and label. In the case of social media, it might include user posts and related activities such as "upvoting," "downvoting," and comments. Because the data is decentralized (not controlled by any single party) and irreversible (once entered and accepted, items can't be changed unilaterally), it's both highly secure and accessible to different parties.

Blockchain-Enabled Business Models

By leveraging the blockchain applications we've described, companies are starting to build innovative business models that not only offer new monetization strategies for their digital assets but also streamline critical business activities such as relationships with business partners and distribution of revenue across the value chain. These developments could create completely new ecosystems for content creation and consumption. Among the startups we studied, we saw five business model innovations. The first two have disruption potential; the rest are helping existing players compete more effectively or explore market gaps. (See "Two Classes of Business Model Innovation," p. 43.)

Monetizing content for both creators and curators. The first new business model involves creating a social network in which users can earn financial rewards (in the form of micropayments or payments of digital currency) by posting their own content or curating and promoting others' posts. Rather than allowing the platform owners to reap all the monetary benefits, as happens today with established players like Facebook and LinkedIn, this model compensates independent content creators (bloggers, experts, hobbyists) and consumers (social network users who enjoy sharing their opinions) for their contributions. For example, Steemit, a blockchain-based social network, rewards content creators with digital currency (called "Steem") based on the popularity of their posts. Although it was initially geared toward users interested in the

topic of cryptocurrency, the content focus has expanded to include technology, science, news, art, food, photography, and travel. As a post is upvoted and becomes popular, the author's reward increases, and early promoters can earn a slice of that. The platform also generates reputation scores for users. According to the Steemit website, this system helps foster the creation and curation of quality content.[10]

Steemit isn't alone in rewarding users financially. Yours, the startup we described earlier, also pays content creators and allows them to set their own rates for how much they will receive when someone reads or views a post. Authors and artists can even charge users for the right to comment. Compensating users on both sides represents an entirely new concept for monetizing social network activity. Whereas Facebook's and LinkedIn's business models rely on targeted advertising based on insights drawn from a user's platform activity history, blockchain-based social media platforms aim to monetize the relationships between authors and their followers, thus stimulating the creation of new content. Letting users monetize their own content is a key element in attracting users to the social networks. However, there are different mechanisms for monetization available to platform owners as well. Yours uses a commission model and charges fees for transactions that occur on its platform. For now, Steemit is using an approach that's closely linked to the value of its own cryptocurrency, although its revenue model is still evolving.

Building a one-stop content shop. The second new business model simplifies the value chain by decreasing or eliminating the need for intermediaries between users who create content and those who consume it. The model does away with many of the traditional steps and layers, such as content aggregation and distribution, thereby reducing the amount of time it takes to bring new content to consumers and realize revenue. It relies heavily on cryptocurrency and blockchain-based applications like smart contracts and smart property to facilitate and process direct transactions between creators and consumers.

One company that uses this model is SingularDTV, a blockchain film and television studio and distribution portal. SingularDTV caters to video and film producers by giving artists more control over their work, allowing them to launch, distribute, and monetize content without the usual intervention from studios or production houses and without being tied to exclusivity agreements with distribution channels. At the same time, it uses smart contracts to enable consumers to browse, access, and pay for content instantaneously with digital currency.

In a similar vein, startups Creativechain and Musicoin offer their own marketplaces for digital content, where creators and consumers can interact without intermediaries. Creativechain targets artists, including musicians, designers, and writers, using a blockchain designed to support content registration, distribution, and monetization. Artists can choose from different licensing methods, ranging from free distribution to paid limited editions. This flexibility lets them select the method that is best suited to distributing their work. Under this scenario, there is no need for third-party distributors to bring the content to consumers and collect revenue; the platform handles that directly. Musicoin, meanwhile, focuses exclusively on the music industry and encourages independent artists to register and publish their work on its own blockchain-based platform. It uses a standard pay-per-play smart contract to reward musicians based on preset fees each time a song gets played. In addition, consumers are encouraged to reward their favorite artists with tips. Besides distributors, other players typically involved in music rights management (including what are known as "performing rights organizations," which essentially collect royalties for music performance on behalf of rights owners) are not needed on this platform since it connects music consumers directly to artists or labels and automatically customizes revenue distribution.

The startups adopting this business model are capturing revenue in different ways. Since content is being sold and payment transactions are handled in the platform, one straightforward monetization strategy is to charge commission fees. Other options companies are considering are licensing platforms for use by third parties and creating and selling original content. In addition, some startups are following an open-source model: The platform is published as free software, and the startup works to drive its further development while earning money by providing services like consulting, training, or onboarding. As with the previous business model (monetizing content for both creators and curators), one-stop content shops are still

TWO CLASSES OF BUSINESS MODEL INNOVATION

Blockchain is driving two classes of business model innovation in the media and entertainment industries: disruptive models, which represent potential threats to leading players, and sustaining models, which allow established companies to strengthen their businesses.

	BUSINESS MODEL	WHO IT SERVES	WHAT IT PROVIDES	HOW IT USES BLOCKCHAIN	VALUE IT GENERATES FOR THE COMPANY
DISRUPTIVE BUSINESS MODELS (THREATS)	**Monetizing content for both creators and curators**	Social media users Content creators and curators	Monetary incentives for posting and voting A decentralized, censorship-free platform	Blockchain content ledger Micropayments Cryptocurrency	Selling the power to influence Transaction fees, commissions
	Building a one-stop content shop	Digital content creators Digital content consumers	Single place for publishing, distributing, and consuming content Direct transactions between creators and consumers	Smart contracts Smart property Cryptocurrency	Transaction fees, commissions Selling original content Platform licensing Services around the open-source platform
SUSTAINING BUSINESS MODELS (OPPORTUNITIES)	**Protecting intellectual property**	Digital content creators	Simplified copyright registration and distribution of digital content	Time-stamping Smart property	Transaction fees, commissions
	Digitizing the music value chain	Existing music value chain players	Reduce transaction costs Speed up revenue distribution	Smart contracts Smart property Blockchain content ledger	Services around an open-source platform
	Playing and trading	Mobile gamers	Full off-game ownership of game assets, tradeable and sellable with cryptocurrency	Smart property Cryptocurrency	In-game asset sales

experimenting with different revenue model options until the most effective ones consolidate.

Among the blockchain-focused business models we looked at, monetizing content and building a one-stop content shop were the most disruptive. In both instances, companies are starting small by serving a low-end market niche (for example, indie music labels and their audiences) with a value proposition aligned with users' goals (helping both artists and consumers capture more financial value and making their transactions less cumbersome). Because the underlying blockchain technology is not sufficiently mature to handle billions of users and millions of content titles, startups are not yet able to challenge established mass-market players like Facebook, Amazon Prime, and Netflix. But that's partly what makes the new models serious threats: Industry leaders might not recognize them as threats in time to protect themselves. As the technology matures and the blockchain-enabled start-ups begin serving broader segments of customers — with a wider range of content, for instance, or ad-free social media environments — look out.

The other business models we identified are not disruptive innovations. They're geared more toward solving industry-specific problems, and they either make existing players more competitive or simply address specific market gaps. They include the following:

Protecting intellectual property. This business model leverages blockchain smart property and time-stamping applications to help artists affordably protect, share, and manage the rights of their digital

works. A startup called Binded, for example, allows photographers to register unique images in a blockchain as evidence of copyright ownership. Artists receive a copyright certificate that can be used to prevent unauthorized use of the images on the web. Monegraph offers a service for artists to upload their digital work and sell different levels of usage rights to publishers and advertisers. In addition to using blockchain to store ownership and licensing information on individual works, it also provides a public and independent record of licensing transactions between content owners and distributors. The model attempts to fill a market gap: giving independent artists such as photographers an affordable mechanism for copyright protection. In this business model, startups typically don't charge artists for registering their works in the blockchain. Instead, they often take a share of the profits their service enables. Monegraph, for example, charges a processing fee on the sales that artists generate on its platform.

Digitizing the music value chain. The primary goal of this business model is to optimize the process of distributing music revenue across the various parties in the value chain so that companies can become more agile and reduce their costs. (It usually relies on what's known as a "permissioned blockchain."[11]) Optimizing revenue distribution is notoriously difficult, given the large number of stakeholders involved in music creation, the complex relationships between them, and the absence of a shared copyright database. So, music revenue often takes months or even years to find its way to the rightful owners. Unlike the previous models, which mostly address narrow market segments, this one covers a broader universe of customers. For example, Dot Blockchain Media, one of several startups using this model, works with artists, record labels, aggregators, distributors, and performing rights organizations to create a standardized blockchain-driven database for music rights that can be used industrywide. Many parties stand to benefit. For example, distributors, aggregators, and performing rights organizations could use the database to optimize their own processes and reduce internal costs, and rights owners could receive payments faster. The database will be maintained in an open-source fashion by all of the stakeholders. Dot Blockchain Media's own role is driving the creation of the ecosystem, defining the technology elements and the file and metadata formats, and supporting participants on the usage and evolution of the platform. This will enable it to drive its own revenues from services based on the platform.

Playing and trading. This business model allows assets registered in a blockchain to be sold or traded in other environments. One company that is experimenting with this approach is EverdreamSoft, a Swiss game developer. It offers a game in which people buy cards that they use to play. What distinguishes it from other games where players buy assets is that the cards are registered in a public blockchain and can be sold or traded outside the game, through digital currency. A similar approach could be adopted by other gaming companies, with the benefits of making the game assets more valuable and potentially increasing the revenue generated by in-game asset purchases. This might also expand interest in the games themselves, creating a network effect that can lead to increases in game-related revenue streams such as subscriptions or licenses.

Consequences for Industry Players

In thinking about how blockchain affects media and entertainment companies, we see both threats and opportunities for industry players. For content creators, blockchain offers significant opportunities. It can provide more control over their work, more flexible license models, a greater share of the content revenue, and faster monetization. These are clear potential benefits, even if they may take time to materialize.

For aggregators, including record labels, publishing companies, performing rights organizations, and others, a reduced role for intermediaries and more efficient distribution of revenue across the chain might make them less relevant and therefore pose a potential threat. But incorporating blockchain-driven technology into existing offerings could help aggregators concentrate on activities where they can add real value (such as discovering and fostering new talent, financing complex projects like movies and TV shows, and providing promotion and marketing muscle). Moreover, as an enabler of sustaining innovation, blockchain could prod aggregators to redefine or reinforce their place in the value chain. In many cases, the role of the aggregator can't be completely automated and replaced by blockchain smart contracts. Managing contracts,

relationships with labels, legacy catalogs, and even the collection of royalty payments for musical events (concerts, radio, and TV) may still require lots of personal involvement. However, aggregators should be able to leverage permissioned blockchains to handle some processes more efficiently and fill gaps between the digital and analog worlds.

For distributors, there is no escaping the fact that the threat of disruption is real. Ironically, online distributors such as Spotify and Amazon, which have reaped huge profits from the digitization of content, may face some of the biggest risks.[12] As content consumers are able to connect directly with content creators, distributors may play much smaller roles.[13] Even if this change takes many years to materialize, the threat can't be ignored.[14] Like aggregators, distributors need to figure out what they provide that's distinctive beyond being an access and payment channel. To prepare for the future, they need to experiment with blockchain-enabled business models so that they can position themselves in a new digital content market built on this technology.

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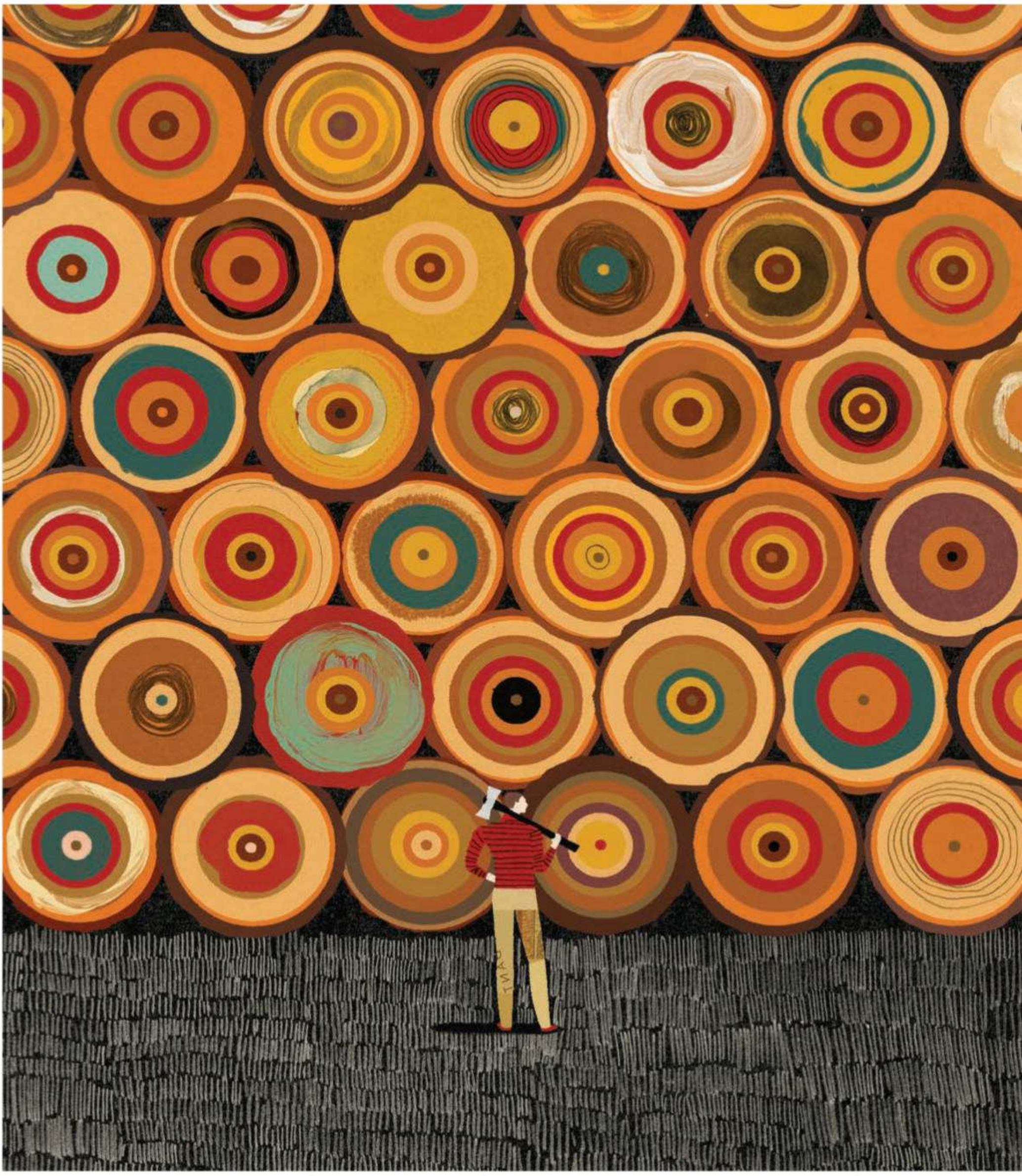

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BREAKING

LOGJAMS IN KNOWLEDGE WORK

How organizations can improve task flow and prevent overload.

BY SHEILA DODGE, DON KIEFFER, AND NELSON P. REPENNING[1]

If you work in an organization, you know what it's like to have too much to do and not enough resources to do it. Digital tools for communication and collaboration are meant to make it all more manageable, but access to technology often can't fix the root causes: poor work design and entrenched organizational behaviors.

The costs of overload are well-documented: It makes people less creative, less productive, more prone to illness, less likely to hit deadlines and goals, and more likely to leave their organizations to work elsewhere.[2] And it's been implicated in many major accidents and disasters, from BP's Texas City Refinery explosion to the more recent U.S. Navy ship collisions.[3] But, despite the evidence, many leaders continue to believe that their organizations thrive when overloaded, often both creating pressure and rewarding those who deliver under duress. It's a popular but pathological approach to management.

THE LEADING QUESTION

How can organizations redesign knowledge work to improve productivity and performance?

FINDINGS

- **Managers can adopt a "pull" system for controlling the number and rhythm of tasks, as manufacturing plants have done.**
- **That makes it easier to allocate resources effectively, preventing pileups and work overload.**
- **"Visual management" techniques can help organizations apply pull thinking to development portfolios.**

U.S. manufacturers suffered mightily under this approach for decades, until many found a better way.

Before the 1980s, plant managers tended to believe that keeping every person and machine busy was the key to success. If everybody was busy, the thinking went, the plant would produce more. But visits to Japanese manufacturers and books like *The Goal*[4] revealed that this approach actually undermined performance. Today, factories are run differently. On the whole, managers have become much more aware of which operations are critical to overall performance — and manufacturing and assembly plants are both more efficient and more flexible than they were in the 1980s.

Nevertheless, the "keep everybody busy" theory remains alive and well in other settings, particularly in knowledge work. Though it hasn't been studied as extensively in such contexts, evidence suggests that in many types of jobs — for instance, serving bank customers, performing complex surgeries, and developing cutting-edge products — organizations overload their employees in hopes of maximizing the performance of the enterprise.[5] They have a lot to learn from manufacturing, where managers have adopted a "pull" system for controlling the number and the rhythm of tasks in a work process.

In this article, we explain how this concept from the world of physical work can be used to improve resource allocation and prevent overload in other settings. We also explore how "visual management," a technique often used in agile project management, can make it easier to apply pull thinking to an entire development portfolio by rendering nonphysical tasks more tangible. To illustrate, we describe two recent work-design changes at the Broad Institute of MIT and Harvard, a biomedical and genomic research center in Cambridge, Massachusetts, where one of us, Sheila Dodge, oversees the main technology platform. The first intervention streamlined lab operations, a setting similar to manufacturing and assembly operations, and the second improved the flow of R&D and technology development work. Though Broad may seem like a specialized case, our experience suggests that managers in just about any knowledge-based organization struggling with overload can learn from the institute's past mistakes and process improvements.[6]

Managing a Lab Like a Factory

Completed in 2001, the sequencing of the first human genome took almost 10 years and cost $2.7 billion.[7] A few years later, in 2004, the Broad Institute was launched with the mission of transforming medicine by systematically understanding the genetic underpinnings of disease through cutting-edge analysis and new technologies. The cost of genomic sequencing has dropped more than 100,000-fold and can now be done in a matter of days for about $1,000.

Today, the Broad Institute's organizational structure comprises two distinct components: (1) a set of research programs that explores how genetic information might provide a window into the origins of diseases like cancer and diabetes, and (2) a set of technology platforms that supports the research by analyzing samples (typically blood or tissue) and identifying DNA sequences.

But Broad wasn't always set up that way. It started as a distributed research-focused organization staffed with chemists, biologists, and applied mathematicians, and the genomics technology platform resembled the research labs. Work was done in small batches, often following informal or even improvised processes. Given the highly educated and capable people Broad hired, there was never a shortage of new ideas. This loose configuration of dedicated staffers produced rapid advances in sequencing technology — until that growth revealed the limits of Broad's approach to managing and doing the work. In 2012, cycle time for processing samples was more than 120 days, leaving Broad unable to keep up with the increased industry demand for sample analysis. Researchers from collaborating institutions began sending samples to other labs.

To address this challenge, Broad changed its approach to scheduling work in its genomics lab from a traditional "push" system to one based on "pull," which streamlined the flow of samples from chemical manipulation to analysis to sequencing. In a push-based system, tasks are effectively decoupled, and each person "pushes" as much work as she can to the next step in the process, whether or not the next person is ready for it, often creating costly overload. In a pull system, in contrast, the amount of work in the system is carefully controlled, leading to both improved transparency, which enables learning, and greater productivity. Since it's an approach that

could benefit any organization where tasks — whether physical work or knowledge work — tend to pile up between steps in a process, we'll describe here how the change played out at Broad.

The costs of a "push" process. Broad's struggle to handle the demand for its services was rooted in the use of a push system to manage the flow of lab samples. When a sample arrived, it would immediately go to the first, preparatory step of the analysis and sequencing process, where it would sit until someone could turn to it. (See "Push Versus Pull: Two Systems for Managing Workflow.") When that step was completed, the sample would move to the next step, where it would again wait for processing and so on, until it reached the sequencing machines that read the DNA.

The samples that accumulated between steps constituted work-in-process inventory, or WIP. When used properly, WIP can improve overall throughput by decoupling steps — even if the person upstream from me is stuck on a hard task, the WIP inventory allows me to keep working. Scholars in operations management have developed sophisticated models for figuring out exactly how much WIP should be placed between operations in a manufacturing process.[8]

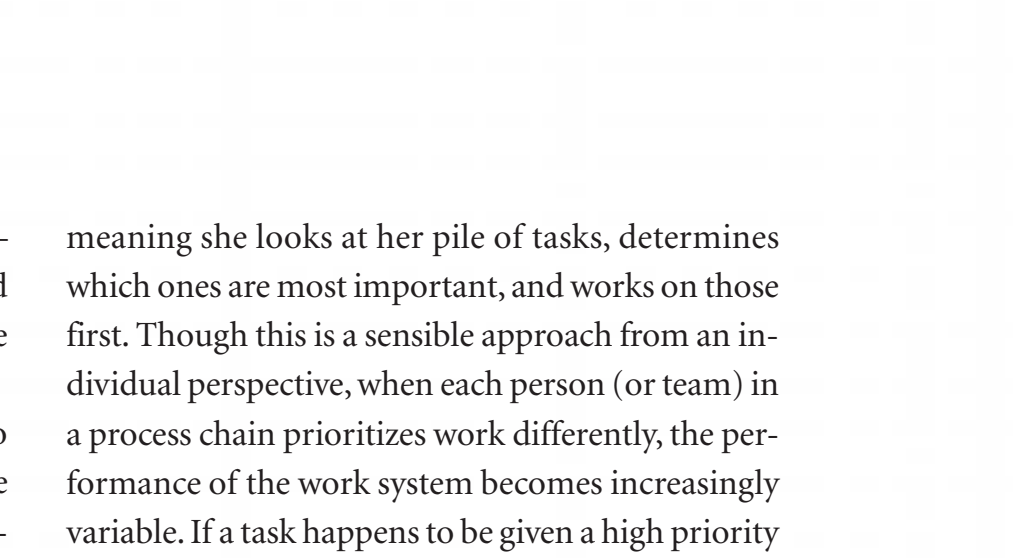
Unfortunately, practice doesn't always follow theory. The team at Broad was working hard every day to push samples through the system, and yet performance kept getting worse. The piles of WIP continued to grow, far exceeding any optimum level. When somebody needed a specific sample, it could take two days to find it. Managing the consequent congestion and confusion occupied an increasing portion of the leadership team's time.

To better appreciate the challenges created by a push system, consider the process from an individual's perspective: When WIP accumulates at each step, the person executing a particular operation often faces more work than she can complete in a given shift. She may then engage in *local reprioritization*, meaning she looks at her pile of tasks, determines which ones are most important, and works on those first. Though this is a sensible approach from an individual perspective, when each person (or team) in a process chain prioritizes work differently, the performance of the work system becomes increasingly variable. If a task happens to be given a high priority by everyone in the chain, it gets done quickly. But that means another task has been moved to the bottom of several to-do lists, and it might take weeks or months to move through the system.

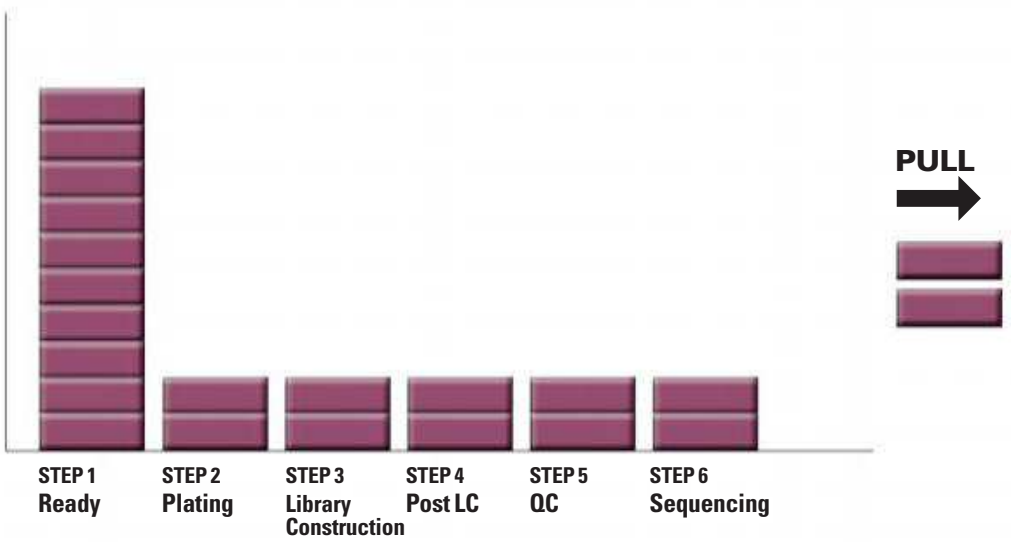
Before switching from push to pull, the lab staffers at Broad started each day by prioritizing their own tasks, asking themselves, "Is there a particularly important set of samples that needs to go first? Should I do the next sample in the pile or respond to the angry researcher who just called to complain about not receiving her data?" As thousands of

PUSH VERSUS PULL: TWO SYSTEMS FOR MANAGING WORKFLOW

In the old workflow system, staffers in the Broad Institute's genomics lab worked as quickly as possible, pushing completed tasks to the next step in the sequencing process and creating logjams.



The new "pull" system enabled line balancing, which improved efficiency and productivity.



in-progress samples stacked up, not only did the average cycle time grow, but outcomes also became less and less predictable. Some samples were completed relatively quickly while others took six months or more.

The tendency of push systems to produce long and unpredictable cycle times creates another problem. When a really important piece of work comes along, people don't want to risk having it get stuck in a WIP pile. So they work around the system to ensure that the task gets prioritized at every step. In factories, this is called *expediting*. Before the lean revolution, it was not unusual for plants to dedicate staff to hand-carry "special" jobs through the production line. But expediting is like a narcotic — the more you use it, the more you need it. When a piece of work is expedited, all the other WIP tasks are deprioritized. Eventually, those tasks will be so late that they also will require expediting, creating a vicious cycle.

At Broad, production team members developed daily schedules but rarely adhered to them for more than a few hours before reshuffling tasks to meet shifting demands. Locally reprioritizing and expediting tasks created an almost constant need for firefighting. When a technician wanted to start preparing a sample for sequencing, the first thing she had to do was find it. Often, halfway through her search, her attention would be directed to another set of samples that suddenly had become a higher priority. Members of the operations team spent their day responding to complaints, leading to an increasingly inefficient allocation of resources. Despite working longer hours, the lab was falling further behind. Morale suffered, and arguments erupted daily as team leaders tried to figure out why yet another sample was about to miss its promised delivery date.

The benefits of a "pull" process. To get operations out of constant overload and firefighting, Broad's genomics platform switched to a pull system. The key to understanding the difference between push and pull is to recognize that WIP inventory is a double-edged sword. Though it is intended to help mitigate variability in speed and productivity between steps in a process, it also hides information that supervisors and operators could use to manage and do the work more effectively. In a push system with lots of WIP, an operator can focus on her individual task with little regard for what is happening around her. But a pull system forces a broader awareness. It sets clear limits (both upper and lower) on WIP accumulation. When an individual or team hits one of those limits, that's a sign of an underlying problem. Managers can trade off short-term productivity and long-run learning by adjusting the WIP limits. Tighter limits allow them to identify and fix problems in the system; a wider span leads to fewer hiccups and more short-run throughput.

At Broad, implementing pull began with reconfiguring the inventory holding areas between steps. A simple color-coded system now provides technicians with clear signals about the state of their operation relative to the overall production system. Each operation now has a WIP box that has three sections, colored green, yellow, and red. If the box is completely empty, then the technician should process samples. Once the green area is full, she can slow down, and filling the yellow area means she is nearing the end of the day's work. A full red section signals that it is time to stop. If a technician is done with her work for the day, she can quickly assess the overall state of the system by looking at other people's boxes to identify a colleague who might be behind and need some help. By providing clear produce and stop signals, a pull system promotes effective line balancing.

Pull systems also provide a clear set of vital signs for managers to monitor. At Broad, a quick walk through the production area reveals which parts of the operation are moving and which are stuck. A

> Expediting is like a narcotic — the more you use it, the more you need it. When you expedite one task in a process, all others are deprioritized, and eventually they too must be expedited.

> Limiting work-in-process inventory between steps and allowing reprioritization only at the beginning of the process results in a system that is both faster and more reliable. It also frees up resources for innovation.

perpetually full pull box means either the downstream task is moving too slowly or the upstream one is moving too quickly. An empty pull box at the end of the day means that something is wrong with the operation that feeds it. With this transparency, the operations team has been able to identify and address a variety of problems that had been previously hidden by the piles of samples in progress. For example, empty pull boxes showed the team how a seemingly small change in shift schedules meant that sequencing machines would often finish their work on a Saturday or a Sunday but would not be reloaded until the following Monday, reducing utilization.

Limiting WIP between steps and allowing reprioritization only at the beginning of the process resulted in a system that was both faster and more reliable. Resisting the temptation to expedite remained a challenge for the Broad team. With time, however, the culture changed and people began holding one another accountable for sticking with the process. In the morning production meeting, it's not unusual to hear team members call one another "pushers," a lighthearted reminder that they are falling back into the vicious cycle of expediting. Even the center director has agreed to refrain from reprioritizing midprocess.

Implementing pull produced significant gains at Broad. With the new system, utilization of the sequencing machines — the single biggest capital investment — rose almost immediately and eventually more than doubled. Today, it rarely falls below 90% and often exceeds 95%. Process cycle time eventually fell by more than 85%, and the variance declined dramatically. A faster, more predictable, and more transparent process has created stability and competitive advantage. The lab receives fewer queries from researchers wondering where their data went. Staffers once dedicated to expediting samples can now focus on fixing fundamental problems that prevent the process from functioning as desired. Resources have also been freed up to innovate, enabling the platform to pioneer a variety of industry-leading services, such as clinical genome sequencing, where data is returned to patients, and cell-free blood biopsy interrogation, enabling minimally invasive characterization of tumor metastasis.

Managing Tech Development

The improvements Broad made in its operations would be impressive in any industry. That said, it was a relatively modest leap from a traditional manufacturing and assembly environment to implementing a pull system in the samples lab. Broad's next intervention was far more novel: adapting the pull approach to managing technology development. While many management scholars have argued that efficiency and innovation are strict trade-offs, Broad created a system that allows it to be a highly efficient processor *and* an industry leader in generating new technology.

When knowledge work processes are managed via push, it's difficult to track tasks in process because so many of them reside in individual email in-boxes, project files, and to-do lists. Complicating matters, talented employees — particularly those in innovation-focused environments — have a knack for continually pushing more new ideas into an organization than it's equipped to process. Studies of new product development organizations in the consumer electronics and motorcycle industries suggest that R&D systems often have three to five times as many projects in progress as they have capacity to complete.[9]

The R&D processes in Broad's genomics platform were a case in point. In 2012, the group had many more ideas for tech development under consideration than it could fully investigate and many

more projects under way than its overloaded operations team could ever implement. What's more, the push approach to managing tech development created snags similar to those experienced in the lab. Accustomed to exercising considerable autonomy, the development teams would engage in local reprioritization and regularly switch their focus from one idea to another, both reducing productivity and creating variability.[10] When they felt a sense of urgency, often because of a customer requirement or a change in a vendor's technology, they would drop everything and fight the new fire. Given a slow and unpredictable development process, leaders routinely resorted to expediting. Expediting had *become* the development process, and the genomics platform was losing the technology leadership position it had worked so hard to gain.

To apply the pull concept that had worked well in the samples lab, the tech development teams used visualization to give their less-tangible work a physical "face." Managers have done this in risk and crisis management contexts for decades, often capturing the data needed for a pending merger or acquisition in a "war room" or dedicating a room to "incident command" after an accident. Though visualization is less common in "peacetime," it can be equally effective for managing day-to-day work.

Our physical environment shapes how we perceive and process information.[11] In physical work, it's visually obvious when excess WIP inventory piles up and production lines stall out, so colleagues naturally converge to help. But when work on a key component of an R&D project stops, it doesn't usually generate a clear signal to the rest of the organization. Visual management makes it easier to see what is moving and what is stuck. Broad's technology teams made their work more tangible by drawing a simple schematic of the development "funnel" on some unused wall space and creating a separate box for each major stage (feasibility, design, and validation). Working together and drawing from multiple emails, spreadsheets, and project files, they generated a list of all projects under way. They then transferred each one to a Post-it note and placed it on the funnel diagram in the box corresponding to the development phase that it was in.

Though creating a visual representation of an individual project is not novel (agile teams do it all the time), it is fairly rare to create one for an entire development portfolio, as the R&D group at Broad did. The exercise led to two insights. First, there was an obvious lack of common prioritization: Nobody was aware of every project, there was little consensus about which ones mattered most, and many projects overlapped or competed with others. Second, the system had too much work in process. Comparing the number of current projects with recent delivery history showed that employees had at least twice as much work as they could complete in the best of circumstances.

With the unintended consequences of continually pushing new ideas into an overloaded development system now visible, the teams began meeting in front of the funnel board weekly to determine which activities in the portfolio were in trouble and needed to be escalated for consideration by leadership.[12] For each project, a set of Post-it notes captured three elements: relevant activities (such as developing a testing protocol), the name of each activity's "owner," and target completion dates. During the weekly meeting, people would briefly report on whether activities were completed on time. If the answer was no, a Post-it note in a contrasting color (usually pink) was placed on top of the original entry to signal that something was not going according to plan. Once a "stuck" activity was identified, team leaders could discuss ways to get it moving, whether by adding resources or by removing organizational roadblocks. After all the activities for a particular phase were completed, the group would discuss whether the project was compelling enough to move to the next phase of development. If it was, then new sticky notes, representing the next set of key activities, were created and placed on the board.

This exercise also helped the group identify and cancel low-priority activities. Over the two years, the number of projects in progress was cut by more than half, reducing the time required to complete the projects that survived and increasing the overall throughput of the system.

But paring down the portfolio wasn't sufficient to sustain improvement. Broad's scientists and technicians would continue to generate more good ideas than they had the resources to execute. Without rules for managing the portfolio, the

overload was almost certain to return, and painful cuts would again be required.

So the genomics platform made a few adjustments to the weekly meeting and supporting visual board. First, a "hopper" was added in front of the funnel to capture and represent all of the proposed projects that hadn't yet begun. To facilitate shared prioritization, the group ranked each project in the hopper by potential impact and effort required to complete it. Ideas could be added to the hopper at any time, and new suggestions were discussed and ranked each week. Second, an "agreed and ready" column was added between the hopper and the first stage of the development funnel. New ideas deemed worthy of development would go there. Managers and employees would review those together weekly and adjust priorities as needed. Third, they would also review the amount of work in the various stages of the funnel and pull from the "agreed and ready" column only when people agreed that they had enough space to start a new project.

To determine whether there was space for a new project, the R&D group modified the pull approach used for lab samples. In the lab, samples can be reduced easily to a common unit of work, and therefore it is relatively straightforward to quickly specify the resources needed. In contrast, R&D projects come in a variety of shapes and sizes. So the funnel board by itself does not provide enough information to allocate resources. Instead, the group relies on the weekly check-ins, facilitated by the visual system, to assess the amount of work people can handle, thus allowing the teams to capitalize on the experience and expertise of their members. Only someone who is deeply familiar with a task can accurately gauge how much time and effort it will require. Each activity's target completion date is based on its owner's assessment of how long it would take to complete in normal circumstances — that is, in a *properly loaded development system*. The relevant contributors are then asked whether, given their current loads, they think they can meet that date. If they say no, that's a sign (like a profusion of pink Post-it notes) of too much work in that part of the system. The new activity can't move forward until others are completed or canceled.

Leaders also use the board to spot bottlenecks and other individual performance management issues. If certain portions of the funnel are moving more slowly than others, the resources need to be rebalanced or the relevant employees need to engage with their work differently.

Creating a pull system for technology development at Broad has led to significant gains, just as it has in the lab. Having increased the velocity and throughput of its system severalfold, the development group has freed up resources to create new products and services, including sequencing for commercial clients, processing clinical samples for individual patients, and creating a data platform that enables more scientists to do research using genetic data. Employees report deeper engagement in their work and more success with cross-functional collaboration (fewer "turf" battles, for instance, and better-integrated goals).

As the R&D group developed this system, it dutifully kept every Post-it note that came off the board when an activity was completed and placed it on a large spike. After four years of running the

STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION

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Robert W. Holland, Jr.

system, managers and employees held a small celebration and counted all the sticky notes in that stack — more than 4,000 separate development activities, or about one every two weeks for each member of the extended leadership team.

Designing Work for People

As we have begun to teach this material at MIT, by far the most common question goes something like this: "Sure, this works in your examples." (We typically discuss manufacturing, genomic sequencing, and oil drilling.) "But will it work in *my* organization?" We always give the same reply: "The stuff we teach works only in organizations that have people in them."

Toyota and other Asian manufacturers catalyzed a revolution in physical work, and Western companies spent the better part of two decades mastering quality management and lean production, an effort that continues to this day. But, while the companies using these methods have developed significant capability in manufacturing and supply chain operations, many have missed a larger message. The tools and practices associated with quality management and lean approaches work not because they are better ways of organizing manufacturing activity, but because they are better ways of organizing *human* activity.

Creating systems that allow people to see their nonphysical work more clearly as well — both when it is moving and when it is stuck — may represent the next frontier of improved organizational performance.

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Selling Solutions Isn't Enough

B2B companies need to focus on helping each customer achieve better outcomes.

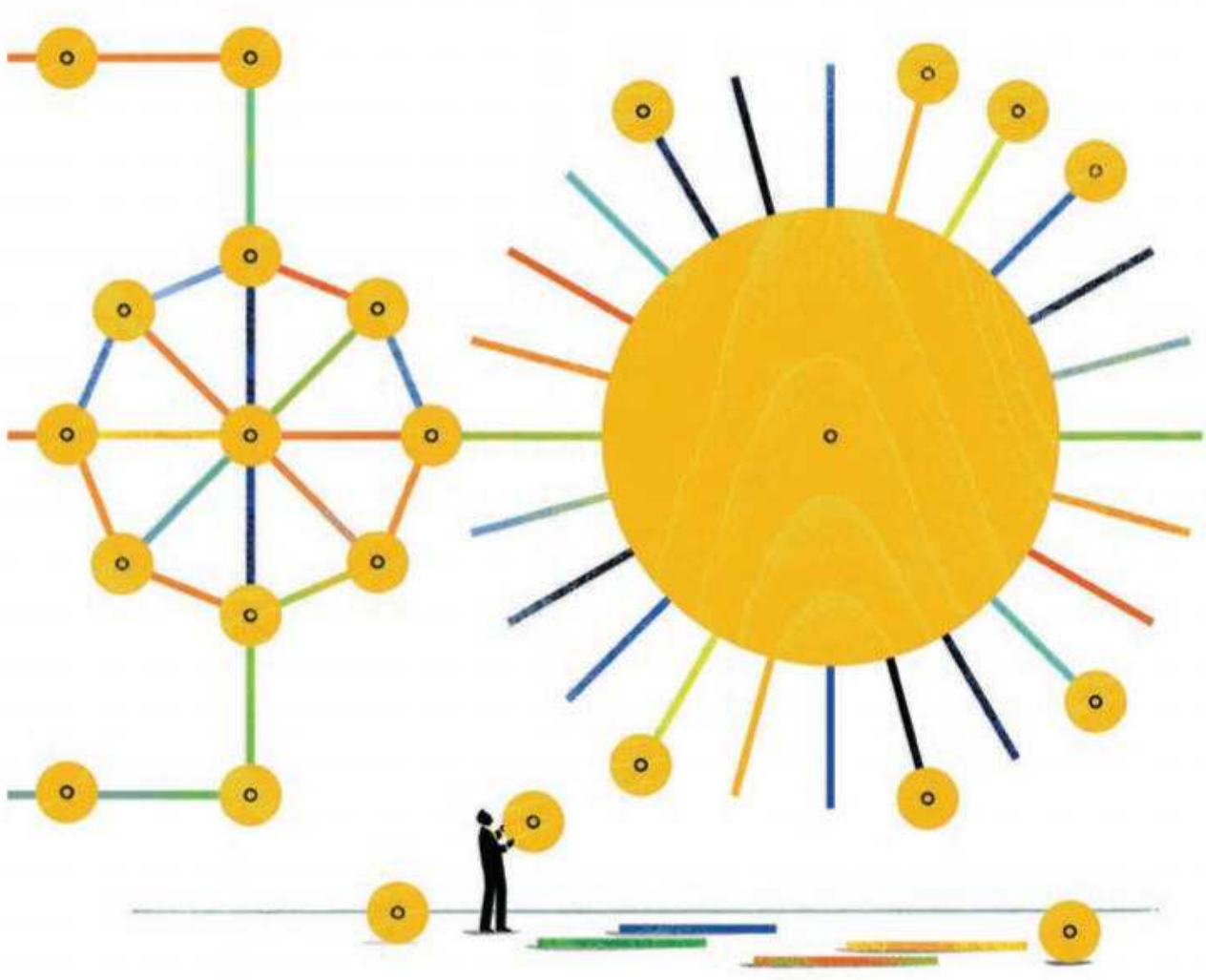
BY HANNAH GROVE, KEVIN SELLERS, RICHARD ETTENSON, AND JONATHAN KNOWLES

The word *solution* needs to be retired from the business vocabulary. What was once a meaningful, buyer-defined term that meant "the answer to my specific problem" is now generic jargon that sellers have co-opted to mean "the bundle of products and services I want to sell you."

Management guru Peter Drucker made this observation nearly a half-century ago, when he said that customers are always more interested in their outcome than in your solution. "What the customer buys and considers value is never a product," Drucker wrote. "It is always utility, that is, what a product or service does for him."[1] In the business-to-business (B2B) environment, many companies have moved away from this truth. They develop products and services (often described as solutions) from an internal view, and they attempt to sell them to the widest possible customer base.

In this article, we describe how four companies have chosen to move away from selling solutions in favor of identifying and delivering outcomes that customers want. The companies are State Street, which manages investments for large institutional investors; Avnet, which supplies electronic and semiconductor components to technology manufacturers; a large U.S.-based manufacturer of building products; and a leading U.S.-based construction, engineering, and specialty service company for the power and process industries.

We've observed that B2B customers define their desired outcomes in widely different ways. Beyond the obvious financial metrics (such as revenue growth and profits), goals might include delivering a better experience to buyers, fostering a more vibrant internal culture, achieving efficiencies, or revamping the company's reputation. In each case, the desired outcomes represent leading indicators of that customer's future business performance.



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THE LEADING QUESTION
How can B2B companies deepen their engagement with customers?

FINDINGS
- **Identify and enable the outcomes that B2B customers want to achieve.**
- **Aim for customer advocacy, not just satisfaction.**
- **Be prepared to make changes on five aspects of how business is done.**

Becoming an outcome-oriented B2B business isn't easy. It involves going beyond the organization's comfort zone as a technical problem-solver to engage in a more tailored form of collaboration with customers. Rather than relying on self-serving rhetoric to describe their solutions, providers need to better understand their customers' specific challenges, objectives, operating practices, and competitive environment. Armed with these insights, the four companies discussed here assembled the relevant resources (both internally and through third parties) to create offerings that deliver value within a customer's specific business context and culture. (See "About the Research.")

Making the case for change can be challenging. The organizations we describe were already acknowledged leaders in their field and had been generating strong financial results. However, the changing nature of the B2B environment and their customers' desire for increasing levels of customization convinced the executives that an outcomes-based approach was required to maintain their market leadership.

The Changing B2B Environment

For decades, B2B success relied on developing products or services that outperformed the competition and progressively improving them while maintaining strong sales relationships. B2B offerings were sold by specialists to specialists, largely on the basis of functional performance and technical sophistication.

In recent years, however, the dynamics of most B2B markets have been disrupted by four factors:

- **The commoditization of quality.** The technical and qualitative differences between competing offerings have been dramatically narrowed by the widespread adoption of total quality management, Six Sigma, and similar methodologies. As a result, high quality has become table stakes, and companies need to deliver additional forms of value.
- **New technologies.** In many industries, new technologies such as cloud computing, mobile applications, and artificial intelligence pose an existential threat to some business models because they offer cheaper and simpler ways to deliver the same functionality.
- **The abundance of product information.** Easy access to information means that B2B customers can do research on their own before the formal sales process begins. Therefore, customers are less inclined to ask, "What does your product do?" than "What can it do for *me*?"
- **A shift from cost to value.** Procurement at customer organizations used to focus almost solely on negotiating for the lowest price. Today, it's aimed at identifying the supplier that can help generate the greatest business value.

Any one of these changes in isolation would require B2B companies to revamp their marketing practices. Collectively, they demand a complete reset in how companies create value for customers.

Five Key Dimensions

In our experience, B2B companies pursuing an outcomes-based approach have to change along the following five dimensions. (See "Implementing an Outcomes-Based Approach," p. 58.)

Changing the definition of success. An outcomes-based mindset requires recognizing that success is measured in terms of the value received by the customer. Accordingly, a key step is engaging with employees from all areas of the business to identify — collectively and function by function — how the company can provide more of that value. Such conversations can help companies redefine what they mean by "most valuable customers." Rather than focusing on those who buy the most (or who have been buying from them the longest), they should pursue the customers for whom they can *generate the most value*.

This concept — that B2B companies are in business to make their customers more successful — requires focusing on the customers' customers. Through this lens, the companies in this article have had to articulate their definition of success in a way that connects employees with the ultimate purpose of their work. Avnet's brand promise, for example, used to be that it served as the logistics arm of technology component manufacturers — a supply-driven identity that worked well for many years. Today, Avnet considers itself a component-sourcing partner for a diverse group of "makers" that includes both global technology companies and garage-based entrepreneurs.

State Street's direct customers are institutional investors, but it has recently articulated its purpose in business-to-business-to-consumer (B2B2C) terms: "Pursue faster, easier, more responsible ways

for the world's investors to stay ahead" (which speaks to the interest of individual investors who entrust institutional investors with their savings).

Similarly, both the building products and industrial infrastructure companies have made explicit efforts to link their offerings to emotionally resonant purposes. With building products, the purpose is protection and security; with industrial infrastructure, it is laying the foundation for modern living.

Changing the approach to technology. A key test for whether an organization is oriented around customer outcomes is the role of IT. Eduardo Conrado of Motorola Solutions is one of the rare business leaders to have served as senior vice president of both marketing and IT. He observes that IT's role is strongly influenced by where it sits in the organization: If IT reports to operations, it will focus on supply chain and other internal efficiencies. If IT reports to finance, it will focus on cost reduction. And if IT reports to marketing, it will focus on creating seamless and valuable relationships with customers.[2]

Each of the four companies featured in this article has sought ways to use emerging technologies to deliver distinctive value to customers. State Street, for example, has focused on providing customers with a near real-time status on their in-process transactions (similar to the tracking information that shipping companies provide), giving them superior visibility into their trading positions and portfolio composition.

In both the building products and industrial infrastructure companies, the use of drones lets customers visualize their options more clearly (through rendering of how various products would look in their specific building or home) and monitor the job progress. The latter is especially valuable for industrial facilities, given their remote location.

Avnet, for its part, has used technology to standardize and automate some low-value processes (such as simple ordering and fulfillment) at lower costs. However, the company has also invested heavily in capabilities and tools that have a bigger impact on the customer relationship. Recently, for example, it rolled out an "always on" digital design service tool that lets U.S. customers identify the different components and configurations they can use in their designs and see the corresponding lead times and costs for each option. Already, the new service is being used on more than 700 projects, saving customers from two to five weeks (depending on design complexity) of development time. Avnet is planning to roll out the service worldwide.

Changing how the company is organized. Orienting the company around customer outcomes typically requires a degree of internal restructuring and alignment, as priorities shift from maximizing the efficiency of each department to maximizing the contribution the entire organization makes to the customer's success.

Avnet's organizational changes have been far-reaching. In late 2016, the company sold a major division (representing 40% of its legacy business) and then proceeded to complete a major acquisition. In the process, it consolidated its global design and technical services, enabling faster response times for customers developing prototypes of new products. These enhanced service capabilities — available earlier in the design process — have led to deeper relationships with customers.

For State Street, structural change has involved reorganizing around customer segments (for example, pension funds or insurance companies) as opposed to service offerings (such as trading, risk, or investment management). The new structure ensures that customers interact with a client-facing team that is deeply versed in their needs. As part of the redesign, State Street revamped its training programs to help employees understand the issues and regulatory and operational requirements of each customer type.

The industrial infrastructure company initiated a similar restructuring to ensure that each power and process customer engages with personnel who know

ABOUT THE RESEARCH

This research is a collaboration between senior business leaders from four B2B companies, a professor of marketing, and a consultant who has extensive experience working with B2B companies. The framework synthesizes the experiences of the B2B executives in implementing an outcomes-based approach in their respective organizations, but it also draws on the wider body of research that the other coauthors have conducted on how B2B companies think about the value they deliver to their customers. Over a 10-year period, this research has involved one-on-one interviews with more than 600 business leaders, 360 marketing and sales executives, and 270 B2B customers. The interview subjects represent a wide range of industries, including technology products and services, health care products, financial services, industrial engineering and construction, and building products. In addition, 500 B2B business managers have participated via workshops. The insights gained from the interviews and workshops have been refined through successive waves of online research involving more than 3,800 B2B customers.

its industry and type of work (be it capital projects, specialty engineering services, or plant maintenance).

Changing how the company communicates with customers. The increased availability of information and peer-to-peer engagement has fundamentally changed the role of communications in the B2B purchase cycle. Today, prospective customers enter the formal sales process better informed through their own research, including information from suppliers and — equally important — from current customers, user groups, and other forums. The traditional focus on communicating technical content (sometimes referred to as the "cathedral" model) has given way to a "marketplace" model in which B2B companies are just one voice among many interactions happening both physically and online.

Social media has, of course, accelerated this shift. In business-to-consumer (B2C) environments, where the typical goal is to spur spontaneous purchases, companies have been investing in location- and context-based applications. In the B2B environment, by contrast, the real value of social media is in how it connects companies to customers (and to their customers' customers). It reveals where, when, and how customers are sharing content among their peers, allowing suppliers to generate new insights and forge more direct ties to their customers.

For example, the building products company conducted an extensive "digital listening" exercise across a broad range of blogs and online forums dedicated to commercial and residential construction. By using natural-language algorithms to identify relevant conversations and human-supported machine learning to classify the conversations, it has been able to understand the topics of greatest interest to customers, monitor the sentiments associated with customers' experiences, and track how often the products and brands of the company and its competitors were mentioned. These insights have enabled the company to develop content relevant to each key topic and, where appropriate, make it available to those participating in the online discussions. This approach has proven so valuable that the company is collaborating with contractors and distributors on a proprietary tool for exchanging information on a near real-time basis.

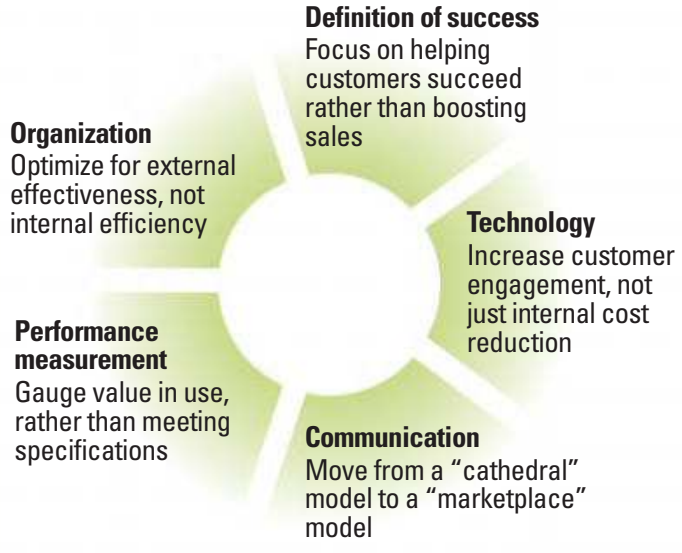
Avnet, too, monitors user forums and has recently created a number of user sites of its own where engineers and entrepreneurs can share practical tips and expert commentary on a range of relevant and emerging topics. In the company's view, current and potential customers are likely to get more value from a forum devoted to technical issues and work-arounds than from white papers demonstrating the company's engineering prowess or thought leadership. Avnet's forums currently have nearly 1 million registered engineers, a number that is growing by 25,000 users each month.

State Street uses social media not only to monitor the pulse of the institutional investors who make up its customer base but also to learn about the needs and expectations of retail investors who invest through those organizations. While it's fairly common for financial organizations like State Street to conduct research on the investment appetites of institutional customers, they don't typically pay attention to social media at the retail level. Nevertheless, State Street has found such engagement useful. Although it doesn't treat these online discussions as a source of potential sales leads, it does like to contribute to online investment discussions with timely, relevant, and jargon-free commentary.

Changing how the company measures value. In the past, B2B suppliers aimed to deliver products

IMPLEMENTING AN OUTCOMES-BASED APPROACH

Focusing on customer outcomes rather than internally generated "solutions" requires that companies take action across five dimensions.



that matched the customer's technical and operational specifications. Assuming the product met the specs, the supplier's job was complete.

Under an outcomes-based approach, suppliers need to rethink their metrics of success and help customers assess the value their products and services generate. In some settings, quality will no longer be internally defined (measured, say, in manufacturing error rates) but instead gauged by how well a product meets the customer's expectations for quantitative and qualitative business impact. Likewise, measures of internal efficiency (such as inventory turns) need to be supplemented by external measures of effectiveness (such as accelerating a customer's time to market or increasing engagement with customers).

While the four companies in this article are at different points in their journey to rethink the measurement of outcomes, all their sales teams are beginning to collaborate with individual customers to help them articulate quantitative and qualitative business objectives. Clarifying these objectives helps customers weigh the merits of various options and offerings. Moreover, the assessments don't stop after the sale. Rather, they can include usage rates and other agreed-upon business performance measures once the product or service is deployed. Moving from traditional sales contracts to subscription-based models can make higher levels of engagement and post-sale assessments even more important.

Underlying the approach of the four companies is the explicit identification of the ways in which their products and services contribute to the superior business performance of their customers. This involves detailed examinations of how the customers make money and how the companies can contribute to their customers' success in ways that go beyond the functional quality of their products and services. For example, State Street and Avnet are developing in-market key performance indicators linked to the commercial success of individual customers. State Street uses Net Promoter Score,[3] a marketing metric used by many companies to identify customer "pain points" and sources of "delight." Avnet is working to quantify the value that individual customers get from reducing development time and cutting overall costs when they turn ideas into products and begin generating revenue.

Given the large number of contractors and distributors with which it interacts, the building products company has tailored its measurement efforts around how different customers define value. For some, the dominant value driver is advice- or relationship-based; for others, it's the validation that the manufacturer provides their business through certification and warranties; and for another small segment, it's simply about price.

The common thread is the desire to demonstrate the company's value as a trusted collaborative partner that aligns with each customer's business priorities — not only during the initial sale but throughout the commercialization phase and life cycle of the product or service.

A Challenging — and Rewarding — Path

As the B2B environment becomes more dynamic and demanding, enterprise customers want their suppliers to stop selling prepackaged "solutions" and actively contribute to their commercial success. Based on our collective experience and analysis, moving in this direction requires changes on multiple levels. Companies that develop an outcomes-based approach will be able to collaborate more directly with their customers and take on shared responsibility for creating greater, and more sustainable, value. When their customers win, they will also win.

Hannah Grove *(@hannahgrove9) is the chief marketing officer of State Street.* ***Kevin Sellers*** *is the chief marketing officer of Avnet, a distributor of electronic components and embedded solutions.* ***Richard Ettenson*** *is a professor and the Keickhefer Fellow of Global Marketing and Brand Strategy at the Thunderbird School of Global Management.* ***Jonathan Knowles*** *(@typetwo) is CEO of Type 2 Consulting. Comment on this article at http://sloanreview.mit.edu/x/60109.*

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How to Launch Products in Uncertain Markets

In volatile times, uncertainty can be turned into a competitive advantage.

BY JAN-MICHAEL ROSS AND JAN HENDRIK FISCH

Predicting the needs of your customers has always been tricky. In one 2005 survey, for example, 80% of corporate executives said they believed they were delivering superior products to their customers — but only 8% of their customers agreed.[1] It's even harder to please your customer when things are as uncertain as they are today. Shifts in politics, immigration patterns, and trade policies are shaking the foundation of international commerce. Consumers are both more informed, thanks to the internet, and more fickle, thanks to social media. When you consider all that — and the rapidity and frequency of technological change — predicting the future needs of your customers may seem like a fool's game.

Given the obvious costs of misjudging customer preferences, how should companies at the brink of a product launch behave in the face of great market uncertainty? Should they "wait and see" until uncertainty resolves? Or should they commit resources for a full-scale launch and ride it out?

The conventional wisdom these days is that being early to market is the right choice. But our study of 550 manufacturing companies and analysis of service companies with considerable sunk investments suggests that this is not always the case. (See "About the Research," p. 63.) Often, being better matters more than being first. We've observed that many companies can benefit by taking a mixed approach, which we like to call "act and see." By deferring the large-scale launch of new products and using the time to conduct effective R&D, companies can glean valuable insights and develop capabilities that give them an edge on competitors that rush in with less caution. But implementing an act-and-see approach isn't easy. Business leaders must ensure that the company has the personnel and the structure to make effective learning from experimentation commonplace.[2]

The idea of experimentation in the face of uncertainty is not novel for those who are familiar with concepts such as discovery-driven planning,

A. RICHARD ALLEN/THEISPOT.COM

THE LEADING QUESTION
Should companies be first to market in uncertain times — or should they wait and see how things go?

FINDINGS

- **Many companies benefit by holding off but conducting R&D while they wait.**
- **Doing so enables them to build capabilities that will help them navigate volatile markets.**
- **This approach also makes it harder for rivals to copy their moves.**

probe and learn, disciplined entrepreneurship, active waiting, and lean startup. So, what's new? Our work shows how prelaunch experimentation can build capabilities that help you create value in uncertain market environments. What's more, those capabilities will make it harder for competitors to copy you.

A Wise and Active Approach

Some managers make decisions without considering the uncertainty in the markets they are about to enter.[3] They make low-information bets on new products that may not be in demand. This all-too-common approach is so foolhardy that we hesitate to even call it a strategy.

A more conscious alternative to ignoring uncertainty is to avoid it. Investment theory argues that businesses should wait and keep their options open, putting off any irreversible commitment and keenly watching the market. But this approach has several problems. First, it assumes that uncertainty will resolve over time, which may or may not be the case. Second, the company is learning only passively. Waiting and watching, the company wastes time that could be spent acquiring the constantly changing skills and capabilities necessary to stay competitive in challenging markets. Third, the company runs a serious risk of falling behind its more proactive competitors.

Another conscious alternative, being first to market, is a prized tenet of Silicon Valley culture, but its value is often overstated. Without a keen sense of customer demand, such launches can be risky — especially when the company has made sizable and irreversible commitments. Iridium, the satellite phone company that filed for bankruptcy in 1999, invested $5 billion for the launch of a worldwide network that no one needed or wanted. Webvan, a startup from the same era, had a great idea: delivering groceries that were ordered online. The company expanded quickly, only to discover that the idea was way ahead of its time. Demand never materialized, and Webvan filed for bankruptcy in 2001.

An act-and-see strategy combines a realistic patience with active learning. By delaying expensive launches, companies acknowledge their need to lessen the uncertainty they face. But by experimenting actively during this delay — perhaps by dipping a toe into a limited market, with a product that can still be iterated, to gauge appetite, validate assumptions, and build capabilities — they learn more about their customers and the market. When the new product or technology does finally launch, these capabilities can be deployed straightaway to exploit the market opportunity more effectively and less expensively.[4]

Developing these additional capabilities can lead to critical competitive advantages. For example, acquiring better data about your customers ahead of the launch of a single product can pay off on later launches as well. Pablo Isla, CEO of Inditex, parent company of clothing retailer Zara, emphasizes that Zara's business success is not about speed but accuracy — using the data it has collected over many product launches to understand what its customers really want and translating those insights into product offerings. Zara's competitors have been hard-pressed to keep up.[5]

As MIT finance and economics professor Robert Pindyck shows, the learning curve is crucial for the value of real options at a time of uncertain demand.[6] Learning more before the start of full-scale production increases the potential value of new products while lowering the cost of commercialization. It also creates a strategically valuable residual uncertainty among rivals that are less willing to experiment: As they struggle to copy you, they are incapable of aggressive responses and must "make room."[7]

In the aftermath of the oil crisis, for example, Hyundai Motor shifted its learning orientation and capability building. Instead of learning *by* doing production, it spent more on R&D to learn more *before* doing. By actively learning while waiting to strike, Hyundai enhanced the upside of uncertainty and limited downside risks. When the economic climate became less uncertain, Hyundai launched strong products that its customers wanted, increased sales, and caught up with rivals.[8]

Three Ways to Learn Before Launching

Speaking about the value of prelaunch experimentation in times of uncertainty, Pankaj Ghemawat reminds us that "learning does not, of course, occur automatically, not even for new ventures."[9] At companies with clear processes for acting upon learning, allocating more resources to R&D for experimentation under uncertainty can enhance

ABOUT THE RESEARCH

To understand how companies allocate resources to R&D and the commercialization of new products in uncertain market situations, we studied 550 German companies across all manufacturing industries. Using a unique panel data set that includes quantitative and qualitative information from innovation surveys, monthly business climate surveys with managerial expectations, and monthly industry sales data from the Federal Statistical Office in Germany, we studied a representative sample of companies (mostly small and medium-size businesses) over time. Further, we analyzed cases of service companies and reviewed books and articles in the fields of strategic management, innovation, entrepreneurship, and finance published in leading practitioner and academic journals. Through the review of the literature and the data analysis, we were able to study multiple timing strategies under different environmental conditions.

value. At companies without this capability, more R&D may simply waste resources. Our research suggests that companies that regularly turn learning gleaned from experimentation into value do these three things:

1. Hire people who are skilled at the experimental process. To turn learning into value, you have to unearth meaningful insights and then make something of them by informing, connecting, and motivating various parts of the organization.[10]

Scientists and engineers with training from top universities can facilitate both parts of the process. They are experienced at designing experiments that unveil meaningful data and explore cause-and-effect relationships. They are also accustomed to drawing on the assistance of many different departments along the way, for everything from securing proper resources to licensing discoveries. Those skills are of great value in a corporate setting, where, for instance, engineers in isolation may create brilliant products that are of no use to anyone, while marketers in isolation may yearn for products that are technically impossible. In a successful experiment, the product marketing team and the research laboratories (including process engineers) interact during the learning process. The skill of integrating insights into a company's processes is critical for developing the capabilities that enable a company to introduce new product options. Business leaders must keep this in mind when hiring technical staff: Training in the process of experimentation is as important as individual technical brilliance.

2. Leverage assets of the core business. Sometimes, new product opportunities that emerge from corporate labs are not strategically central to the existing business. Turning those opportunities into meaningful value is particularly difficult, given the company's inexperience and unfamiliarity with the new domain. That's why this kind of learning before doing can be costly and inefficient.

We've found that it's more effective to explore opportunities that are closely related to a company's core business. This leverages past experiences and existing capabilities, ensuring that people know when a particular cause-and-effect relationship is meaningful. Learning rates from experimentation are higher when new launches are similar to existing products. The familiarity makes it easier to discern and apply meaningful lessons. Furthermore, the cost of experimenting close to the core is lower, since the company can reuse existing assets such as models and components.

Cost-effective learning has a high learn-to-burn ratio — that is, the rate at which information about a course of action is received divided by the cost of pursuing such experimentation.[11] Rather than persuading scientists and engineers to execute experiments when learning cannot be transferred and leveraged, business leaders should encourage possibilities with high learn-to-burn ratios so that the company's current competence serves as a tool for taming the uncertainty of the market.

3. Match experimentation to the industry's life cycle. The strategy for facing uncertainty in a mature industry is very different from the one required when contending with the uncertainty of a nascent sector. In the early stages of an industry's life cycle, extensive experimentation, iteration, and variation can deliver enormous value, since so much of the market is unclear and unexplored. In mature industries, however, companies must look to other areas for explosive growth, since the learning opportunities in the old business have already been exploited.

A good example of this is today's automotive industry. Improvements in gasoline-powered engines are likely to deliver minimal value, given the maturity

of the market. The learn-to-burn ratio in gasoline engines is very low. But the electric vehicle market holds much more promise. There, R&D spending on electric capabilities may pay off handsomely. In fact, the market is so promising that R&D spent on learning how to effectively switch from the old capabilities to the new might also be money well spent.

A Recipe for Smart Failure

Done right, prelaunch R&D can give companies a meaningful edge on the competition in uncertain times. Of course, this kind of act-and-see approach isn't for every company. Some businesses that require commitments years before the start of production may not have the flexibility to respond to new information. But most businesses can and should consider such a strategy when uncertainty reigns.

As strategy and innovation experts Rita McGrath and Ian MacMillan point out, in uncertain times, businesses must let go of old approaches in order to direct resources into new opportunities for growth.[12] One critical tendency they must abandon is their bias against failure. Product managers and marketers run into this repeatedly when trying to convince the C-suite that delaying a launch and directing more funds to R&D is a good strategy. Without a tolerance for failure, experimentation will never deliver the kind of learning that companies need.

And yet, it's important to set the stage for failure that the organization *can* tolerate and learn from. By bringing skilled experimenters in-house, tapping core business assets to facilitate prelaunch learning, and focusing on underexplored areas of the market, companies can equip themselves to turn uncertainty into value.

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Why People Believe in Their Leaders — or Not

Credibility hinges on perceptions of competence and trustworthiness.

BY DANIEL HAN MING CHNG, TAE-YEOL KIM, BRAD GILBREATH, AND LYNNE ANDERSSON

Leadership is the relationship between people who aspire to lead and those who choose whether or not to follow.[1] And it hinges on the leader's credibility, which is difficult to build and easy to lose. In recent years, numerous corporate executives — including the CEOs of BP, Wells Fargo, and Volkswagen — have learned that tough lesson through high-profile scandals that swiftly damaged their reputations.[2]

But what's at the heart of credibility? Two critical elements: perceived competence (people's faith in the leader's knowledge, skills, and ability to do the job) and trustworthiness (their belief in his or her values and dependability).[3] Such views are formed through direct and indirect observation of the leader's work and performance. And these perceptions are extremely important in a digital age, when vast amounts of information about people can be captured and scrutinized through technologies like smart sensors and artificial intelligence systems. Employees also seek assurance that those who are managing them and assessing their performance are competent and trustworthy.

Researchers have identified several broadly defined behaviors that influence whether leaders are perceived that way.[4] These behaviors include knowing oneself, appreciating one's constituents, affirming shared values, developing new capabilities, serving a purpose, and sustaining hope. However, not much has been written about concrete actions that enhance or harm a leader's credibility. Indeed, it's widely assumed that behaviors that don't increase credibility naturally decrease it.

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THE LEADING QUESTION
How do leaders gain or lose credibility?

FINDINGS

- **Behaviors that reflect competence and trustworthiness enhance credibility.**
- **An inability to demonstrate relevant job knowledge hurts credibility, as does behavior that isn't aligned with the organization.**
- **Making up for lost credibility is difficult but not impossible.**

Research has begun to challenge this assumption,[5] but we had many unanswered questions, so we set out to learn more.

In several field studies, we explored the specific behaviors that affect how people assess their leaders' competence and trustworthiness and, in turn, their credibility. From this work (see "About the Research"), we have gleaned the following insights into what causes leaders to gain or lose credibility with their employees and what leaders who have lost credibility can do to regain it.

How Leaders Build Credibility

Based on input from employees we surveyed from a range of organizations, we found that leaders are perceived as competent when they place an emphasis on the future, on organizational outcomes, and on employees, as well as when they take action and launch initiatives, communicate effectively, and gain knowledge and experiences. At the same time, we identified several behaviors that point to trustworthiness. They include communicating and acting consistently, protecting the organization and employees, embodying the organization's vision and values, consulting with and listening to key stakeholders, communicating openly with others, valuing employees, and offering support to employees and stakeholders. (See "Actions That Build or Destroy Credibility," p. 68.) Although scholars have already described many of these behaviors as signs of exemplary leadership[6] and credibility[7] in general, deeper analysis reveals specific actions that leaders can take to enhance their credibility.

Behaviors that project competence. In the context of senior management, what are the best ways to emphasize the future and organizational outcomes and to take action and launch initiatives? One is to create clear plans for future success. This is different from simply stating a strategic vision or setting performance targets. It involves mapping out, in detail, how the organization will achieve its goals. Another way is to demonstrate sophisticated knowledge of industry trends and clear ideas about how the organization should respond to them. Still another approach involves actively predicting and preparing for upcoming changes by, say, making strategic investments in new technologies or markets. More than 80% of our respondents identified these behaviors as strong indicators of a leader's competence.

A sense of competence is enhanced when leaders work consistently to improve organizational structures and processes and maintain fiscally sound operations. These actions might include eliminating unnecessary reporting structures and spending, establishing new roles, or investing in technology that improves operational efficiency or business effectiveness.

It's often noted that true leaders are willing to take on big problems that others are reluctant to tackle. This sentiment was reinforced by more than 60% of our respondents, who told us that they saw leaders as competent when they were action-oriented and aggressive, when they took on issues or projects that needed to be addressed, and when they weren't afraid to make tough decisions.

Behaviors that project trustworthiness. Consistent with previous research, we found that leaders are perceived as trustworthy when they communicate and behave in a consistent manner. To begin with, this means making decisions that aren't contradictory. But it also means behaving in a way that aligns with promises (both explicit and unspoken) that the company makes to employees and other stakeholders. By preemptively looking out for stakeholders' needs, executives can prevent stakeholder conflicts and organizational crises, as well as gain the trust of key stakeholder groups.

Another core behavior that can establish and enhance a leader's trustworthiness is to embody the organization's mission, both professionally and personally. Yvon Chouinard, the founder and former CEO of outdoor apparel company Patagonia, provides a good example. An avid outdoorsman and adventurer, Chouinard founded Patagonia with a specific mission: "Build the best product, cause no unnecessary harm, use business to inspire, and implement solutions to the environmental crisis."[8]

Throughout the company's 45-year history, Chouinard has lived and celebrated this mission. Employees are expected to use the company's products (some of which they can get for free) so that they are well-informed about what they sell, and they are encouraged to participate in outdoor adventures to stay connected to the natural environment. And on

ABOUT THE RESEARCH

We conducted several field studies over three years, using both quantitative and qualitative methods, to understand what affects leaders' credibility and how their credibility influences employee behaviors and organizational outcomes. The studies included both blue- and white-collar employees from different parts of the United States and with varying levels of formal education. We developed a comprehensive model of top managers' credibility through a field study involving 146 respondents: employees in a transportation company and evening MBA students employed in a variety of organizations. Analyzing the answers provided by our respondents, we identified leadership behaviors that generate perceptions of competence and incompetence, trustworthiness and untrustworthiness — factors that either underpin or undermine leader credibility.

To cross-validate and refine the set of behaviors, we conducted a second field study with 145 respondents: employees in a service-industry organization and a second set of evening MBA students. The respondents assessed the extent to which the behaviors identified in the first study indicated a leader's competence or incompetence and trustworthiness or untrustworthiness.

a personal level, Chouinard makes time for mountain climbing, skiing, and other outdoor activities with friends and family.

How Leaders Erode Credibility

While prior research was less focused on factors that cause leaders to lose their credibility, employees in our field studies identified a number of red flags in both the competence and trustworthiness categories. (See "Actions That Build or Destroy Credibility," p. 68.) Many leaders are unaware that they are acting in these ways or that such behaviors are damaging their credibility, so we will describe them here.

Behaviors that suggest incompetence. More than 80% of our respondents told us they view their top managers as incompetent when they display a lack of relevant job knowledge. Although people often assume that leaders are selected because of their knowledge, skills, and abilities, this isn't always the case. Leaders risk losing credibility quickly when they struggle to handle key tasks that are part of their job, have difficulty answering questions about the organization, or make decisions that don't align with the organization or its broader environment. An extreme example of this is Tony Hayward, BP's CEO during the 2010 Deepwater Horizon oil spill, who during the crisis repeatedly showed a lack of understanding of the accident's causes and severity and its devastating social and environmental consequences.

As we have noted, an important characteristic of competent leaders is that they take on big problems. So it makes sense that more than 70% of our respondents told us that they seriously question the competency of leaders who fail to take action or ignore problems. Commenting on the 2016 Wells Fargo scandal, in which bank employees opened 2 million accounts without customers' permission, Warren Buffett said that then-CEO John Stumpf's biggest mistake was his failure in the preceding years to address the underlying policies that triggered the scandal.[9] In essence, Stumpf showed the sort of laissez-faire approach to leadership that people often equate with incompetence.

One of the surest ways leaders raise questions about their competence, employees noted, is to create confusion among employees and other stakeholders. A particular example that more than 70% of our respondents cited is distributing incorrect information. Sometimes leaders do this without realizing it; sometimes they misrepresent the facts by trying to put a positive spin on difficult situations. Either way, people end up confused at best — and suspicious at worst. This is a high-stakes problem in today's business environment, where leaders are expected to handle information from numerous sources with great care and discretion.

Another behavior that undermines a sense of competence is giving contradictory information. The contradictions might come from different people on the leadership team or even from the same person. For example, Hayward was severely criticized for providing incorrect and inconsistent information during the Deepwater Horizon oil spill. He was quoted as stating that "the overall environmental impact of this will be very, very modest" in spite of clearly contradictory information.[10]

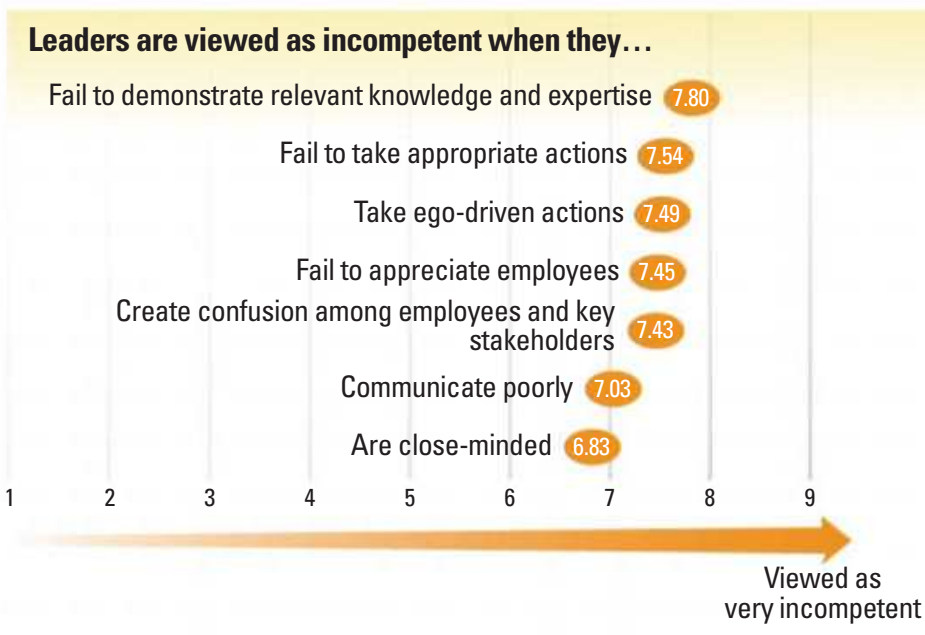
Finally, leaders can damage their reputations for competence when they ask for information and reports that don't seem relevant or worthwhile. Such seemingly extraneous requests can cause confusion as to what the organization's priorities are, and employees may feel resentful about what they see as a waste of their time.

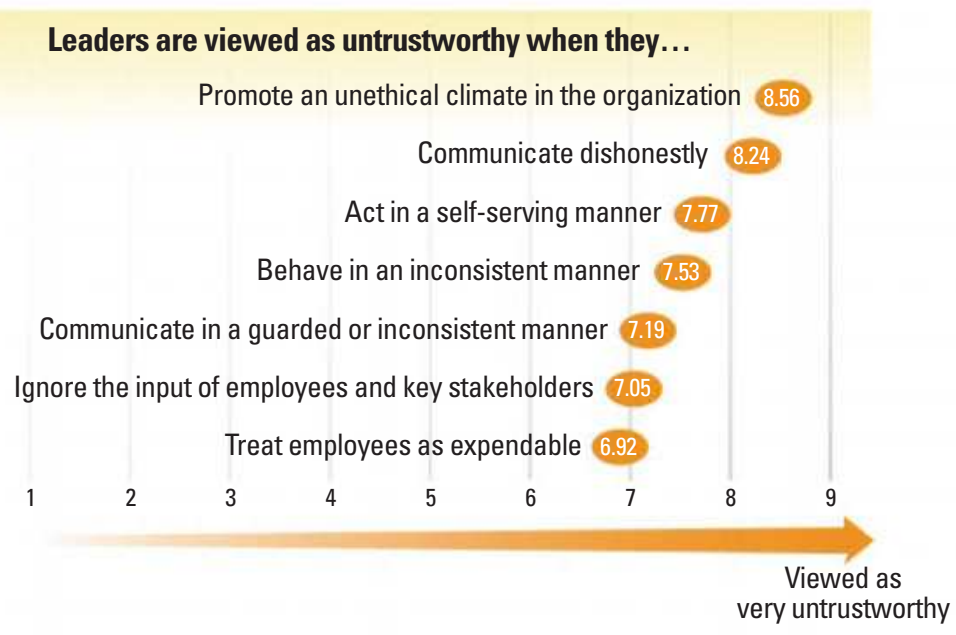
Behaviors that suggest untrustworthiness. Since trust is so fundamental to the relationship between leaders and their constituents, behaviors that suggest untrustworthiness quickly undermine credibility. We identified several behaviors that one might think leaders would realize are detrimental and avoid doing. They include promoting an unethical climate within the organization by misappropriating resources (as Tyco International CEO Dennis Kozlowski did when he used company money to throw a birthday party for his wife in Sardinia); manipulating or even falsifying data to make things look better (as illustrated by the "creative bookkeeping" used by Enron and Arthur Andersen); and engaging in sexual harassment of, or illicit relationships with, employees. In fact, our respondents mentioned these behaviors frequently, with more than 80% indicating that the behaviors were very suggestive of an untrustworthy leader.

ACTIONS THAT BUILD OR DESTROY CREDIBILITY

Using a nine-point scale, 145 employees in a range of organizations rated these leadership behaviors as indicators of competence and trustworthiness — traits that people associate with credibility.

These behaviors emerged as indicators of incompetence and untrustworthiness.





Source: Survey of 145 respondents who were either employees in a U.S. service-industry organization or evening MBA students who worked in a range of settings.

Even if leaders don't act unethically themselves, they can suffer a serious loss of trust if they permit colleagues to act unethically. Leaders must uphold high ethical values to protect their organization and its people, or their followers and key stakeholders will lose faith in them.

Dishonest communication is another seemingly obvious way leaders hurt their trustworthiness. This goes beyond trying to paint something in the most favorable light possible. Leaders who relay false or inaccurate information or keep lots of secrets jeopardize their credibility, as do those who make promises without making any effort to fulfill them, for example, by saying "I'll get back to you," but never doing so.

Our research also revealed that self-serving behaviors can undermine employees' trust in their leaders. These include bending the rules to privilege themselves or close associates, making decisions based on their own self-interest rather than what's best for the organization, urging employees to make material sacrifices while wasting the organization's resources on perks for themselves, and taking credit for the achievements of others.

Leaders who openly ignore the opinions of employees and key stakeholders are also perceived as untrustworthy. Specific examples given by our respondents include making unilateral decisions and casually rejecting others' requests without due consideration. More than 60% of our respondents identified these behaviors as strong indicators of a leader's untrustworthiness.

Although it's clear that leaders lose credibility when they display incompetence or untrustworthiness, scholars have found that employees are much more tolerant and forgiving of an incompetent leader than they are of an untrustworthy leader.[11] They believe that incompetent leaders can at least *try* to become more competent, whereas untrustworthy leaders can't easily become more trustworthy.

Insights for Leaders

So far, we've described behaviors that build or erode credibility so that leaders can more accurately assess how they're comporting themselves and how others see them. Next, we will share a few insights from our analysis so that leaders will better understand how to avoid losing credibility or, if they've already lost it, how to get it back.

1. The behaviors that help you gain or lose credibility aren't always mirror images of each other. Some behavioral indicators for competence versus incompetence or trustworthiness versus untrustworthiness are mirror images; for example, taking action can suggest competence, while failure to do so can suggest incompetence. More often, though, behaviors that cause employees to perceive senior managers as competent or trustworthy aren't inversely related to those that convey incompetence or untrustworthiness. While emphasizing the future can indicate competence, for instance, it's not as though emphasizing the past is a sign of incompetence.

Because many of the perceived behaviors of competence and trustworthiness are asymmetric, avoiding behaviors that make leaders *lose* credibility doesn't automatically help them *gain* credibility. Indeed, even when they engage in behaviors that enhance credibility, leaders might still lose credibility by engaging in behaviors that indicate incompetence and untrustworthiness. So it's important to consider the full range of indicators when trying to gauge how others see you as a leader.

2. Sometimes positive information carries more weight than negative information — and vice versa. Scholars who study trust have found that people tend to weigh positive information more heavily than negative information with regard to competence. However, people weigh negative information more heavily than positive information when it comes to trustworthiness.[12] A single competent act may be seen as a reliable signal of competence, but a single incompetent act is more likely to be dismissed as an outlier. On the other hand, people tend to attach more significance to a single untrustworthy act than to a single trustworthy act. This suggests that leaders can gain credibility by performing one action that projects competence, such as creating a clear vision for the organization's future. But they can easily lose credibility by engaging in an untrustworthy action, such as manipulating data to mislead others.

3. Overcoming the loss of credibility is difficult — but possible. Any behavior that causes employees to attribute incompetence and untrustworthiness to top management, either alone or in combination with other behaviors, can have negative repercussions that are tough to recover from.

As noted earlier, employees are less tolerant of untrustworthy behaviors than of incompetent behaviors. Partly for that reason, it's more difficult to regain credibility once it's lost than to build credibility in the first place.[13] But it can be done.

In the wake of the financial crisis in the late 2000s, for example, some of the questionable practices of major U.S. financial services companies were exposed in the media and scrutinized by the public. Many companies responded by making relatively modest changes to executive compensation or governance practices. However, James Gorman, CEO of Morgan Stanley, took the opportunity to thoroughly review the company's practices regarding compensation, compliance, and risk management. He refocused the company's culture on sustainable long-term performance goals, ethical management of resources, and a renewed emphasis on the interests of clients, and earned praise and trust from employees and other stakeholders. But many leaders don't have that experience when trying to regain credibility after their (or their organization's) trustworthiness has been questioned. Such turnarounds often require companies to install new leadership, as in the wake of the Wells Fargo customer account scandal, which forced CEO Stumpf to resign.

To regain lost credibility, leaders must reestablish positive expectations, which means they must repeatedly engage in trustworthy acts, since a single act won't mean much. They also need to overcome negative expectations that stem from their incompetent and untrustworthy behaviors by emphasizing the specific behaviors that project competence and trustworthiness.

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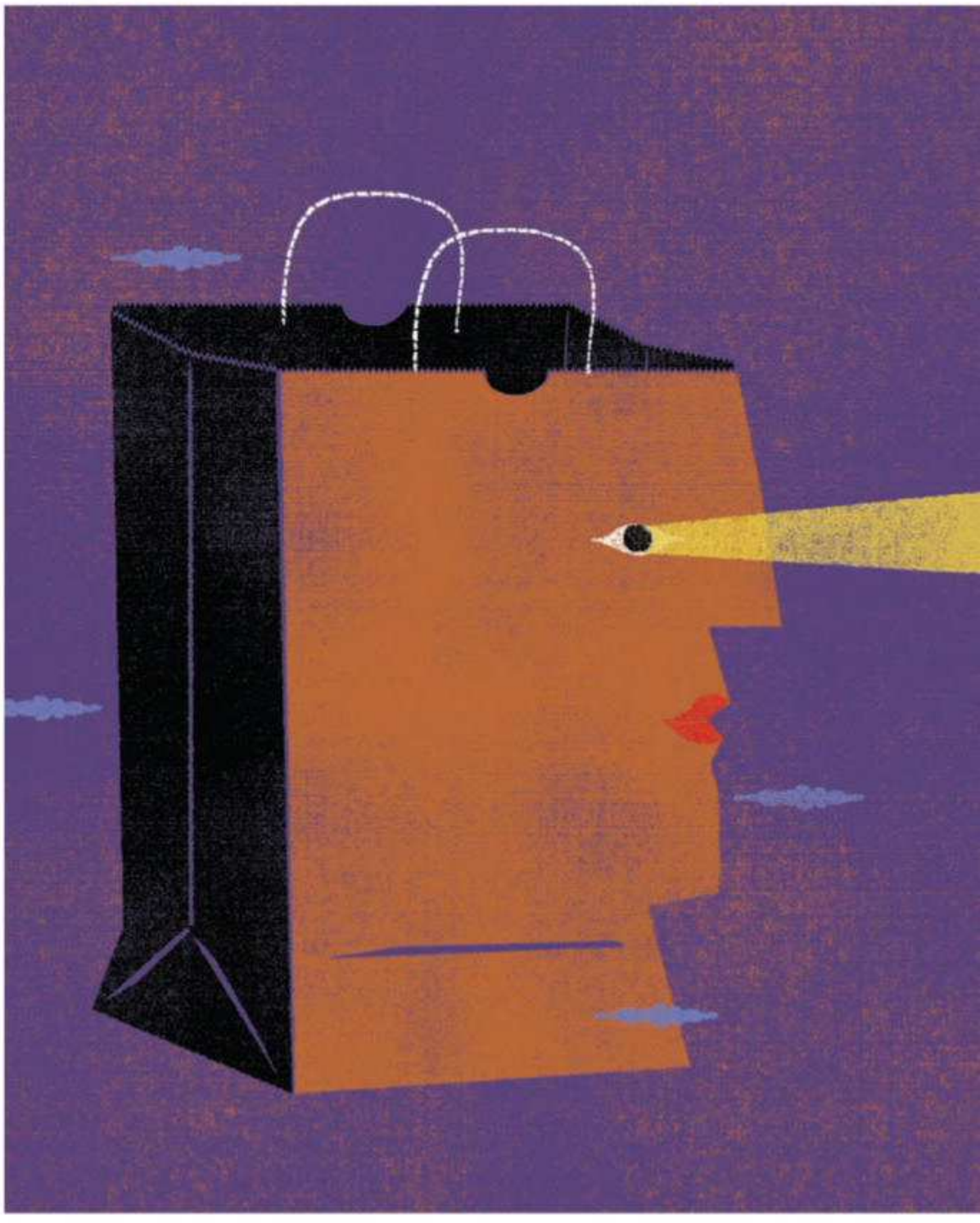
A More Profitable Approach to Product Returns

By studying consumers' transaction patterns and tailoring return policies accordingly, companies can prevent a major drain on profits while increasing engagement with loyal customers.

BY JAMES ABBEY, MICHAEL KETZENBERG, AND RICHARD METTERS



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For a century, L.L. Bean had an extremely liberal product-return policy, with no time limit and no receipt requirement. You could get a full refund for boots purchased decades ago. But many people abused the policy, returning products fished from dumpsters or bought used on eBay. Over the past five years, worthless returns cost L.L. Bean $50 million per year. That amounts to roughly 30% of the company's annual profits.[1]

So in February 2018, the company established a new policy that limits all product returns to one year from the date of purchase. The change led to bad publicity, a class-action lawsuit, and vows from once-loyal customers to stop shopping at L.L. Bean because they felt unfairly penalized for the actions of others. Some of those customers say L.L. Bean is no longer special and has become just another store.[2]

L.L. Bean is not alone. Best Buy, REI, Lands' End, and Costco have instituted return restrictions such as restocking fees, shorter time limits, and requirements for the original receipt.[3] Some retailers still have more liberal policies, but they are becoming rare.[4]

Regardless of how generous or restrictive companies are when it comes to returns, they tend to apply a

THE LEADING QUESTION
How can companies use analytics to make product returns less costly?

FINDINGS

- A relatively small number of purchase and return metrics can accurately predict customer profitability — and the likelihood of policy abuse.
- Restricting or denying returns specifically for the customers who cost the company the most money — before they make their next purchase — can help companies prevent abusive returns and avoid PR disasters.
- For some customers who never return products, encouraging returns can actually boost their profitability.

one-size-fits-all approach to their entire customer base. They ignore wide variations in individuals' behaviors, lumping loyal, compliant customers in with those who game the system.

Yet new tools and technologies make it possible to segment customers and impose strict return policies only on those whose past behavior warrants it. We recently analyzed customer data for a large, high-end U.S. retailer and identified transactional patterns that indicate which people are most likely to abuse return policies. Though highly accurate for the company we studied, our predictive model is unique to that retailer; in another setting, other factors might be identified — or the same ones might be weighted differently. Still, the overall approach to identifying and managing the people most likely to abuse return policies is broadly instructive, so we are sharing it here to help retailers manage returns profitably while delivering a positive customer experience.

Finding the Most- and Least-Profitable Customers

Returns are big business. In 2017, consumers returned $351 billion worth of purchased products. (Our analysis shows that if the hypothetical Consumer Returns Inc. were an independent company, it would rank second on the Fortune 500, trailing only Walmart.) On average, 10% of everything going out of a U.S. store comes back. Unfortunately, many returns cannot be put back on the shelf, and it takes a lot of staff time to determine which items can be restocked and then handle them appropriately. After receiving returned goods, employees must sort through them and then repair, repackage, and restock items that still have value.

Return fraud and abuse exacerbate the problem, costing U.S. retailers $23 billion per year. That's enough to wipe out the profits of the three largest U.S. retailers — Walmart, Costco, and Home Depot — combined.[5] Return abuse takes many forms, some of which are quite creative. For instance, customers sometimes buy large-screen TVs to watch the Super Bowl or purchase expensive clothes for special events, only to return them afterward. Such behavior takes many names, including retailer borrowing, renting, wardrobing, and de-shopping.

Other people purchase things for which they have no use at all but nonetheless gain value from them via returns. For example, they might buy items on credit cards with travel rewards and return them for cash, accumulating airline miles or hotel points while the merchant gets stuck paying transaction fees. In another money-making gambit, some people buy items on sale but then return them and claim to have lost the receipt, making it possible to collect the full retail price for the return. The simplest form of return abuse is to shoplift and return an item for cash.

The key to combating fraudulent returns is identifying the likeliest offenders and tightening restrictions only on them — ideally before their next transaction. For those customers, companies can charge restocking fees, for instance, or reject certain returns altogether. That way, they can afford to keep a generous policy in place for loyal customers who return things for legitimate reasons.

This approach focuses on the lifetime value of the customer, and we've found that it can be far more profitable than either restrictive or liberal blanket return policies. It's also much easier from a PR standpoint. If a company can justify clamping down on a customer with a history of questionable return behavior, it can avoid coming under public fire for instituting broad return restrictions — the way L.L. Bean did.

The retailer we studied operates more than 100 brick-and-mortar properties, along with discount outlets and catalog and online sales channels. In all, we looked at more than 1 million customers and more than 75 million transactions recorded over seven years, totaling $2.9 billion in sales and $466 million in returns.

Examining this data, we identified seven key variables that collectively explained an incredible 94% of the variance in overall customer profitability. (See "About the Research" and "Signs of a Profitable Customer.") Interestingly, demographic variables such as age and income were insignificant and not incorporated in the predictive model. Transactional data such as total number of purchases to date, number of purchase categories, and average time to return mattered much more.

By identifying customers with negative lifetime profitability, we were able to predict which ones were most likely to make fraudulent returns in the future. We found that the model was accurate

ABOUT THE RESEARCH

The analytics methods we've used to conduct our research vary from relatively straightforward multiple regression to nuanced classification models, including random forests, support vector machines, and shrinkage methods. Even simple methods provide surprisingly accurate, robust classification of customer behaviors over time.

Of great interest to most retail executives is the risk of misidentifying a nonabusive customer as abusive, because implementing return restrictions or denials as a result of this mistake may alienate loyal customers. But the rate of inaccurate identifications is quite low: Out of more than 1 million customers examined, our model misidentifies only 400 customers based on five transactions, and it misidentifies fewer than 200 customers based on 10 or more transactions. Our analysis breaks the exemplar company's data down into greater detail, showing correlations between customer profitability and the various explanatory variables ranging from 2% to 76%. For more information about the methods, data, and core analytics used to isolate and understand segment behavior, please contact the authors.

99.96% of the time after just five observed transactions. With 10 or more transactions, the accuracy rate increased to more than 99.98%.

We divided customers into three segments: legitimate returners, nonreturners, and "abusive" returners — those whose frequency and timing of returns caused the company to lose money on them. (See "Segmenting Customers by Profitability," p. 74.)

On average, legitimate returners contributed about $1,445 each to the retailer's profits each year — they were by far the most profitable group we studied. And they appeared to place considerable value on the option to return products, with an average return rate of 23%. Furthermore, the relatively small set of abusive returners had an extraordinarily negative impact: A mere 0.4% of customers, who returned an average of 60% of their purchases, accounted for a combined loss of $60 million in profits annually. Because these customers took an average of two months to complete their returns, the value of the products at the time of return was significantly lower than it had been at the time of purchase, particularly for seasonal goods.

Customizing Return Policies

By analyzing transactional behaviors and segmenting customers according to profitability, retailers can figure out when to impose — and, just as important, when *not* to impose — return restrictions. Of course, companies should give the greatest leeway to customers who value flexible return policies *and* contribute significantly to the bottom line to avoid disregarding those individuals' needs in an effort to rein in the costly unethical behavior of others. With that approach, they're more likely to increase customer satisfaction, enhance loyalty, and encourage future purchases that will stick.

Companies could adapt their return policies in several ways. A simple method is to make clear during the return process that returns are welcome but are also monitored for unreasonable volume. In a case where a customer has a clear history of excessive returns, the retailer could restrict or refuse transactions on the spot.

However, retailers need not wait until the return attempt occurs. They could make differentiated return policies explicit at the point of sale. And based on the results of predictive analytics models such as the one described above, they could flag excessive returners as they make purchases and tell them that they will be given a limited amount of time to bring items back, and that they will be assessed restocking fees or charged shipping fees if they do make returns. Additionally, retailers could apply fees and shorter time windows to particular product categories that lose value quickly, such as seasonal products or electronics. Though many mechanisms are available, the retailer we analyzed began denying returns for any customer deemed to be unfairly exploiting the return policy. It decided to make this

SIGNS OF A PROFITABLE CUSTOMER

For the retailer we analyzed, here's what mattered — and what didn't.

SIGNIFICANT VARIABLES	INSIGNIFICANT VARIABLES
Customer's purchases to date	Income
Customer's refunds to date	Age
Amount of current refund	Number of items purchased
Number of purchase categories	Number of items returned
Average time to return	Length of relationship
Value of average item returned	Purchase frequency
Return frequency	Percentage of purchase value returned

SEGMENTING CUSTOMERS BY PROFITABILITY

Customers who made legitimate returns were significantly more profitable, on average, than those who never made any returns. And the few who abused return policies cost the company a great deal.

	LEGITIMATE RETURNERS	NONRETURNERS	ABUSIVE RETURNERS
Proportion of customers:	51.9%	47.7%	0.4%
Gross sales:	$5,034 per year	$592 per year	$14,022 per year
Profit contribution:	$1,445 per year	$222 per year	-$1,254 per year (for an aggregate loss of more than $60 million)
Length of customer relationship:	4.4 years	1.7 years	5.3 years
Time to return:	23 days	Not applicable	59 days
Return rate:	23% of items purchased per year	0% of items purchased	60% of items purchased per year

change as we were conducting our analysis, partly in response to industry trends toward stricter policies.

We uncovered a hidden opportunity regarding nonreturners, as well. Our data shows that, compared with customers who make legitimate returns from time to time, nonreturners have a lower purchase volume overall and represent significantly lower lifetime profitability. But companies might be able to change how those customers behave by enticing them to sample products risk-free, perhaps even encouraging them to buy several competing products at the same time and then choose a favorite and (quickly) return the rest. Or they could try to convert nonreturners into legitimate returners at the point of purchase by offering targeted coupons or future discounts should a return be needed. If such a conversion is not feasible, a retailer can offer nonreturners rewards that may induce them to buy more — say, lower prices on certain products in exchange for forgoing future return options.

This is an approach already taken by some online retailers, including Jet.com and Walmart.com. Though not yet common, such incentives may become more widely implemented over time. Just as return policies can become more restrictive for customers who engage in abusive behaviors, they can become more generous over time for less costly customers.

Since most major retailers now have massive amounts of data related to customer transactions and behaviors, it's within their reach to institute flexible return policies that can be adapted to individual customers. Note that the model discussed here is behavioral, not demographic. Behavior can shift over time. Should that happen in response to customized return policies, companies can keep recalibrating on the basis of the most recent transactions — and continue to encourage the customer behavior they'd like to see.

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Building an Ethically Strong Organization

Ensuring that employees understand the appropriate ways to address daily ethical issues can prevent your company from spiraling into corporate scandal.

BY CATHERINE BAILEY AND AMANDA SHANTZ

When German car manufacturer Volkswagen was caught cheating on its diesel emissions testing regime a few years ago, the subsequent scandal launched numerous lawsuits, cost billions of dollars in fines, and severely harmed the company's reputation. The actions — and inaction — of dozens of employees at all levels, across divisions and countries, contributed to this disaster, including the software engineers who designed the cheating device, the workers who installed it, the managers who approved the fitting and testing, and the members of the senior leadership team who either orchestrated the scam or simply turned a blind eye.[1]

Of course, VW isn't an isolated example. Consider the costly lapses in judgment at Wells Fargo,[2] for instance, and at Samsung Electronics.[3] Why do such scandals continue, despite the clear moral and financial imperatives for ethical action? And — perhaps more important — what can be done to change matters?

Although some argue that people are innately inclined to behave unethically out of self-interest,[4] our research reveals that organizational ethics matter significantly to most employees and managers, and that people want to work for employers whose values and principles are aligned with their own. This suggests that ethical employers are likely to attract and retain ethical employees.[5] What's more, research has shown a link between ethical leadership and task performance, organizational citizenship, and other productive work behaviors[6] — companies have many compelling reasons to address ethical failings at the earliest opportunity.

JOYCE HESSELBERTH/THEISPOT.COM

THE LEADING QUESTION
How can companies set the stage for ethical behavior?

FINDINGS

- Understand that consistent mishandling of low-level issues can lead to big problems.
- Recognize the daily ethical dilemmas that employees face.
- Equip employees to make good choices: Acknowledge murky areas, clarify trade-offs, model desired behaviors, create and enforce robust policies, make it safe to speak up when breaches occur, and embrace a higher cause.

The urgency is all the greater in this digital age, since businesses must continually make rapid, high-stakes choices about how to handle sensitive customer and employee data.

To uncover the reasons behind persistent unethical conduct, we asked employees at five U.K. organizations — a national government department, a nationwide retailer, a nonprofit in the social services sector, a county-level police force, and a construction company — to tell us about their experiences of both ethical and unethical practices on the part of their colleagues, line managers, and senior executives.[7] (See "About the Research.") We found that the ethical tone of an organization is the cumulative outcome of how its members address daily ethical dilemmas as they go about their work. Over time, a consistent mishandling of these micro-level issues can spiral into macro-level corporate scandal. Here, we discuss several murky areas that employees must navigate and ways that organizations can help them make ethical choices day to day.

Daily Dilemmas That Trip People Up

When employees don't have a shared understanding of events that unfold around them, what constitutes an ethical response, and the consequences of behaving otherwise, it often means the organization has created an ethically weak situation for them. People essentially become free agents, behaving idiosyncratically in the absence of clear, strong norms. (An ethically strong situation, in contrast, is one in which "the right thing to do" is clearly communicated to employees and people have the motivation and ability to behave in ways that are consistent with the organization's ethical code.[8]) In the case of VW, an ethically weak situation was allowed to develop over many years, as senior executives prioritized market share over environmental and legal concerns in one judgment call after another.

Here are the daily dilemmas we found that tend to muddy the ethical waters for individuals in decisions both large and small.

Ethical disconnect. Sometimes employees observe a gap between their personal ethics and those of the wider organization, and that makes them uneasy. An abundance of studies show that people want to fit in at work[9] — but it's not just a fit with the requirements of the job or even a fit with the organization's culture that matters. New research is beginning to show that people have a strong desire to gain a sense of moral fit as well.[10]

Because they feel this deep-seated need, they're desperate to close the gap between their own ethics and those of their organization. When they struggle to do so, they often withdraw and may quit their jobs altogether. One manager told us, "I've worked in businesses that I didn't stay in very long because of the ethics and the culture. I didn't feel comfortable." This sentiment is echoed by many.

Conflicting stakeholder needs. Every organization has a range of stakeholders affected by its decisions, including employees, suppliers, clients, senior managers, the local community, wider society, and even the environment.[11] Organizations may have an explicit approach to balancing these competing needs — but that may not be the same as the implicit approach that employees witness every day.

When we asked employees and their leaders to rank the order in which stakeholders "matter" in important decisions, consensus was rare. As one employee in the retail sector said, "Even though we've got a vision and we've got an ethical policy framework, I personally feel very strongly that [in practice] it's shareholder, company, colleague, in that order."

ABOUT THE RESEARCH

To inform our study design, we carried out a detailed analysis of research over the past 25 years on ethical leadership and decision-making. We then surveyed a representative sample of 1,319 workers in the United Kingdom and conducted in-depth case studies in five U.K. organizations: a central government department with 18,000 employees, a nationwide retailer with 31,000 employees, a nonprofit in the social services sector with 1,100 permanent and 300 temporary staffers, a police force of 3,000 officers plus civilian staffers, and a construction company with 6,900 employees.

In four of the organizations, we surveyed 1,033 employees and their 524 line managers. Across all five, we conducted 46 face-to-face interviews, held 16 focus groups with a total of 79 participants, and analyzed company documentation such as human resources policies and statements of mission, vision, and values.

When employees choose to stay quiet — even with good intentions — alternate viewpoints are silenced, levels of engagement and commitment are likely to diminish, and others note that failure to challenge is the norm.

When groups of stakeholders lobby for special treatment, the situation becomes even more complex. For the nonprofit we studied, a core challenge was figuring out how to handle large donations that are linked to requests for preferential care of the donors' relatives. One manager told us, "Sometimes, the choices we have to make are not overtly compromising, but they can make things difficult — people asking for access to services when they're not entitled to them, or people jumping the queue." Managers must weigh the monetary worth of the donation against the nonprofit's values of integrity, fairness, and transparency.

While the nonprofit solved this dilemma by refusing to provide preferential treatment in exchange for donations, situations vary, and what is right for one organization may not be right for another. Even different departments within the same organization face competing priorities when having to choose between stakeholder groups. However, each time an employee or a leader makes a decision that implicitly or explicitly favors one stakeholder group over another, it sends a message to other employees about what really matters — and whose interests the organization is willing to sacrifice.

Not knowing whether (or how) to speak up. Witnessing unethical conduct by a colleague or superior forces people to decide: Do I take this further? If so, how? And what will be the consequences for me and for others?

Often, whether or not people challenge unethical behavior depends on the nature of the infraction, the setting within which it takes place, the seniority and roles of those involved, and the potential risks of challenging the behavior. Some ethical breaches are especially difficult to challenge; in many cases, staff may be unwilling to challenge upward. One government manager seemed to have realized this, saying, "I'm quite an outspoken person, and nobody has ever challenged my behavior, even though in some circumstances I recognize that I perhaps go a bit too far."

Possible responses include staying silent, taking the individual aside and discussing the matter privately, calling the person out in front of others, reporting the matter to senior staff, or reporting it anonymously via a whistle-blowing or anti-harassment program.

Some employees we spoke with described instances when they chose to stay silent. Discussing an event when bonuses were awarded to everyone except the hourly workers on the front line, one retail employee said:

> *It did feel desperately uncomfortable, but in the end you either rise up as a whole population and say, "No, this isn't right, none of us are taking bonuses," or you become an outlier and a single person saying, "I don't want my bonus, I'm going to give it to charity," or you say nothing. I didn't say anything.*

And a junior police officer told us:

> *If you and I were constables and I'd seen you behave in an unethical way and challenged you about it, that could cause bad feeling. But then if you and I went out and faced somebody going crazy with a knife, I'd need to know you'd have my back. It's not like working in an office. You might be relying on that person to save your life.*

When employees choose to stay quiet — even with good intentions — alternate viewpoints are silenced, levels of engagement and commitment are likely to diminish,[12] and others note that failure to challenge is the norm.

Conversely, in the construction company, an employee was comfortable publicly challenging a

colleague for the use of sexist language; when the perpetrator apologized immediately, the interaction sent a positive message to others about how to handle such situations.

Ethics versus expediency. Another challenge is deciding what to do when the ethical solution to a problem is not the expedient solution — often because there aren't enough hours, dollars, or people to make the ethical solution happen. As one retail manager put it:

> *I think our ethics as a business are very, very good. Where we get the frustration is when we want to do the right thing with our people, but actually the resource levels that we're asked to work on make it impossible sometimes.*

In the context of the police, this kind of problem meant that officers had to make choices about which crimes to investigate, causing "a huge amount of strain and stress to officers because they can't do the job they're trained to do, that they're paid to do, that they want to do, and is the reason why they joined in the first place," according to a leading officer on the force.

Call to Action

No organization is free of these dilemmas, but they can be managed. Our research and analysis suggest that the following six steps can help leaders set an ethically strong tone so that employees are better equipped to make the right choices day to day.

1. Acknowledge ethical ambiguity. Many organizations do not recognize or discuss ethically tricky situations their managers and employees face. This drives individuals to internalize their decision-making processes — which can create a slippery slope.

In the police force we studied, even though leading officers were well aware that budget cuts meant increased workloads and longer hours for the rank and file, they had not openly acknowledged these pressures with their staff and how they might affect day-to-day decision-making — preventing an authentic dialogue about the problems or possible solutions. One leading officer said, "We are really struggling, and we're not admitting that to people on the ground." Officers and staff felt the pressure but, given the lack of open discussion, assumed that senior leaders did not care.

In organizations with a culture of transparency, people are more inclined to seek to understand the underlying rationale for decisions. This has a positive effect on ethical decision-making because values are exposed when they are openly discussed rather than inferred from town hall meetings or company documentation. At the nonprofit we studied, one executive noted: "You know, I've worked for places where things are done behind closed doors and you don't really understand the reasons. I think here, whatever initiatives are being run, it's done very openly. We don't make decisions in hiding; we make decisions in a very consultative way." So when its employees wonder how, for instance, to respond to a donor who requests a service, it's easier for them to make that call, because they have a clear understanding of the organization's ethical values and are confident they can go to their managers for clarification or support without fear of being negatively judged.

2. Clarify the ethical trade-offs. Another important step is to explicitly clarify how employees should balance the needs of different stakeholder groups.

Most decisions will affect more than one set of stakeholders. Although the needs of all groups can sometimes be met, trade-offs are usually necessary. When employees are not sure how to manage this tension, unethical approaches can develop.

In the retail company, leaders paid lip service to meeting customers' needs above all others, but their

Another challenge is deciding what to do when the ethical solution to a problem is not the expedient solution — often because there aren't enough hours, dollars, or people to make the ethical solution happen.

behavior wasn't always consistent with that message, which created confusion. Employees reported that decision-making was more often governed by immediate profit considerations and key performance indicators. Some felt a degree of cynicism toward the company's "customer first" rhetoric, believing that in practice senior executives were more concerned about hitting performance and sales targets by persuading customers to buy add-on products and services than about caring for the customer or providing excellent customer service. One employee said: "You always have that tagline at the end, 'The customer comes first,' but at the end of the day it's a business and the people at the top know we need to hit a KPI figure."

Confusion about whose needs to prioritize can be compounded when an organization has been through a series of mergers or takeovers that bring together different ethical climates. In these cases, leaders have an especially significant role in establishing a consistent ethical framework and guidelines for balancing stakeholder interests.

Providing employees with a clear statement of vision can help them weigh competing concerns and make appropriate trade-offs. In the police force, for instance, a widely shared "Plan on a Page" helped officers understand policing priorities (such as child abuse and exploitation, modern slavery, and violence) and provided guidance on serving the needs of the community (by putting the victim first and communicating effectively with the public) while also making the most efficient use of resources.

3. Ensure role-modeling from the C-suite down. Employees observe how leaders actually handle ethical dilemmas, rather than what they say about ethics, and will infer the organization's real priorities accordingly. VW is a case in point: Though senior executives claimed to care about "clean diesel," they apparently both condoned deliberate cheating on emissions tests and encouraged employees to hide or destroy its evidence.[13]

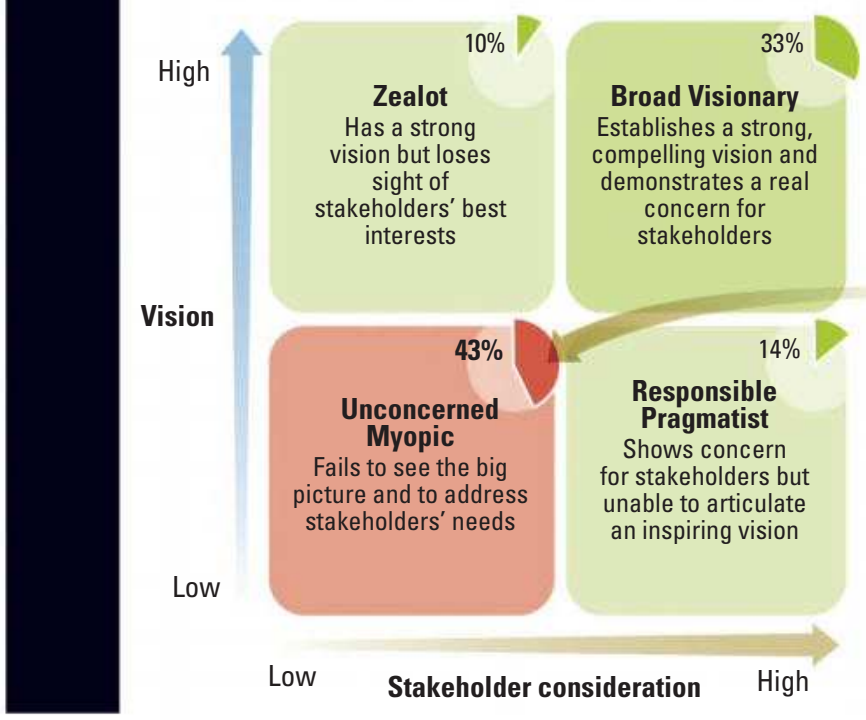
When the senior team sends mixed ethical signals, mid-level managers may pick and choose what to follow. These mixed signals cascade through each level of the organization. As one employee in the construction business said, "If your direct line manager isn't setting an example for you, it detracts from the message that the business is giving."

TWO CRITICAL ELEMENTS OF ETHICAL LEADERSHIP

The number of CEOs sacked for ethical misconduct has risen 36% in the last five years,[i] including such high-profile examples as Yahoo CEO Scott Thompson, United Airlines CEO Jeff Smisek, and LendingClub founder Renaud Laplanche. But the problem of unethical behavior can't be "solved" simply by firing senior leaders who behave badly.

To bring about lasting change, organizations must invest in "distributed" ethical leadership. That is, they must hire and cultivate leaders at all levels who promote ethical behavior. Two essential ingredients are a strong vision and a deep commitment to stakeholders.

Our research shows that employees who see their managers as ethical leaders are more satisfied with their work, are more willing to go the extra mile, find the work that they carry out has significance in the broader scheme of things, and are less likely to quit. Unfortunately, most organizations aren't poised to reap those rewards.



When we surveyed 1,557 employees and managers about how they view their leaders, here's how the responses broke down.

Fully 43% said their leaders fell short on two critical dimensions of ethical leadership: vision and sensitivity to stakeholders.

We did find that the ethical conduct of mid-level managers can compensate for mixed messages from the C-suite, slowing or even reversing the development of an ethically weak situation. In the retail business, for example, the staff talked positively of the "family atmosphere" and shared values within individual stores and regions that counteracted the dominant "cost control" messages from the head office. However, a much more reliable approach is to set the desired example at the top. The nonprofit fostered an ethically strong situation by clearly showing how core ethical dilemmas should be resolved: When a company bidding to work with it asked one of the nonprofit's trustees to put in a good word for it, its leaders immediately ruled out the company as a partner due to a misalignment of ethical values.

4. Embed ethics in corporate policies and programs. Ethically strong situations are developed in settings with robust codes of conduct and policies

Ethically strong situations are characterized by the presence of a transcendent cause that unites the organization behind a vision and set of values that go beyond self-interest.

for enforcing those codes.[14] Such policies should include clear rules about bullying, harassment, and whistle-blowing. And they should be conveyed and reinforced through on-boarding, leadership development, and other training programs.

Without formalized policies around ethics, efforts to create an ethically strong situation will most likely founder. As one police officer said, they "help people understand why we need to behave, act, do things in a certain way, and what the consequences are for *not* doing that."

Although corporate policies and programs alone will not eliminate unethical practices,[15] their existence is essential. For example, at the nonprofit we examined, employees were frequently confronted with ethical dilemmas when working with clients, such as how to assess mental capacity or how to manage end-of-life issues and determine appropriate levels of treatment and support. The organization helps its employees make ethical decisions by developing clear policies on approaches to care and providing training that specifically focuses on such challenges.

Similarly, at the construction company, part of the recruitment process involves matching applicants' ethical values with those of the business. It has also adopted a code of conduct and a formal framework called "What Good Looks Like" to guide employee behavior. Training on topics such as how to deal with anti-competition risks and health and safety issues is compulsory for line managers, and an online system allows for logging any health and safety issues as they arise. Although employees sometimes feel that these processes slow decision-making, they provide clarity and "consistency, and people know what is expected of them," according to a front-line manager.

5. Empower individuals to handle ethical breaches. Ethical breaches will inevitably arise, of course — whether through error, neglect, or deliberate action. But ethically strong organizations explicitly say how people should deal with them when they do occur, in addition to trying to prevent them in the first place. Employees at all levels then feel more empowered — and obliged — to call out bad behavior, even when doing so may be difficult. For example, employees in the construction company are required to challenge decisions and actions that could compromise the health and safety of employees and customers alike. One manager said that the culture around this is so strong that "in extreme circumstances, people have lost their jobs because they haven't followed through on what really is their duty to either challenge it there and then or report it later to make sure remedial action can be put in place."

In ethically weak organizations, challenging people's behavior is not the norm. Sometimes employees fear retribution, because they do not see others around them raising questions. Or they may feel that no action will be taken if they do speak up.[16] Sadly, that assumption isn't necessarily unfounded. While some VW employees apparently did challenge the use of "defeat devices" designed to cheat the emissions tests, their concerns were ignored.[17] So far, the evidence suggests that more than 40 VW employees in different roles and at varying levels of seniority were implicated in the diesel emissions scandal.[18] Had individuals felt empowered to challenge ethical breaches, perhaps the scandal could have been contained before erupting on such a massive scale.

6. Embrace a higher cause. Finally, ethically strong situations are characterized by the presence of a transcendent cause that unites the organization behind a vision and set of values that go beyond self-interest. One employee called this "the vision that brings you back tomorrow."

The nonprofit's transcendent cause is to provide care and support for the community; for the police, it is to keep the community safe from harm. The construction company's ethical vision of sustainability translates into protecting the environment as well as safeguarding its employees and customers. As one of

its managers told us, "A lot of practices in our industry do create harm for the planet, and so we're trying to reduce our CO_2 emissions."

When a company's mission or vision is unclear or divorced from ethics, or, as a senior leader at the retail organization said, when "the 'why' is missing" altogether, an opportunity to provide guidance is lost and an ethically weak situation develops. But an overarching sense of purpose creates a context within which micro-level ethical dilemmas can be resolved.

SETTING THE STAGE for ethical behavior isn't just a top-down exercise — though clear direction and positive role-modeling from senior executives do help. Organizations must also consider the daily ethical dilemmas that their managers and employees face and give them the tools to make good choices. This involves regularly checking in to ensure that codes of conduct are clearly articulated and upheld — and imposing consequences when they are not.

No company is immune from ethically questionable decision-making. But by openly acknowledging and carefully managing murky situations that come up again and again, organizations become much less susceptible to egregious lapses in judgment — and less likely to incur the associated reputational and financial costs.

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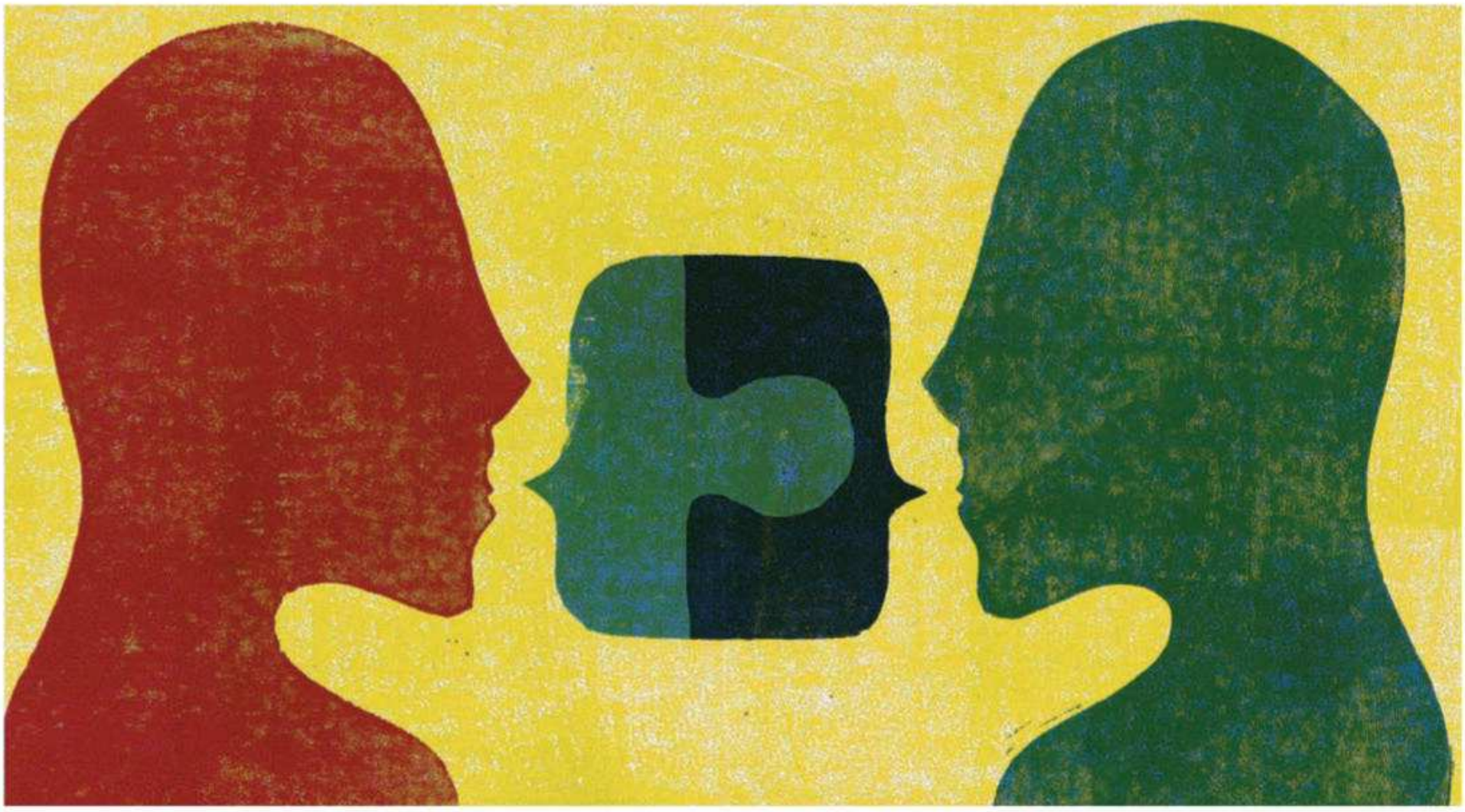

When Communication Should Be Formal

Sometimes channels known for their speed and flexibility bog down organizations with errors and inefficiency.

BY ANTTI TENHIÄLÄ AND FABRIZIO SALVADOR

When we communicate in organizations, we tend to keep things casual so that we can be fast and flexible and get things done. We email, Skype, Slack, and Yammer. Formal, protocol-guided communication — such as face-to-face meetings or teleconferences, where leaders use standard agendas to review concerns and coordinate responses — is increasingly seen as an old-fashioned bureaucratic time sink.

Informality helps an organization's daily operations run more smoothly, to be sure. And unnecessary meetings that serve no real business purpose can plague a workplace. But no one would argue against the value of formal, reliable communication in, say, aviation or the military. In those mission-critical contexts, protocols for a communication's timing, content, and participants ensure clarity, transparency, and accountability.

Prompted by those models, we decided to study companies that manufacture high-tech machinery — businesses that need precise, cross-functional communication to get the job done. Our data shows that overreliance

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on informal communication can harm performance because it is often imprecise and erratic, and that formal communication offers specific, crucial advantages that no company should overlook.

Over the course of two years, we studied 73 manufacturing sites encompassing 163 production processes for customized industrial machinery and instruments. We analyzed both ongoing informal communication (such as emails and phone calls) and periodic (typically weekly) cross-functional meetings with standard agendas and prespecified participants. On-time delivery — a critical performance dimension in this industry — was our primary measure of communication effectiveness.

We found that processes using periodic protocol-guided meetings had a consistent performance advantage over those relying solely on informal communication. Indeed, they improved the rate of on-time delivery by an average of 5 to 8 percentage points, representing substantial value for the companies we studied. (See "About the Research, p. 84.")

Recognizing the Value of Formality

Only 45% of the organizations in our study relied on formal meeting protocols. The most widely used channel of operational communication was email (used by 71% of the organizations). When we interviewed managers, they often said that they chose email primarily because it offered speed and flexibility — and that they opted against recurring meetings mainly because staff resisted them.

Informal channels are indeed speedier and more flexible than formal communication, and they can be useful when the matter at hand is truly novel or complex enough to merit a rapid back-and-forth discussion. But when you're in the weeds of daily operations, tasks can seem more novel and complex than they actually are. Furthermore, if you opt for an informal exchange, you risk connecting with the wrong people (perhaps because the right people are not readily available), delivering or receiving inaccurate or incomplete messages, and getting distracted from the current interaction by competing priorities. As a result, reliance on informal communication often leads to delays, rework, contract penalties, costly expediting efforts, and disappointed customers.

For example, we observed that critical messages were sometimes held up or even forgotten because stakeholders did not immediately respond to one another's ad hoc requests. In other cases, individuals sought guidance on decisions but — after their informal messages ricocheted around their organizations — moved forward on their own, having never received a clear yes or no or a proper assessment of downstream implications.

Establishing a protocol takes effort and necessitates overcoming the common assumption that formality means drudgery and inertia. But in settings where communication errors can be costly, formal protocols can be a rock of reliability for the following reasons:

- They allow people to connect with the right stakeholders at the right time.
- They standardize messages to ensure that they are complete, and provide standardized procedures for follow-up.
- They promote accountability for tasks, because responsibilities are explicitly assigned to specific people.
- They embed lessons from previous interactions and meetings to ensure continuous improvement.

The health care sector is learning this lesson. According to The Joint Commission, the largest medical services accreditation agency in the United States, up to 80% of serious medical errors stem from miscommunication among caregivers.[1] Patient handoffs between intensive care units and operating rooms, for example, are essentially cross-functional meetings that demand precise exchanges of information. It's not surprising that hospitals are making substantial efforts to improve communication in such instances, and standardized protocols have proved to be an effective means of doing that.[2] Leading health care providers, such as the University of Pennsylvania Health System, have developed stepwise protocols to standardize what these exchanges cover, which parties should be present, and who is responsible for transmitted information.[3]

Designing Communication Protocols

It is not necessary to set up formal protocols for communication regarding infrequent events. Informal channels are just fine for that purpose. For example, if a member of a procurement team must contact a marketing expert — an interaction we seldom observed in our research — it makes

THE LEADING QUESTION

What benefits can formal communication channels provide?

FINDINGS

***They help ensure that the right people are receiving the right information at the right time.**

***They make it easier to stay on task in the face of competing priorities.**

***They facilitate follow-up and accountability.**

sense to use an enterprise social network platform to identify and connect with an appropriate person. To establish a protocol for that rare type of communication would be a waste of time.

However, formal communication is especially effective for common events. For instance, if a procurement team learns that a shipment from a supplier will be delayed — an event we observed frequently in our research — a formal communication protocol ensures that accurate information about the situation reaches the right production planners and sales reps so that the timing of orders can be adjusted and customers can be notified.

When events are sufficiently frequent, the organization learns who should be contacted under what circumstances — lessons that a protocol can codify. The organization also identifies which errors and which types of miscommunication are most common, and a well-designed protocol can address those sticking points.

But why make a protocol for something that is already done repetitively? Again, a useful lesson comes from health care — specifically, from University of Iowa Hospitals and Clinics. A new cross-departmental communication protocol that standardized patient handoffs between emergency departments and operating rooms improved the quality of care while radically reducing lead times. "There are some things that you never think to plan for, especially things that you do every day," concludes the team of physicians behind the new protocol. "They may seem too trivial or common to really organize, and afterward you often think that it could have gone better."[4]

Afterthoughts like that are invaluable input for the development of communication protocols. And such protocols ideally should be created *jointly* by people who collaborate regularly. When individuals develop communication habits on their own, their assumptions about best practices often do not align with those of their colleagues, and that can lead to frustrating situations fraught with competing expectations and unsynchronized efforts.

Overcoming Resistance

Getting people to develop and commit to a formal communication protocol is a considerable challenge. After all, most people prefer to craft messages in their own words and send them to whomever they regard as relevant at whatever time they choose.

Addressing the negative perceptions of formality is therefore crucial for motivating people to implement change. In some organizations, it may be effective to hold up agile management methodology as a positive example. Agile has come a long way from its software development origins, with contemporary implementations ranging from banking[5] to boardrooms.[6] Although the approach emphasizes self-organization, at its core is a strict communication protocol for team meetings called "scrums."[7]

The scrum format is always the same (with most colocated teams standing up instead of sitting down). The participants and timing constraints are prespecified, and the agenda is limited to three questions: What has everyone done since the previous meeting? What will they do next? What is everyone's most pressing challenge? Scrum may not be the perfect communication protocol for every organization, but it has the potential to appeal to people who bristle at anything that seems old-fashioned and bureaucratic.

A common argument against formality is that even frequent events have their own particularities that demand informal, unique communications. Take, for

ABOUT THE RESEARCH

This article is based on a two-year research project conducted at high-tech-machinery manufacturers in 18 countries across Europe, Asia, and North America. We analyzed formal and informal communications among managers from sales, product design, engineering, production, and procurement. Operational communications in this industry often center on customer-initiated changes to order specifications and delivery dates, engineering modifications to product designs, resource availability issues in production, and the logistics of shipments from suppliers.

Our primary performance measure was on-time delivery rate. Secondary measures included the ability to promise delivery by customers' initially requested dates and speed of order fulfillment. In comparing the influence of formal versus informal communication on these measures, we statistically controlled for other major influences on delivery performance, such as raw materials delays, internal quality issues, machine breakdowns, and delays caused by customers.

Overall, use of formal meeting protocols (rather than solely informal communications) to address product specification changes improved the rate of on-time delivery by, on average, 5 percentage points. When the communications were about customer-requested delivery-date adjustments, use of formal protocols improved on-time delivery by an average of 8 percentage points. The advantages of formal communication were statistically significant — and similar in magnitude between the primary and secondary performance measures.

example, customers' changes to orders, a common challenge in capital goods manufacturing. Sales staff routinely claim that their valued customers deserve fast, individually tailored responses to their requests for changes, and it may seem impossible to respond quickly when using formal communication channels.

Informal communication may indeed get fast attention, but it is prone to losing attention just as quickly. If all the relevant information is not captured in the moment, and if conversations are forgotten, misunderstandings and mistakes may arise, and customer dissatisfaction and delivery delays increase. For example, the immediate gratification of swiftly confirming a customer order amendment may be undercut by the later discovery that the new delivery date cannot be met — because not all relevant parties were consulted or because follow-up was inadequate to ensure thorough, coordinated implementation of changes.

Collecting and presenting data on past miscommunications — and the resulting delivery failures — may help mitigate resistance to the adoption of formal communication protocols. In our study, formal communication was more common in organizations that approached process improvement systematically (sometimes with Six Sigma). Of the many benefits of data-driven problem-solving, one emphasized by managers we interviewed is the simple fact that hard numbers can be irresistibly persuasive.

For example, one process at a robotics manufacturer we studied had unsatisfactory delivery performance. Although everyone was aware of the problem, improvement efforts did not initially focus on shortcomings in communication. A shift in focus did not occur until analysis of hard data showed that internal confusion about product-specification changes caused delivery failures more often than any external factor. Of course, such analysis alone is insufficient to prove the effectiveness of formal communication, but it does suggest a need for change.

Once a formal protocol has been piloted, comparative analyses can provide impetus for a wider rollout. One such analysis, at a manufacturer of industrial refrigeration systems, revealed that customer order amendments were twice as likely to result in delivery failures — and that their average cost doubled — when changes were communicated via email rather than in weekly meetings between production planners and sales personnel. Faced with stark numbers, even the most reluctant sales reps admitted that the convenience of email just didn't matter.

Formality Forward

Our aim is not to urge organizations to return to the days when every process was documented in triplicate or to make people jump through hoops just for the sake of uniformity. It is merely to show, with evidence from our research, that informal communication has its limits and should not be blindly accepted as a best practice. Lessons from aviation, the military, health care — and now high-tech manufacturing — reveal that formal communication (like organizational hierarchy[8]) not only has a place in everyday operations but also offers competitive advantages that no forward-looking company can afford to ignore.

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Gender Discrimination Still Exists — Now What?

We need the language to call out bias when we see it.

BY MORELA HERNANDEZ

LATE LAST FALL, after a semester of classes, a young, white, male MBA student came to me and said, "So, I now realize just how badly women still experience gender discrimination, and it makes me really angry. But I have no idea how to stop it or what to do about it." His words communicated a genuine desire to combat attitudes and treatment that for many women are all too familiar.

I would have been surprised by his comments had I not witnessed a similar reaction months earlier when interviewing seasoned executives who serve on the boards of large, publicly traded U.S. companies.

As part of an ongoing research project, my coauthors Tiffany Trzebiatowski (a management professor at UMass Amherst), Courtney McCluney (a postdoctoral fellow at Darden), and I have been examining the effect of gender composition on the decision-making processes of corporate boards. After interviewing a couple dozen female directors, we could see that they consistently faced distinct barriers in the boardroom when they were the only woman, or one of just a few women, on the team. But when investigating this issue from the male point of view, we found a significant lack of awareness regarding these obstacles.

Women continue to have difficulties with nomination onto boards because they don't fit the typical mold — white, male, former CEO — or, once on a board, they tend to be excluded from decisions that happen on the golf course or in men's executive lounges (yes, bathrooms). As we recounted these examples to our male interviewees, however, we witnessed disbelief, shock, and disappointment. We saw real frustration at the realization that their female colleagues were routinely experiencing obstacles that they and their male colleagues were not.

And again, we heard the sentiment, "OK, this still exists, and it's worse than I thought it was. What can I do about it? I want to help fix it."

Of course, the fact that gender discrimination is alive and well should not be surprising, especially given the attention that the #MeToo and #TimesUp movements have brought to sexual harassment in the past year. However, in both practice and research, we have not moved beyond *awareness* of the issue to concrete *recommendations* on how to tackle it.

One exception might be the recommendation that women seek out sponsors,

not just mentors. Sponsorship involves advocating for a mentee and helping to position her for career-advancing opportunities. It goes beyond providing feedback; it is the active promotion of an individual. Research shows that women are much less likely than men to receive sponsorship.

Even when women do receive it, the benefits take time to unfold. Meanwhile, what happens when we hear or see discriminatory behavior? How do we respond *in the moment* to an off-color comment? Or to a male colleague exhibiting a common unconscious display of dominance by speaking just a little bit longer and louder and drowning out the voice of a female colleague?

'Scripts' Could Provide a Way Forward

Here's one idea I've been exploring: giving people clear language to use in their day-to-day encounters with prejudice so they can call attention to the issue without sacrificing work relationships.

In my research, I have begun to investigate developing and testing the efficacy of what I call "scripts." There is currently no established set of scripts to address gender discrimination — no readily available list of words or phrases that would signal to a peer that he has crossed a line, whether knowingly or unknowingly.

Developing such scripts has the potential to short-circuit the automatic cognitive processing often responsible for the expression of gender bias in the workplace. A phrase as simple as "Can you repeat what you just said?" gives people a straightforward way to respond to a biased remark or joke, a way to make others aware when they've said something out of bounds. A response like "That's not cool" or "That comment doesn't reflect the person I know you to be" can immediately prompt the speaker to reconsider his perspective.

Scripts act as a pause button of sorts, enabling us to reevaluate what was said or done, despite the initial surprise or shock of witnessing the biased behavior. They allow us to push back respectfully but effectively.

Battling Egocentricity and Confirmation Bias

In essence, scripts are a way to reduce the blind spots caused by occupying a majority position. To be clear, lack of awareness is not an inherently male problem. If women made up the majority in powerful, high-social-status positions, they, too, would be likely to fall into majority-favoring behavior that could become mostly automatic and unconscious. It's how the human brain works — we prioritize what we are exposed to personally, and we have difficulty understanding the perspective of those who have different experiences. Psychologists call this an egocentric bias.

Another cognitive shortcoming that scripts could help address is confirmation bias. People make decisions about one another based on previous experiences and beliefs. Because they are generally exposed to more male leaders than female leaders, people associate stereotypical male attributes with leadership. But if men were to adopt scripts to disrupt this self-reinforcing cycle, more equal weight could be given to women's voices in decision-making processes, leading to greater visibility, more endorsements, and ultimately more promotions.

Take the unconscious display of dominance I described earlier — the tendency of men in the workplace to speak a little bit longer and louder than women — or the similarly common tendency for men to interrupt women significantly more than they interrupt other men. A simple phrase like "I believe Nancy was speaking — please let her finish" could short-circuit a peer's biased behaviors. Indeed, given the threat of backlash that women face when speaking up in response to this type of situation, male colleagues — especially at the peer level — can play a particularly powerful role in expressing this script.

IN THE WORKPLACE, in schools, and in society, biased comments and everyday power plays may seem small individually, but they are cumulatively significant.

Men, by virtue of their majority position, have a unique opportunity to directly combat gender discrimination. Women can also contribute by sharing ideas and feedback in support of their male colleagues' attempts to right the process. Learning how to develop and enact scripts to disengage from the automaticity of our everyday interactions is ultimately a collaborative effort.

A response like "That's not cool" or "That comment doesn't reflect the person I know you to be" can immediately prompt the speaker to reconsider his perspective.

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COLUMN

Finding the Middle Ground in a Politically Polarized World

To gauge whether — and how — to jump into the political fray, business leaders should consider an issue's importance to company performance and its relevance to stated values.

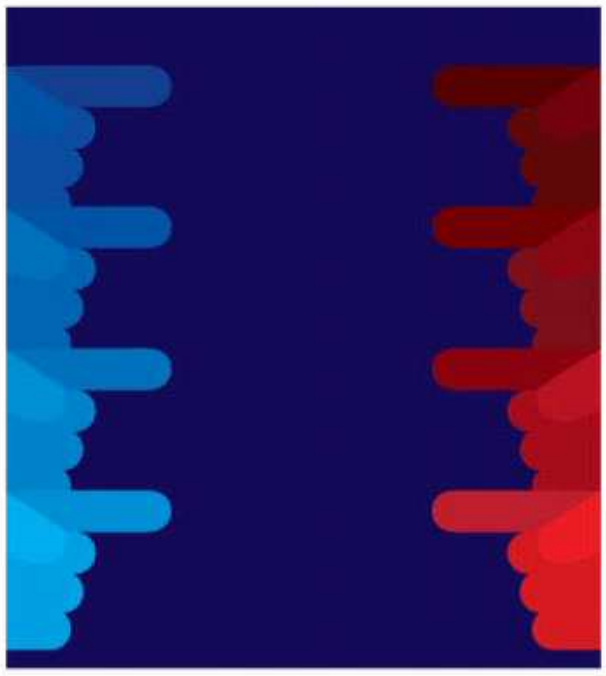
BY N. CRAIG SMITH AND DANIEL KORSCHUN

CONSUMERS AND EMPLOYEES now expect companies to engage on social, environmental, and economic issues that are part of the political discourse (think immigration, climate change, and trade). Given how politically polarized the world has become, that can put business leaders in a bind.

Here's the dilemma as it's usually understood: They can take a political stand and risk upsetting some consumers or employees, igniting oppositional behavior such as boycotts and strikes, and damaging the company's reputation. Or they can remain silent, ceding the moral high ground and allowing others to write the narrative.

One company that found itself caught in this dilemma is Delta Air Lines. After a deadly shooting at a high school in Parkland, Florida, the company reexamined a discount it had offered to members of the National Rifle Association (NRA). Delta's solution was, in a sense, to employ both extremes; it ended the discount in question but announced the action as a reflection of its "neutral status." In the end, Delta got little reputational benefit for claiming neutrality, and NRA-friendly lawmakers pulled $50 million in tax benefits as retribution.

Framing the debate over corporate political activism in terms of this binary



choice — take a stand or remain silent — ignores the reality that companies often seek less extreme options and have different motivations for becoming active politically. In short, they need a more nuanced set of alternatives.

Figuring Out How to Engage

How might a company identify its alternatives? Our respective research on ethical leadership and corporate political activism suggests that when leaders decide how to engage politically, they need to consider the degree to which the issue is materially important to the company's financial performance and how relevant it is to stated corporate values.

Customers, employees, and other stakeholders recognize that companies, as for-profit entities, are motivated in part by the bottom line. If a political issue could materially affect it, people will generally view the issue as appropriate for the company to address in some way. For example, they would expect a pharmaceutical company to speak out against health care legislation that could harm the business.

Many companies declare commitments to issues such as diversity or poverty alleviation in their values or mission statements. When they do so, stakeholders naturally expect them to honor those commitments. Failure to speak up when a core value appears to be threatened begs the question: What does the company truly stand for?

Examining issues on the basis of these two factors reveals four types of political positions that companies might reasonably take: forceful, tempered, pragmatic, and neutral. (See "A Framework for Corporate Political Positions," p. 90.)

When to take a forceful political position. When a political issue is reflected in the stated values of a company and is

material to its success, leaders should take a forceful position. Statements from the company should be unequivocal, explicitly making the connection to its values and its operations. Moreover, the company should be proactive, creating a track record on such issues so it means more when leaders speak up.

Microsoft took a forceful stand against President Trump's decision to end the Deferred Action for Childhood Arrivals (DACA) program, arguing that the decision was anathema to its values and also harmed its ability to attract talented employees. Microsoft's leaders not only signed an open letter in support of DACA but also spoke directly to Congress. The company promised to fund the legal defense of employees who are so-called Dreamers as well.

When to take a tempered political position. There are times when a company needs to address an issue but seeks an alternative to a forceful position. One of these times is when the issue relates to a stated core value but materiality to performance is low. In such circumstances, taking a staunch position may be offensive to some key stakeholders, so it's better to frame the matter more broadly.

Khane Cinema, a motion picture association in Iran, took this approach when it called for voter participation in the 2017 Iranian elections. The organization's leaders likely knew that higher turnout would favor reformers over hard-liners, so their strategy enabled them to act on their progressive values of tolerance without offending conservative moviegoers or government officials.

AT&T serves as another example. In a speech to employees, CEO Randall Stephenson said that racial tensions were ripping apart American communities and he urged listeners to act. The speech did not explicitly respond to the grievances of the Black Lives Matter movement, but rather made clear the organization's commitment to inclusivity as a core value.

The degree of tempering required will depend on an assessment of stakeholders' beliefs and expectations. The response should not be so strong that it could harm material interests of the company; equally, the company should not sell its values short.

When to take a pragmatic political position. When a political issue does not relate to the company's core values but is of material importance to performance, a pragmatic stand is appropriate. The company should take a position on the issue and clearly explain the impact it will have on revenues, costs, or risks. Such an approach highlights practical rather than moral reasons — though it might invite reflection on whether core values should be reassessed.

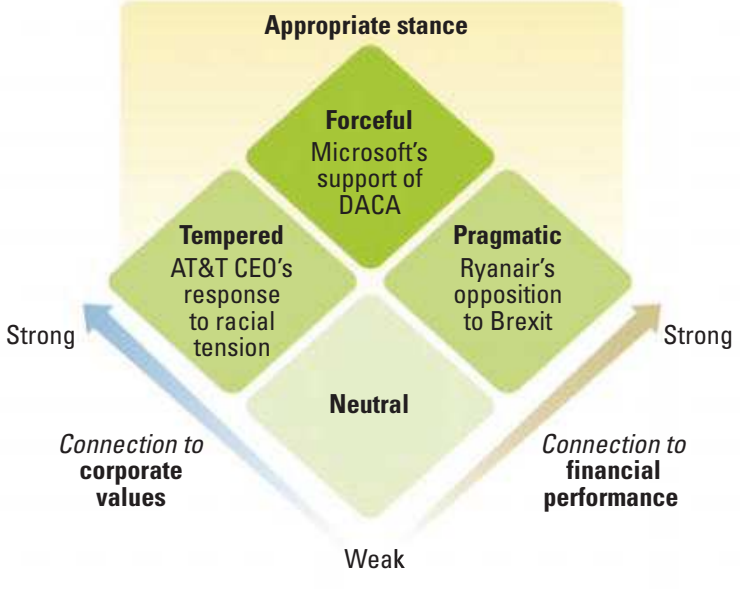
Ryanair, the Dublin, Ireland-based airline, has largely taken this tack on the thorny political issue of Brexit. CEO Michael O'Leary is a staunch opponent of the withdrawal of the United Kingdom from the European Union, mainly on pragmatic grounds. "The first industry over the cliff will be flights," O'Leary said at a conference for airlines executives. "And I think maybe that's the way you bring about the crisis that gets everybody in Britain to say 'well, maybe let's look at this again.'"

To that end, he's even considering grounding Ryanair planes. O'Leary's objections have not been ideological or moral; rather, he argues that Brexit will make travel in Europe cost more, which will reduce Ryanair's profitability and its customers' ability to travel inexpensively outside of the U.K.

When to take a neutral political position. Finally, if a political issue is neither linked to a stated corporate value nor highly material to performance, the company should abstain from taking a position altogether. Of the four strategies in our framework, this is the one that most closely reflects the traditional wisdom that companies should stay out of politics. In such circumstances, the company may acknowledge concerns of its stakeholders but should affirm its nonpolitical stance. We recommend abstention specifically on that issue rather than a blanket profession of nonpartisanship — the company will undoubtedly need to take a stand on other issues in the future.

A FRAMEWORK FOR CORPORATE POLITICAL POSITIONS

By considering how important a political issue is to the company's financial performance and its relevance to stated corporate values, business leaders can decide how forceful a position to take and what to emphasize in communications.



Being Apolitical Isn't an Option

It's not surprising that business leaders are often hesitant to take sides on political issues. Some concern is philosophical: Is commenting on a contentious issue a legitimate use of a corporate platform? After all, business leaders are not democratically elected officials. Some concern is pragmatic: Taking one side of an issue could alienate the customers, employees, and other stakeholders who hold the opposing view. As Salesforce.com director and former U.S. Secretary of State Colin Powell warned Salesforce.com CEO Marc Benioff when Benioff advocated for more corporate activism, "Be careful how far you climb up the tree — it will expose your backside."

But the days when companies could avoid making political statements are over. When issues come up, however, they need not be viewed in black and white. We urge business leaders to think through which ones are most material to performance and speak most directly to the values of the company so that they may plan ahead. Our prescription is for a less extreme — and more context-driven — playbook.

We acknowledge that there will be exceptions to the four strategies. For example, after a white supremacist killed a woman by ramming his car into a crowd of protesters in Charlottesville, Virginia, in 2017, President Trump said there were "fine people on both sides," suggesting moral equivalence between neo-Nazis and counterprotesters. Many CEOs cited moral grounds — not arguments about materiality to the business or corporate values — as they forcefully rejected the president's comments. Still, these four options provide some much-needed guidance for executives who are more typically seeking the middle ground.

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EXECUTIVE BRIEFINGS

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What Problems Will You Solve With Blockchain?

Teppo Felin (University of Oxford Saïd Business School) and Karim Lakhani (Harvard Business School)
pp. 32-38

Distributed ledger technologies — collectively known as blockchain — have burst onto the business scene, accompanied by a significant amount of hype. Some of the excitement may indeed be warranted, the authors say, but only if organizations focus on how these technologies can be used to support their strategy.

Businesses can use blockchain to gain an edge over rivals in a number of ways. It can be a foundation for applications that streamline core operations, lower transaction costs, and make intellectual property ownership and payments more transparent and automated. However, the authors advise against jumping on the bandwagon until firms understand what specific problems they can solve with blockchain — and for whom. For example, how will it help them reach new customers? How can it improve efficiency or transparency in their supply chains? And most important, what will blockchain enable them *to do* that competitors and new entrants *can't do*?

Companies can begin reaping benefits when they understand what the technologies are capable of doing and then systematically configure blockchains in ways that align with their unique strategy, their existing capabilities, and the problems they can solve.

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Blockchain Is Changing How Media and Entertainment Companies Compete

Andre Dutra (Ericsson), Andranik Tumasjan (University of Mainz), and Isabell M. Welpe (Technical University of Munich) **pp. 39-45**

Many kinds of companies are now experimenting with blockchain's core capability as a decentralized and secure ledger to manage digital assets more directly and to rethink how they compete in the marketplace. Start-ups are attempting to develop blockchain-based business models in a range of settings, including health care, telecommunications, energy, retail, aviation, real estate, and supply-chain management.

In an effort to learn what's possible, the authors studied blockchain-enabled business models in 20 media and entertainment startups involved in producing and distributing various types of content. They identified applications and business models, including one model that pays independent content creators and consumers for their contributions. Other models are focused on streamlining critical business activities (such as relationships with business partners).

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Breaking Logjams in Knowledge Work

Sheila Dodge (Broad Institute), Don Kieffer (MIT Sloan School of Management), and Nelson P. Repenning (MIT Sloan School of Management) **pp. 46-54**

People who work in organizations know what it's like to have too much to do and not enough resources to do it. Digital tools for communication and collaboration are meant to make everything more manageable, but access to technology often can't fix the root cause: poor work design and entrenched organizational behaviors.

The costs of overload are well-documented: It makes people less creative, less productive, more prone to illness, less likely to hit deadlines and goals, and more likely to leave their organizations to work elsewhere. It's also been implicated in many major accidents and disasters.

In this article, the authors explain how the approaches developed to address these problems in physical work can be used to improve resource allocation and prevent overload in other types of settings. To illustrate, they describe two recent work-design changes at the Broad Institute of MIT and Harvard, a biomedical and genomic research center in Cambridge, Massachusetts, where one of the authors oversees the main technology platform. While an academic research center may seem like a specialized case, the authors contend that managers in other knowledge-based organizations struggling with overload can learn from this experience.

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Selling Solutions Isn't Enough

Hannah Grove (State Street), Kevin Sellers (Avnet), Richard Ettenson (Thunderbird School of Global Management), and Jonathan Knowles (Type 2 Consulting) **pp. 55-59**

Customers are always more interested in their outcome than in your solution, Peter Drucker once observed. But in the B2B environment, the authors note, many companies have lost sight of this truth. They develop products and services (often described as solutions) from an internal view and try to sell them to the widest possible customer base.

This article describes how four companies are identifying and delivering outcomes that customers want. The companies are State Street, which manages investments for large institutional investors; Avnet, which supplies electronic and semiconductor components to technology manufacturers; a large U.S.-based manufacturer of building products; and a leading U.S.-based construction, engineering, and specialty service business.

B2B customers define their desired outcomes in different ways. Beyond the obvious financial metrics, the goals might include delivering a better experience to buyers, fostering a more vibrant culture, achieving efficiencies, or revamping the company's reputation. In each case, the desired outcomes represent leading indicators of that customer's future business performance.

Becoming an outcome-oriented B2B organization isn't easy, the authors note. It involves going beyond the company's comfort zone as a technical problem-solver to engage in a more tailored form of collaboration with customers. To do this, B2B must change along five key dimensions: the definition of success; the approach to technology; how the company is organized; how it communicates with its customers; and how it measures value.

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How to Launch Products in Uncertain Markets

Jan-Michael Ross (Imperial College Business School) and Jan Hendrik Fisch (Vienna University of Economics and Business) **pp. 61-64**

Predicting the needs of your customers has always been tricky. Although conventional wisdom suggests there are benefits to introducing products early, according to the authors, being early is not always advantageous. They found that many companies can benefit by taking a mixed approach, which they call "act and see." By deferring large-scale launches of new products and using the time to conduct effective R&D, the authors found, companies can glean valuable insights and develop capabilities that give them an edge on competitors that rush in with less caution.

The article shows how prelaunch experimentation can build capabilities that help companies create value in uncertain market environments and make it harder for competitors to copy their moves.

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Why People Believe in Their Leaders — or Not

Daniel Han Ming Chng (China Europe International Business School), Tae-Yeol Kim (China Europe International Business School), Brad Gilbreath (Colorado State University), and Lynne Andersson (Temple University) **pp. 65-70**

In recent years, executives at numerous companies have learned tough lessons through high-profile scandals that swiftly damaged their reputations. Credibility, the authors argue, is based on two key elements: perceived competence (people's faith in the leader's knowledge, skills, and ability to do the job) and trustworthiness (their belief in his or her values and dependability).

In field studies, the authors explored the specific behaviors that affect how people assess their leaders' competence and trustworthiness and, in turn, their credibility. The authors identified a number of behaviors that can cause leaders to lose credibility, including displaying a lack of relevant job knowledge, struggling to handle key tasks that are part of their job, and making decisions that don't align with their organization or its broader environment.

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A More Profitable Approach to Product Returns

James Abbey (Texas A&M University), Michael Ketzenberg (Texas A&M University), and Richard Metters (Texas A&M University) **pp. 71-74**

Maine retailer L.L. Bean has been known for its extremely generous product-return policy, with no time limit and no receipt requirement. Customers could get a full refund for items purchased decades ago. But in February 2018, citing the policy's negative impact on profits, the company announced a new return policy that limited product returns to one year from the date of purchase. Other retailers, including Best Buy, REI, Lands' End, and Costco, are also tightening their return policies.

As the authors explain, new tools and technologies allow companies to segment customers and impose strict return policies only on the ones whose past behavior warrants it. They analyzed customer data for a large, high-end U.S. retailer with more than 100 brick-and-mortar properties,

discount outlets, and catalog and online sales channels. Using data from more than 1 million customers and more than 75 million transactions over seven years, they identified transactional patterns showing which people are most likely to abuse return policies.

Based on their data, the researchers found seven variables that collectively explained the variance in overall customer profitability. By analyzing transactional behaviors and segmenting customers according to profitability, the authors explain, retailers can figure out when to impose — and when *not* to impose — return restrictions.

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Building an Ethically Strong Organization

Catherine Bailey (King's College London) and Amanda Shantz (Trinity College Dublin) **pp. 75-81**

When German car manufacturer Volkswagen was caught cheating on its diesel emissions testing regime, the subsequent scandal launched numerous lawsuits, cost billions of dollars in fines, and severely harmed the company's reputation. Dozens of employees at all levels contributed to this disaster. Recently there have been other incidents at companies, including Wells Fargo and Samsung Electronics. Why do such scandals continue, and what can be done to change matters?

When the authors asked employees at five U.K. organizations to share their experiences of ethical and unethical practices, they found that most employees and managers care about ethics and want to work for employers whose values and principles are aligned with their own. The authors present steps to help leaders set an ethically strong tone so that employees are better equipped to make the right choices. "Setting the stage for ethical behavior isn't just a top-down exercise," the authors write. Organizations need to understand the ethical dilemmas that managers and employees face — and give them tools, including codes of conduct, to make good choices.

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When Communication Should Be Formal

Antti Tenhiälä (IE Business School) and Fabrizio Salvador (IE Business School) **pp. 82-85**

Informality has become ubiquitous in modern organizations: for example, the use of first names, casual dress, flattened hierarchies, and self-organization. Formal communication guided by protocol, such as face-to-face meetings or teleconferences, where leaders from different business units use standard agendas to review concerns and coordinate responses, is increasingly seen as old-fashioned and inefficient.

The authors studied communications practices at 73 companies that manufacture high-tech machinery — businesses that rely on precise, cross-functional communication to get the job done. They found that, despite the attraction of informal communication, formal communication offers specific, crucial advantages that companies shouldn't overlook. They discovered that processes that used periodic protocol-guided meetings performed better (as measured by their rates of on-time delivery) than those that relied solely on informal communication.

Formal communication was especially effective for common events. For instance, if the procurement team learns that a shipment from a supplier is going to be delayed, a formal communication protocol ensures that accurate information reaches the right production planners and sales reps. When events are sufficiently frequent, the organization learns who should be contacted under what circumstances — lessons that a protocol can codify.

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Tech Companies Don't See Their Biggest Problems Coming
(Continued from page 96)

systems required to run an operation as massive as Facebook's are clearly impressive. But smugness about achievements in the IT arena can make management, even crisis management, seem deceptively easy. If management practices are not given the serious attention they require, crises are more likely to blindside a company.

4. Inadequate responses to major crises. Companies that are well-prepared to handle crises take immediate responsibility when things go wrong. They don't issue trite, meaningless apologies that only make matters worse. No crisis is a standalone event; it's part of a larger, highly interconnected system of events. And often, the initial crisis sets off a chain reaction of other crises. For instance, an ethical crisis can quickly morph into PR and financial crises — and, ultimately, into a broad-based crisis of confidence in the entire company. Organizations must anticipate and plan for such rapid developments.

5. Obliviousness to potential abuse. All technologies are prone to misuse in ways that their creators did not envision. In the case of, say, a social network, developers and other fans of the technology may think, "This is just a platform; it merely connects people." So they either fail to recognize problems that arise or, out of a misguided sense that technology is the solution to everything, convince themselves that any and all related damage to humankind is inevitable and justified, because it's simply the cost of progress. Such willful agnosticism can prevent tech companies from taking appropriate steps to lessen the likelihood of any misfortunes.

How Tech Companies Can Manage Crises Better

By embedding crisis management into their ongoing development of products and services — and their organizational processes and systems — tech companies can anticipate problems more easily. They must not only envision the worst that can happen, but also do everything in their power to prevent it. Simply dumping the latest great technologies on the world — and then cleaning up any ill effects after the fact — is unacceptable.

Tech companies must envision the worst that can happen and then do everything in their power to prevent it. Simply dumping the latest great technologies on the world — and then cleaning up any ill effects after the fact — is unacceptable.

A crisis management mindset for tech companies, both within the organizations themselves and throughout society at large, is key to increasing the likelihood that technology will serve humankind, not the other way around. Developing an effective crisis management program involves multiple steps, but these four are essential:

- Commission an outside group of reputable experts to come up with worst-case scenarios as to how the company's wondrous technological creations could be abused and misused and thereby cause crises that the company's leaders and employees are reluctant to think about.
- Convene a company-wide crisis management team as soon as possible. This panel's basic job should be to look for early warning signs of any of the potential crises anticipated by the outside committee of experts. The team also should identify its own set of potential crises — and meet regularly to assess the state of the company's readiness to handle both the identified crises and any not yet envisioned.
- Make crisis management part of everyone's job — from the CEO to front-line workers. Explicitly communicate that directive to all employees in the company and establish ways to assess implementation.
- Work with government agencies to develop well-crafted regulations that the company can comply with. Even more important, demonstrate from day one that the company takes customer well-being seriously and prioritizes it ahead of profits.

The burden is on technology companies to act responsibly and on government and the public to demand that they follow through on that obligation. Otherwise, the backlash against technology will only grow, possibly leading to the undoing of our love affair with it. That is the ultimate crisis facing tech.

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COLUMN

Tech Companies Don't See Their Biggest Problems Coming

Five blind spots make companies oblivious to the need for crisis management planning — but they can be addressed.

BY IAN I. MITROFF

SINCE MARK ZUCKERBERG'S recent congressional testimony about Facebook's unauthorized release of the private data of millions of users, many flaws in the company's business model have come to light. Crises related to member privacy, misuse of data, and loss of public trust in the company have been emerging in an almost uninterrupted stream.

That's what can happen when organizations do not make crisis management a central feature of their everyday operations. Tech companies are especially prone to this shortcoming. Five blind spots, in particular, make tech companies likely to face crises they never even remotely anticipated. Each one is troublesome in its own right, but together they lead to disaster.

Let's take a look at each one of those blind spots in turn.

1. Too much early success. Peter Drucker famously wrote about the failure that ensues when companies succeed quickly and spectacularly, as Facebook has. The cascade of great news can make an organization blind to serious problems that lurk within its basic business model and are embedded in its culture and structure. A recent *New York Times* article argues, for example, that Facebook's platform not only provides safe harbor for extremists, but actually creates extremists by promoting content that riles (or, euphemistically, "engages") them. Because of the early success of its business model, in terms of both user numbers and advertising dollars, Facebook was insufficiently wary of how the model itself could cause a crisis.

2. Overconfidence after weathering small crises. Facebook's ability to manage the public's outrage about how its platform promotes cyberbullying may have bolstered the company's sense that it could address crises as they arise, rather than building a serious crisis management program. This kind of reactive approach, particularly when it appears to be effective in a company's early days, can lead to a dangerous sense of invincibility.

3. The assumption that management is easier than technical work. The technological skills and (Continued on page 95)

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