

McKinsey Quarterly

2013 Number 2

On-demand marketing

Engaging consumers with just the right touch



This Quarter

This issue's cover story reminds us just how many extraordinary changes we now take for granted in the world of marketing: the instant availability of product information through search; the sharing, comparing, and rating of experiences through social media; the ability to engage virtually with products and services on mobile devices at any place or time. "But we're just getting started," note my colleagues David Edelman and Peter Dahlström. Within the decade, chips embedded in physical products will enable customers, with just a touch or a swipe, to integrate their real-world and digital experiences so that they are essentially indistinguishable. That holds enormous implications for companies trying to market to those customers, whose demand for anywhere, anytime, personalized engagement will rise as technology enables more of it.

An important piece of solving this puzzle is integrating and exploiting extraordinary volumes of data. Many companies are already becoming enthralled by the promise of "big data" and advanced analytics to identify overlooked opportunities, stimulate new business approaches, and boost the effectiveness of day-to-day operations. My colleague David Court and his coauthors propose a simple solution to fulfilling that challenging promise: undertake big-data planning with the same seriousness of purpose and enterprise-wide perspective that distinguish the best strategic plans.

Indeed, they suggest, the value of such efforts is so significant that we're on the verge of a data-planning boom similar to the widespread adoption of strategic planning some 40 years ago.

Great data, though an enabler of great decisions, will not be enough. As Stanford professor Chip Heath and my colleague Olivier Sibony remind us in their fascinating dialogue, companies are prone to make expensive mistakes if they don't have processes in place that stimulate debate, embrace uncertainty, and introduce outside perspectives. Their conversation—with insights from Heath's new book, *Decisive: How to Make Better Choices in Life and Work*—is accompanied by a summary of early-stage research Sibony is undertaking with University of Sydney professor Dan Lovallo on the styles of different decision makers.

There's much more in this issue: we continue our ongoing focus on the implications of rapid emerging-market growth for top management by offering an insider's guide to product development in those countries, reflections from Timken CEO James Griffith on the impact they have had on his company, and C-level summaries of new research on Indonesian and African consumers and of some intriguing talent-development experiments. Facebook chief operating officer Sheryl Sandberg tells McKinsey's Joanna Barsh why she thinks the mantra "You can have it all" is destructive, not empowering, for ambitious women. Wharton professor Adam Grant explains why cultures grounded in giving promote better performance—and shows how to build them. Finally, my colleague Olivier Leclerc and Mihnea Moldoveanu, an associate dean at the Rotman School of Management, introduce a powerful new language for solving complex problems. That's good, because there's no sign the challenges facing today's leaders are getting any simpler. ◦



Tom French

Director, Boston office



On the cover

24 **The coming era of ‘on-demand’ marketing**

Peter Dahlström and David Edelman

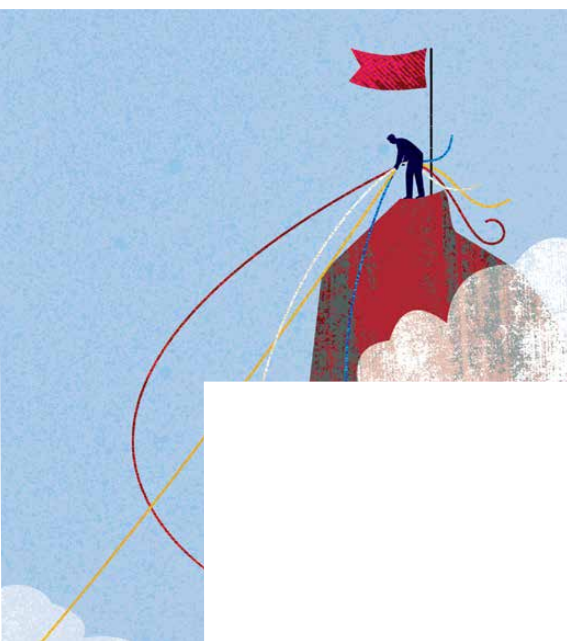
Emerging technologies are poised to personalize the consumer experience radically—in real time and almost everywhere. It’s not too early to prepare.

Features

40 **Big data:** What’s your plan?

Stefan Biesdorf, David Court,
and Paul Willmott

Many companies don’t have one.
Here’s how to get started.



52 **Givers take all:** The hidden dimension of corporate culture

Adam Grant

By encouraging employees to both seek and provide help, rewarding givers, and screening out takers, companies can reap significant and lasting benefits.

Features

66 **Making great decisions**

Stanford's Chip Heath and McKinsey's Olivier Sibony discuss new research, fresh frameworks, and practical tools for decision makers.

77 Early-stage research on decision-making styles

Dan Lovallo and Olivier Sibony



80 **Five routes to more innovative problem solving**

Olivier Leclerc and Mihnea Moldoveanu

Tricky problems must be shaped before they can be solved. To start that process, and stimulate novel thinking, leaders should look through multiple lenses.

Departments

6 **Idea Exchange**

Readers mix it up with authors of articles from *McKinsey Quarterly* 2013 Number 1

112 **Extra Point**

Four principles for making better decisions



Focus on emerging-market consumers

8 **Understanding the diversity of Indonesia’s consumers**

Arief Budiman, Heang Chhor, and Rohit Razdan

In one of the world’s fastest-growing consumer markets, focusing on regional preferences is the key.

12 **Betting on Africa’s potential**

Damian Hattingh, Bill Russo, and Ade Sun-Basorun

To target Africa’s new class of consumer, a wide-angle lens won’t do.

Industry dynamics

A quick look at research and analysis from selected sectors

16 **Retail:** Supply-chain economics in the era of one-day delivery

17 **Health care:** How big data is shaping US health care

18 **Banking:** A new trend line for global banking

20 **Infrastructure:** Too important for business leaders to ignore

Richard Dobbs, Jan Mischke, and Herbert Pohl

Infrastructure spending could be much more productive, boosting global growth and business efficiency. Corporate leaders should be agitating for change.

93 **Facebook’s Sheryl Sandberg:** ‘No one can have it all’

Coming to terms with that reality is invaluable for women trying to find fulfillment as both great leaders and great parents.

Spotlight on emerging markets

98 **Developing winning products for emerging markets**

Sauri Gudlavalleti, Shivanshu Gupta, and Ananth Narayanan

To master the extremes of a fast-changing competitive landscape, challenge your company’s assumptions about designing, developing, and manufacturing products for these regions.

104 **Moving from education to employment in emerging markets**

Diana Farrell and Mona Mourshed

Qualified candidates are often scarce in these countries. Forward-looking companies tackle the challenge through smart partnerships, helping local communities—and themselves.

108 **Timken CEO James Griffith on his company’s emerging-market approach**

Global economic rebalancing has required the iconic, Ohio-headquartered bearings maker to transform itself.

Idea Exchange

Readers mix it up with authors of articles from *McKinsey Quarterly*
2013 Number 1

In the previous issue of *McKinsey Quarterly*, McKinsey's Frankki Bevins and Aaron De Smet argued that companies need to help employees tackle the problems of time management. In a related article, author and CEO adviser Peter Bregman presented a way for managers and their supervisors and direct reports to align organizational priorities through personal time management. Both articles sparked a robust conversation on mckinseyquarterly.com.

Making time management the organization's priority

Mayank Jha

Senior consultant, WNS, Gurgaon, India

"I agree with the principles presented, but I think a better way to solve this problem (scarcity of time) is to accept that, given the dynamism of the modern business and its environment, a project-based organizational structure might work better than a functional one."

The authors respond:

"Good point, Mayank. A project-based organizational structure is certainly an alternative to a functional one, but the principles of time management remain the same. The key in both cases is to create processes that formalize time allocation according to organizational priorities and the total resources and capabilities available, just as you would in a capital-allocation exercise. In a project-based model, this means prioritizing *initiatives*, while for a more functional structure, we prioritize according to the expectations for each *role* within the organization."

A personal approach to organizational time management

Ramiro Roman

General manager, GE, Milwaukee, WI

"We live in an era of great uncertainty, where speed and adaptability are necessary for competitive survival. How do you balance setting the six boxes (and sticking with them) with the flexibility the market demands?"

The author responds:

"Great question, Ramiro. There's a balance between focus and flexibility. I wouldn't suggest that you reassess your priorities each day. You need time to follow through on your chosen priorities before you give up on them. But if—after several months or whatever amount of time feels appropriate to you—it becomes clear you're not getting traction or the market is shifting or you're missing an opportunity you think is critical, then it's a good idea to revisit your boxes and consider shifting one or two."

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Leading Edge

Focus on emerging-market consumers

- 8 Understanding the diversity of Indonesia's consumers
- 12 Betting on Africa's potential

Industry dynamics

- 16 Retail
- 17 Health care
- 18 Banking

- 20 **Infrastructure:**
Too important for business leaders to ignore

Focus on emerging-market consumers

Understanding the diversity of Indonesia's consumers

Arief Budiman, Heang Chhor, and Rohit Razdan

In one of the world's fastest-growing consumer markets, focusing on regional preferences is the key.

Some 90 million Indonesians will join the consumer class by 2030—more than in any emerging nation save China and India. For consumer companies, that will mean an additional \$1 trillion in annual spending by the nation's optimistic and increasingly sophisticated consumers.¹

Already, Indonesia's consumer spending, at 61 percent of GDP (2010), is closer to levels in developed economies than to the corresponding figures for neighboring, largely export-driven nations such as Malaysia and Thailand. As the percentage of the country's population living in

urban areas grows from roughly 53 percent of Indonesia's residents today to 71 percent in 2030, spending should grow in categories such as financial services, leisure, travel, and apparel (Exhibit 1). It already has among today's upwardly mobile, tech-savvy, individualistic city dwellers.

Yet Indonesia's consumer market is complex, scattered over 17,500 islands where tastes and preferences vary. To help companies navigate, we surveyed 5,500 consumers in 44 cities across hundreds of categories and brands.²

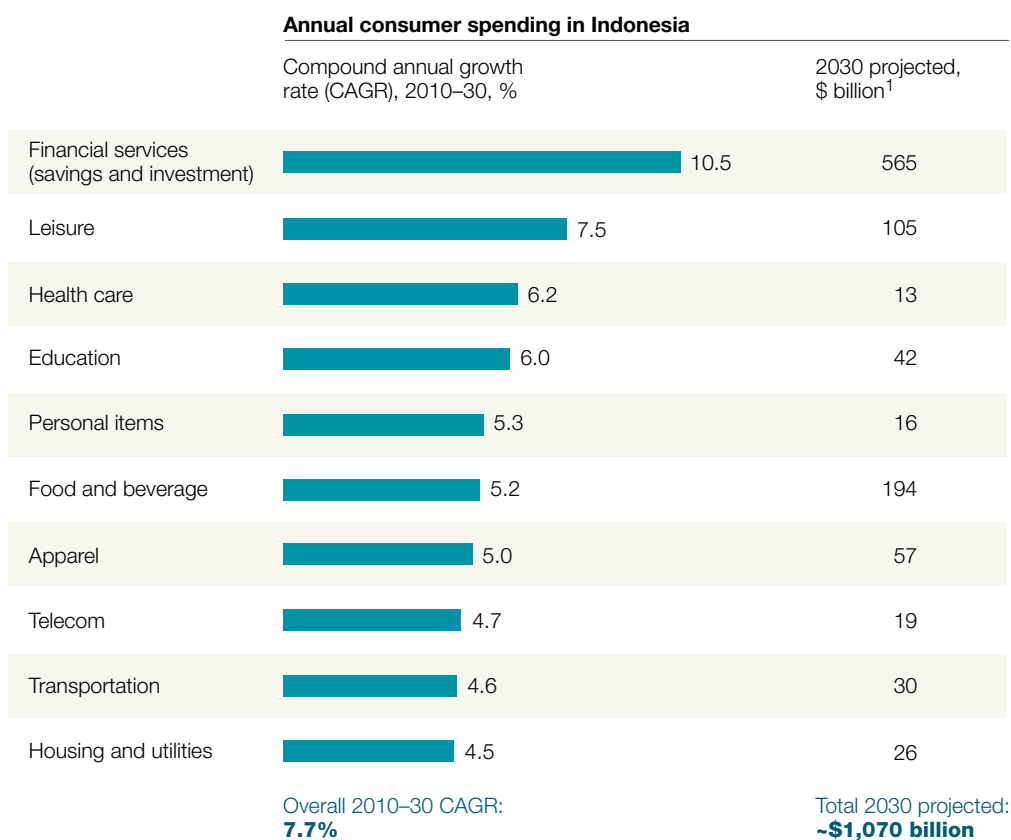
Brand preferences

Indonesians attach more importance to brands than do the consumers of any nation we've seen at this stage of development, including China.³ Sixty percent prefer local brands, which are particularly strong across food and beverage categories. But consumers aren't strongly aware of brand

ownership—many consider Nestlé's Kit Kat brand, for example, to be local—so multinationals aren't at a disadvantage, provided they can develop a brand position that resonates with local buyers. The country's Honda motorcycle subsidiary, for instance, used the Bahasa Indonesian words *satu hati*, or "one heart," in a successful local advertising campaign.

Exhibit 1

Between now and 2030, a wide range of Indonesian consumer markets should experience rapid growth.



¹ In 2010 prices.

Source: Canback Global Income Distribution Database (C-GIDD); Indonesia's Central Bureau of Statistics; 2011 McKinsey survey of 5,500 Indonesian consumers; McKinsey Global Institute analysis

Urban dynamics

The two biggest cities on the island of Java—Jakarta and Surabaya—are hubs for clusters of fast-growing “middleweight” cities, and six clusters of rapidly growing smaller cities are developing across the archipelago. Understanding their dynamics and differences is crucial. We found that the behavior of buyers in Surabaya, for example, tends to be influenced more by brand and image than that of

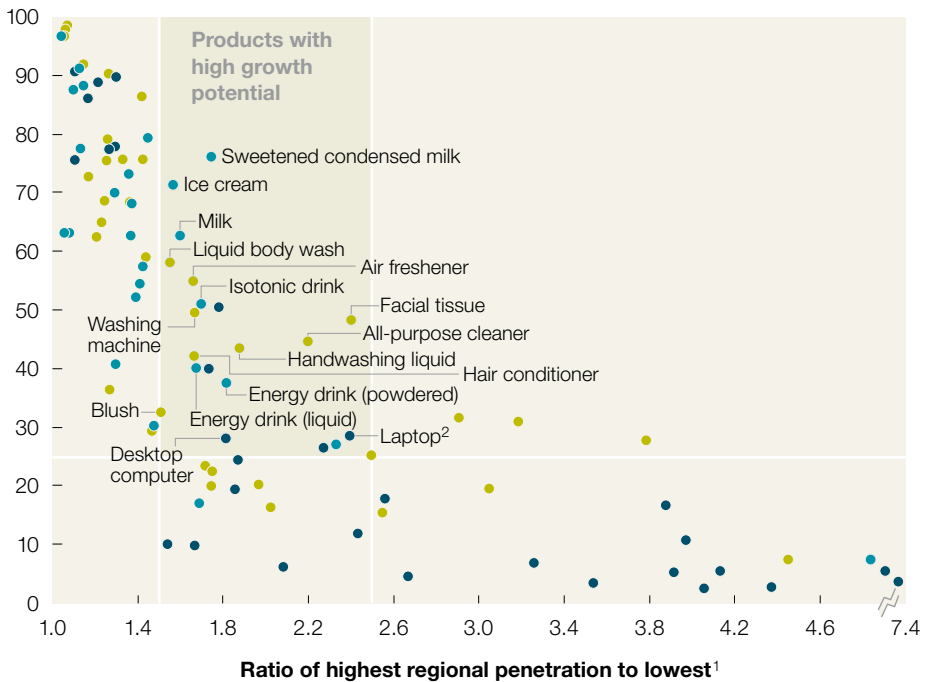
consumers in Jakarta. Surabaya’s consumers favor global categories (such as chocolate) more strongly, and they are two times more likely to seek advice from family and friends before buying. We also found that many product groups have achieved substantial levels of household penetration nationally but that regions vary in meaningful ways (Exhibit 2). Successful companies will increasingly need to localize products and value propositions while crafting portfolios of local and global

Exhibit 2

Product penetration varies dramatically across products and regions.

Penetration rate, % of respondents who own product and/or use it in their homes

- Home and personal care
- Food and beverage
- Consumer electronics



¹The product’s highest penetration rate among 5 regions divided by its lowest penetration rate in the same region where the highest was found.

²Includes netbooks.

brands. That may sometimes require partnerships with local players.

Getting to market

Indonesia's distribution infrastructure is fragmented geographically, and mom-and-pop stores predominate in many consumer categories. Channels are evolving, however, and modern retailing has made rapid inroads. For home and beauty products, we found that shoppers at all levels are more likely to buy at chain stores in malls. For mobile phones, channel loyalty is becoming no less important than brand loyalty as customers start to be comfortable with mall offerings and services. Here again, the evolution isn't uniform across cities; modern retailing, for example, is more common in Jakarta's city cluster than in Surabaya's. For now, companies will need to navigate each of these systems. One large consumer-goods company maximizes its footprint by selling across both channels and educates mom-and-pop proprietors with programs in areas such as cash management.

Going digital

Digital technology will play a greater role in reaching Indonesia's diverse and dispersed consumers. Today, product information flows primarily from TV advertising and personal recommendations. Many fewer consumers use the Web for pre-purchase decisions—5 percent in Indonesia versus 28 percent

in China. However, Internet access is rising at an annual rate of 20 percent, and 100 million Indonesians will be connected to it by 2016. Already, 60 percent of Indonesian adults own a mobile phone, Facebook usage is strong, higher-income Indonesians are flocking to the Web before buying autos, Web-based shopping forums are proliferating, and e-commerce is taking hold. One major commercial bank reports a 300 percent increase in online transactions over the past year.



By embracing the nation's complexity and diversity, global companies can position themselves ahead of Indonesia's rising consumer wave. ○

¹ We define "consuming classes" as people with an annual net income of \$3,600 (2005) or above in terms of purchasing-power parity. For a more extensive discussion of Indonesia's economy, see the full McKinsey Global Institute report, *The archipelago economy: Unleashing Indonesia's potential* (September 2012), on mckinsey.com.

² For the full range of survey results and analysis, see *The new Indonesian consumer* (December 2012), on McKinsey's Consumer & Shopper Insights Web site, csi.mckinsey.com.

³ In our survey, 47 percent of Indonesians, 42 percent of Chinese, and 32 percent of Taiwanese agreed that "well-known brands are of better quality."

The authors would like to acknowledge Ajay Sohoni's contribution to the development of this article.

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Focus on emerging-market consumers

Betting on Africa's potential

Damian Hattingh, Bill Russo, and Ade Sun-Basorun

To target Africa's new class of consumer, a wide-angle lens won't do.

For global consumer companies, Africa beckons. We estimate that \$410 billion in annual consumer revenues will develop between now and 2020—and private consumption is already higher than it is in India or Russia. Africa's GDP growth now trails only emerging Asia and matches that of the Middle East; more than half of all African households will have disposable income by 2020; and the greatest population growth is among people of working age, who have a propensity to spend. Not surprisingly, the vast majority—84 percent—of Africans say they are optimistic about the future.

Multinationals are starting to place bets on this potential. But most have only begun to explore in depth what it will take to increase their investments and how to adapt their brand, marketing, and distribution strategies. A continent-wide lens will miss many of the opportunities and challenges in a region with 54 countries and more than 2,000 dialects. To provide a portrait of a consumer market in transition, we surveyed 13,000 Africans across

several product areas and ten nations, focusing on the largest cities.

Cities in the forefront

Forty percent of Africa's consumers live in urban areas, and the continent's top 50 cities will account for nearly 40 percent of GDP growth in the next decade. Megacities such as Cairo and Johannesburg are clearly important, but just behind are 156 "middleweight" cities—for instance, Abidjan, Khartoum, and Rabat—where half of the urban GDP growth will occur and competitors are less entrenched.

Incomes are higher in Africa's cities—80 percent higher than the national averages—reflecting higher urban productivity. Some 40 percent of new consumer spending will come from households with incomes of more than \$20,000 (only 1 to 2 percent of today's population) and an additional 40 percent from consumers

earning more than \$5,000 (Exhibit 1). For these relatively affluent income classes, total consumption is growing two to three times faster than it is among people with lower incomes.

Urban income dynamics will play a crucial role in market-growth patterns. Consider baby food, which like many products follows a familiar S-curve growth pattern, with sales taking off when markets hit consumption per capita of \$2,700. Cities such as Nairobi, which has reached an income of \$2,800 per capita, are prime opportunities. In urban markets below that growth threshold, companies can prepare consumers by mounting

educational programs that build knowledge of consumption categories.

New marketing venues

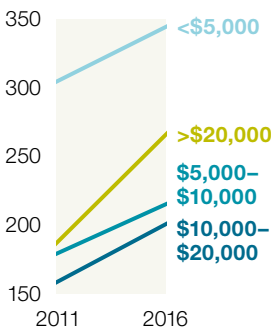
Although incomes are rising and Africans are becoming attached to brands—58 percent say they are loyal to particular brands in any given category—a wide range of products remain unfamiliar. The “consideration” stage of the consumer decision journey is therefore critical, and word of mouth serves as an enormously powerful path to product knowledge. Depending on the region, between 50 and 81 percent of respondents say

Exhibit 1

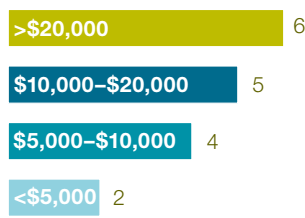
Although low-income consumers account for the bulk of consumption in Africa, high-income consumers will drive its growth.

By income bracket

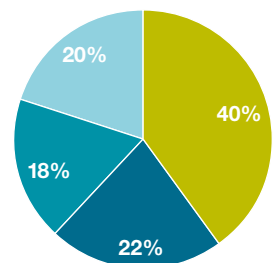
Total consumption, 2011–16, \$ billion¹



Compound annual growth rate, 2000–16, %



Share of total growth, 2011–16
100% = \$205 billion



¹Adjusted for inflation.

Source: Canback Global Income Distribution Database (C-GIDD); McKinsey Global Institute; McKinsey analysis

they gather product information from family and friends.

With 56 percent of urban consumers boasting mobile Internet access and 52 percent accessing the Internet at least once a month (a percentage in line with that of urban China and almost double that of India), digital word of mouth on social media is exploding (Exhibit 2). A wide range of companies are testing these channels to observe what consumers are saying about products. Telecommunications providers,

meanwhile, are offering text-messaging services to companies that wish to target consumers who use mobile devices. Other companies are following traditional routes, building brand awareness with in-store product demonstrations and trials.

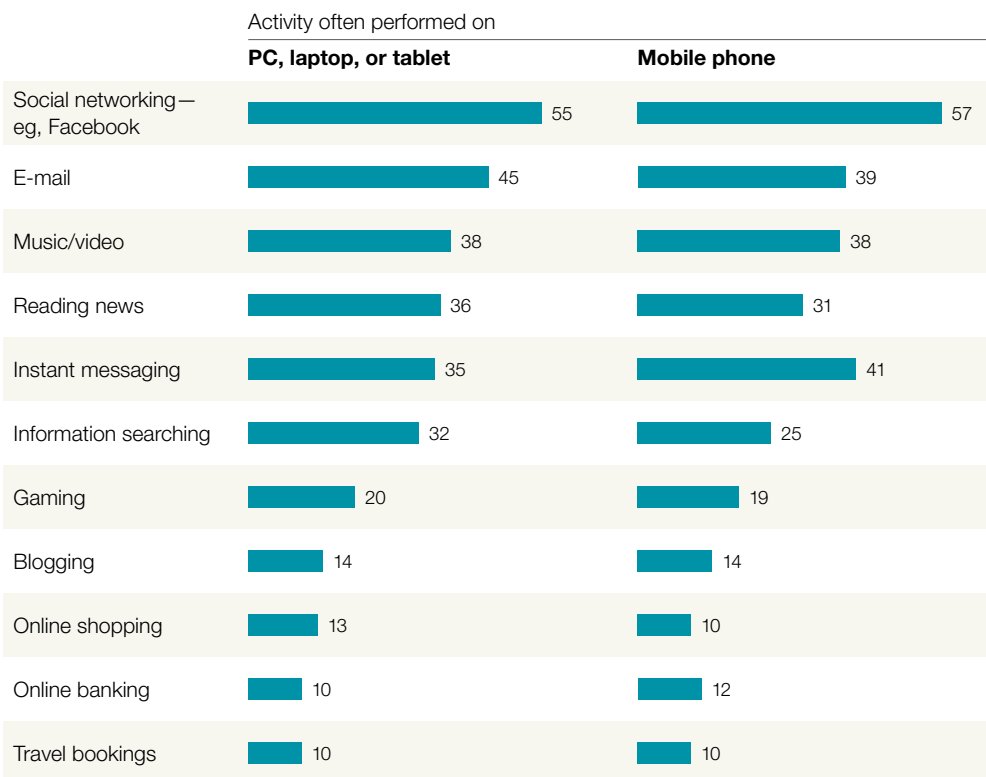
Old and new routes to market

Africa's retail market remains relatively informal and fragmented. The top six apparel retailers, for example, hold a

Exhibit 2

In Africa, social networking is the leading use of the Internet, with more than 55% of users viewing such sites frequently.

% of Internet users



market share of only 4 percent in Egypt and only 2 percent in Nigeria. Modern retailing begins to expand when GDP per capita hits \$750 and takes off at around \$3,000. With incomes rising, change is in the air: chain retailer Shoprite has operations in 16 countries, Massmart (owned by Wal-Mart Stores) in 12.

In the near term, third-party distributors provide the most reliable way to improve market reach. Companies generally still outsource most distribution tasks, paying a penalty in limited customer relationships, poor visibility into buying behavior, and loose controls on operations such as merchandizing. One consumer company has tested a hybrid model, managing accounts directly while outsourcing delivery. Companies can improve by becoming more strategic—selecting distributors that offer both scale and efficiency

(segmenting them to manage the important ones more closely) and instituting performance pay for distributors.



Global consumer companies have approached Africa cautiously. With strong growth likely, targeted investments informed by an ample knowledge of the local context will be the surest path forward. ○

The authors would like to acknowledge the contribution of Arend Van Wamelen to the development of this article.

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For more on these findings, download the McKinsey Global Institute report, *The rise of the African consumer*, on mckinsey.com.

Industry dynamics

Retail economics in the era of one-day delivery

Nitin Chaturvedi, Mirko Martich, and Brian Ruwadi

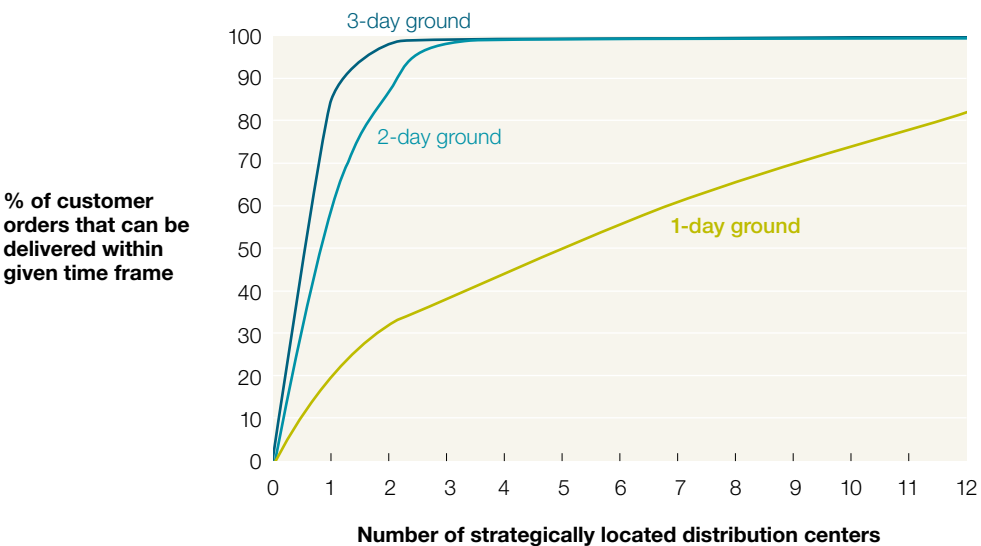
In the 15 years since Amazon.com's initial public offering, the expectations and behavior of consumers have changed profoundly. Many of them expect to be able to buy just about anything online and to get it overnight. Distribution economics make the latter expectation a significant challenge for many US retailers: one-day delivery requires more than a dozen strategically located distribution centers that can fulfill online orders, versus just two or three for two-day service (exhibit).

Subscale retailers do have options. For some, third-party fulfillment relationships are becoming critical—these providers not only bring the required network and

distribution capabilities but can also help manage the product proliferation that is a natural consequence of rapid online growth. Other retailers, integrating existing brick-and-mortar locations to fulfill online orders, are using stores for pickup and delivery or converting underperforming stores into mini-distribution centers. Meanwhile, these retailers are enhancing the way they share information and integrate inventory across the full network of stores and distribution centers. ○

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To offer one-day shipping to all US customers, a retailer would need more than a dozen strategically located distribution centers.



Industry dynamics

How big data is shaping US health care

Basel Kayyali, David Knott, and Steve Van Kuiken

To understand the potential of “big data,” look no further than the US health-care sector. Information silos between payers and providers are crumbling, enabling the powerful integration of digitized public historical and real-time data. We recently glimpsed the future when we integrated two unique data sets: a sample of software applications submitted to the federal government’s Health Data Initiative Forum in 2010 and 2011 and the roster of software applications with venture-capital backing of at least \$2 million in 2011 or 2012. About 40 percent of those data applications were aimed at direct health interventions or predictive capabilities. That’s a powerful new frontier for health-data applications, which historically focused more

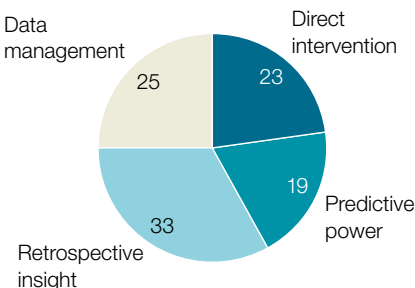
on data management and retrospective insights (exhibit).

If early successes are brought to scale, we estimate that big-data applications could eventually strip more than \$300 billion in costs from the nation’s health-care system and improve transparency to drive better patient outcomes. Such applications might help avoid costly readmissions, enhance the understanding of chronic diseases, and ensure that patients are treated in the care setting that best meets their needs. ○

Basel Kayyali is a principal in McKinsey’s New Jersey office, where **Steve Van Kuiken** is a director; **David Knott** is a director in the New York office.

Many innovative US health-care data applications move beyond retroactive reporting to interventions and predictive capabilities.

US health-care data apps from top innovators,¹ by type of data/analytic capability, 2010–12, % 100% = 132



The apps analyzed cut across all of the US health-care system’s **data-related value at stake**, estimated at **>\$300 billion**.²

Many use proprietary data generated through technologies such as GPS-enabled devices and mobile apps that capture daily activity or patient-reported outcomes.

¹ Drawn from top 100 submissions to Health Data Initiative Forum, 2010–11, and health technology companies receiving \$2 million or more in venture-capital funding, 2011–12; excludes ideas that did not involve big data.

² See *Big data: The next frontier for innovation, competition, and productivity*, McKinsey Global Institute (May 2011), on mckinsey.com. Source: 2010–11 submissions to Health Data Initiative Forum; Rock Health; Standard & Poor’s Capital IQ; McKinsey analysis

Industry dynamics

A new trend line for global banking

Miklos Dietz, Philipp Härle, and Tamas Nagy

After climbing for 30 years, the share of economic activity attributable to bank revenues¹ fell in the wake of the global financial crisis. Looking forward, revenues could flatline at about 5 percent of GDP through 2020 (exhibit). In fact, that's our base scenario for the global banking industry—one that implies growth at the same rate as nominal GDP, following the pattern of other industries.

In developed markets, factors contributing to this trajectory include deleveraging and stiffer regulatory regimes that will require higher bank-capital ratios. In many emerging markets, banking penetration is relatively low (less than 4 percent in India, Mexico, Nigeria, and Russia, for example). In others, it is falling—in China, from 6.2 percent to 5.3 percent, we estimate, mostly as a result of credit liberalization, which will go on dampening margins. These forces are unlikely to be counterbalanced by

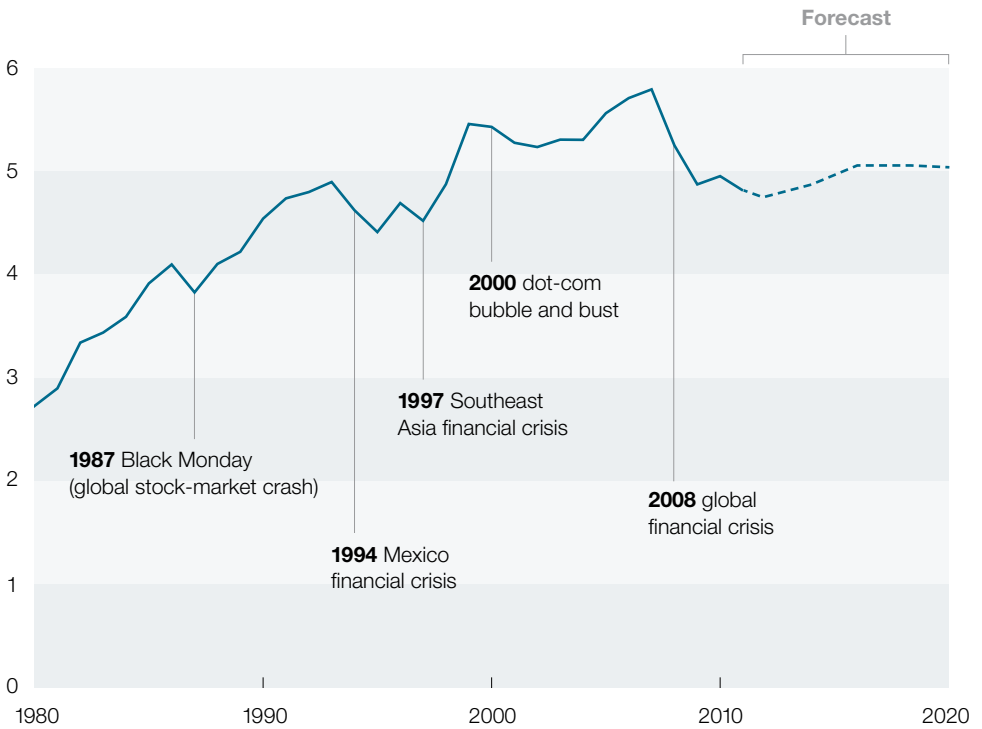
the positive impact of outliers such as Brazil (where banking penetration is more than 10 percent), global infrastructure-spending growth, or the emergence of a new class of borrower in developing nations. If interest rates in developed markets rose faster than anticipated, or if an unexpected burst of product and service innovation took hold, though, the industry's growth could become stronger. ○

¹ Bank revenues, as we use the term, refers to total bank-sector revenue pools (after risk costs). This includes all of a given country's or region's customer-driven revenues—for instance, those from all loans extended, deposits raised, trading conducted, and payments or assets managed. For a more complete discussion of this research, see *The triple transformation: Achieving a sustainable business model*, mckinsey.com, October 2012.

Miklos Dietz is a principal in McKinsey's Budapest office, where **Tamas Nagy** is a consultant; **Philipp Härle** is a director in the London office.

Banking's growth as a share of global economic activity may be leveling off.

Size of global banking revenues (after cost of risk) as % of nominal GDP



Source: Organisation for Economic Co-operation and Development (OECD); McKinsey analysis

Infrastructure: Too important for business leaders to ignore

Richard Dobbs, Jan Mischke, and Herbert Pohl

Infrastructure spending could be much more productive, boosting global growth and business efficiency. Corporate leaders should be agitating for change.

Every business leader has a stake in the infrastructure sector. Each executive who passes through an airport or takes a train feels the impact of the sector's efficiency—or deficiency. All companies that ship goods or communicate with clients and customers have an interest in the state of the physical and digital infrastructure that surrounds them. Consumers feel the pain when prices for imported goods increase as a result of bad infrastructure, and exporters suffer as their business opportunities become limited. Good infrastructure drives the productivity of companies; bad infrastructure holds them back.

The business leader who worries about government debt or exchange rates or the viability of the pension system or whether schools and universities are turning out enough skilled people should be similarly concerned about the state of the world's infrastructure. The challenges are huge. Take the poor state of roads in many countries as just one example. In the United States, road con-

gestion is costing the economy an estimated \$121 billion a year.¹ The economy of India loses up to \$7 billion a year as a result of its roads' poor quality.

Simply to keep pace with anticipated global GDP growth, \$57 trillion must be spent on infrastructure over the next 18 years. That's more than the entire worldwide stock of infrastructure on the ground today—and nearly 60 percent more than has been invested around the world over the past 18 years. Tackling maintenance backlogs, future-proofing infrastructure to cope with a potentially changing climate, and meeting development goals such as all-weather roads for transporting goods to market and access to clean water would cost a great deal more.²

This huge bill looks prohibitive at a time when many governments are highly indebted and capital is tight. Most discussion is focused on the funding of infrastructure. That debate is necessary but not sufficient. What's also needed

is a dialogue about the way infrastructure is planned, built, and operated—in short, its productivity.

Many examples of best practice around the world could help countries get more infrastructure for less. Insights from over 400 studies show that there is scope to boost infrastructure’s productivity and realize savings of 40 percent on the global infrastructure bill, or \$1 trillion a year (exhibit). There are three major ways to reap these large cost savings: making better choices about projects to invest in, streamlining their delivery, and

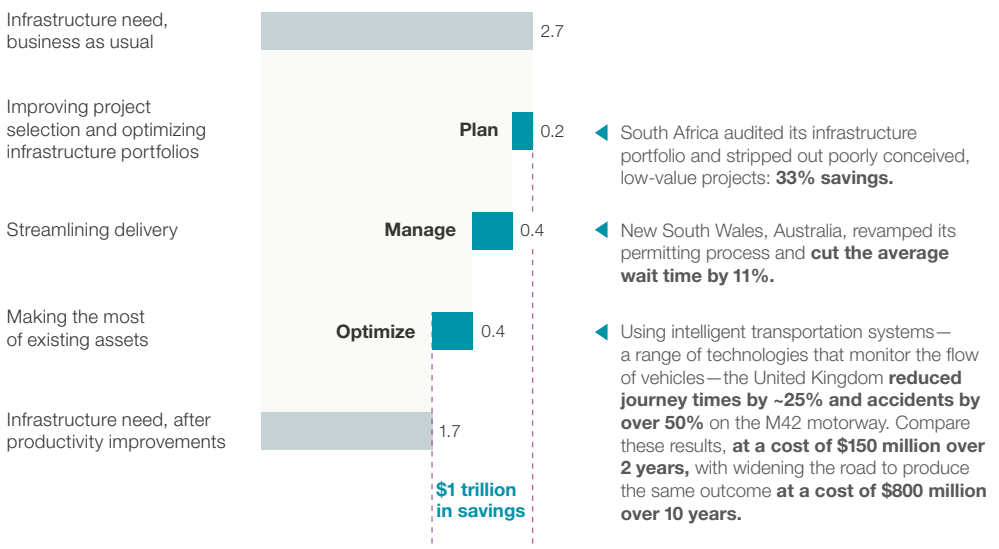
making the most of infrastructure that’s already in place.

Better choices could save \$200 billion a year worldwide. Governments and other stakeholders need to ensure that any proposed project is linked to their economic- and social-development objectives instead of building infrastructure for its own sake. They must also develop their ability to evaluate costs and benefits and to prioritize projects systematically. South Korea’s Public and Private Infrastructure Investment Management Center cut the nation’s

Exhibit

Raising infrastructure productivity, which is already under way in some countries, could eliminate the need for more than a third of the world’s infrastructure spending between now and 2030.

Global infrastructure investment, projected yearly average, 2013–30, \$ trillion



Source: McKinsey Global Institute analysis

infrastructure bill by \$60 billion (1 percent of GDP) between 1999 and 2006 as a result of rejecting almost half of the projects it reviews, compared with only 3 percent in previous years.

Streamlining delivery could save up to \$400 billion a year and accelerate the completion of projects. There is a huge opportunity to speed up approvals and land acquisitions, to structure contracts so that they encourage innovation and cost savings, and to strengthen collaboration with contractors. In Australia, for instance, the state of New South Wales cut approval times by 11 percent in just one year.

Finally, instead of rushing to build new capacity, we can make more of what's already there. This, too, could save \$400 billion a year. Intelligent transportation systems that manage road congestion and demand can double or triple an asset's use—typically at a fraction of the cost of adding the equivalent physical capacity (though politicians will sometimes have to persuade voters of the benefits). Smart grids, for instance, could help the United States avoid \$2 billion to \$6 billion a year in power-infrastructure costs and also reduce the likelihood of outages that cost the economy tens of billions of dollars for each event.

Bringing these opportunities to life will require a radical overhaul of the fragmented way the infrastructure sector works—a root cause of its poor

productivity. Mistrust, which tends to center on the issues of financing and construction, hampers some discussions about collaboration between the public and private sectors in the infrastructure sphere. A more productive sector will emerge in the future if its stakeholders accept much broader public-private collaboration that embraces all aspects of the challenge, including planning and delivery. This isn't a pipedream: Chile, the Philippines, South Korea, and Taiwan are developing frameworks that give private players a greater role in planning projects and portfolios. A growing number of unsolicited proposals by private contractors to governments may improve the efficiency of many projects.

Beyond the immediate and direct actions required of public-sector stakeholders and engineering and construction companies, investors can exercise pressure to boost the efficiency and quality of the planning, tendering, and contracting structures of infrastructure projects and of the way they are managed. The reward will be a longer pipeline of bankable and less risky projects. And it's in the interest of all businesses—even those outside the infrastructure sector—to engage proactively with governments so that infrastructure productivity rises. Business leaders of all stripes should be agitating for action in three areas:

- Engage in a broad stakeholder dialogue about the planning of infrastructure projects and hold

governments accountable for their objectives, outcomes, and costs—not just access and availability.

- Vigorously make the case against subsidies—in particular, those for water and energy. Consumers and businesses now relying on them can be supported in more economically efficient ways, and eliminating them won't tilt the competitive field against any particular player, because this move would affect all businesses equally. Removing subsidies clarifies the business case for infrastructure-efficiency measures.
- Support the levying of additional user fees, already used by ports and airports, in road and rail transportation. Such fees can support dramatic productivity improvements. Suitable pricing can not only help finance important maintenance and capacity-extension work but also serves as an important signal of what businesses and consumers are willing to pay for the infrastructure they use.

The opportunity to be smarter about every aspect of infrastructure is huge. The potential savings and the magnitude of the resulting growth dividend make this an issue global business leaders can no longer afford to ignore. ○

¹ David Schrank, Bill Eisele, and Tim Lomax, *2012 Urban Mobility Report*, Texas A&M Transportation Institute, December 2012.

² For more on this research, read the full McKinsey Global Institute report, *Infrastructure productivity: How to save \$1 trillion a year* (January 2013), on mckinsey.com.

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The coming era of 'on-demand' marketing

Peter Dahlström and David Edelman

Emerging technologies are poised to personalize the consumer experience radically—in real time and almost everywhere. It's not too early to prepare.

Digital marketing is about to enter more challenging territory. Building on the vast increase in consumer power brought on by the digital age, marketing is headed toward being on demand—not just always “on,” but also always relevant, responsive to the consumer's desire for marketing that cuts through the noise with pinpoint delivery.

What's fueling on-demand marketing is the continued, symbiotic evolution of technology and consumer expectations. Already, search technologies have made product information ubiquitous; social media encourages consumers to share, compare, and rate experiences; and mobile devices add a “wherever” dimension to the digital environment. Executives encounter this empowerment daily when, for example, cable customers push for video programming on any device at any time or travelers expect a few taps on a smartphone app to deliver a full complement of airline services.

Remarkably, all this is starting to seem common and routine. Most leading marketers know how to think through customer-search needs, and optimizing search positioning has become one of the biggest media outlays. Companies have ramped up their publishing and monitoring activities on social channels, hoping to create positive media experiences customers will share. They are even “engineering” advocacy by creating easy, automatic ways for consumers to post favorable reviews or to describe their engagement with brands.

But we’re just getting started. The developments pushing marketing experiences even further include the growth of mobile connectivity, better-designed online spaces created with the powerful new HTML5 Web language, the activation of the Internet of Things in many devices through inexpensive communications tags and microtransmitters,¹ and advances in handling “big data.” Consumers may soon be able to search by image, voice, and gesture; automatically participate with others by taking pictures or making transactions; and discover new opportunities with devices that augment reality in their field of vision (think Google glasses).

As these digital capabilities multiply, consumer demands will rise in four areas:

1. **Now:** Consumers will want to interact anywhere at any time.
2. **Can I:** They will want to do truly new things as disparate kinds of information (from financial accounts to data on physical activity) are deployed more effectively in ways that create value for them.
3. **For me:** They will expect all data stored about them to be targeted precisely to their needs or used to personalize what they experience.
4. **Simply:** They will expect all interactions to be easy.

This article seeks to paint a picture of this new world and its implications for leaders across the enterprise. One thing is clear: the consumer’s experiences with brands and categories are set to become even more intense and defining. That matters

¹ For more, see Michael Chui, Markus Löffler, and Roger Roberts, “The Internet of Things,” mckinseyquarterly.com, March 2010.

profoundly because such experiences drive two-thirds of the decisions customers make, according to research by our colleagues; prices often drive the rest.²

It's also apparent that each company as a whole must mobilize to deliver high-quality experiences across sales, service, product use, and marketing. Few companies can execute at this level today.³ As interactions multiply, companies will want to use techniques such as design thinking to shape consumer experiences.⁴ They also will need to be familiar with emerging tools for gathering the right data across the consumer decision journey. Finally, the marketing organization's structure will need to be rethought as collaboration across functions and businesses becomes ever more essential.

What to expect in 2020

Over the next several years, we're likely to see the consumer experience radically integrated across the physical and virtual environment. Most of the technologies needed to make this scenario happen are available now. One that's gaining particular traction is near-field communication (NFC): embedded chips in phones exchange data on contact with objects that have NFC tags. The price of such tags is already as low as 15 cents, and new research could make them even cheaper, so more companies could build them into almost any device, generating a massive expansion of new interactive experiences. To understand that near future, please turn the page and follow a hypothetical, tech-enabled consumer, Diane, who purchases an audio headset.

Meet tomorrow's consumer: Diane. 

² See David Court, Dave Elzinga, Susan Mulder, and Ole Jørgen Vetvik, "The consumer decision journey," mckinseyquarterly.com, June 2009. The research identified the ways individuals interact with a brand as they embark on consumer decision journeys across multiple touch points: considering, evaluating, purchasing, experiencing, sharing, and, ultimately, bonding with products after buying them. It also quantified the impact of those touch points on consumer decisions.

³ See Tom French, Laura LaBerge, and Paul Magill, "We're all marketers now," mckinseyquarterly.com, July 2011.

⁴ For more on design thinking, see Lenny Mendonca and Hayagreeva Rao, "Lessons from innovation's front lines: An interview with IDEO's CEO," mckinseyquarterly.com, November 2008.

Scenes from the future of on-demand marketing

Scene 1

Curious about her friend's headset, Diane taps it with her phone. Both have near-field-communication (NFC) capabilities.



Scene 2

Diane's phone prompts her to photograph her face and then displays how the headset would look on her in various colors.

Scene 3

She's then invited to send the photo to Facebook friends, who are asked to vote among a choice of colors that best suit Diane.

Scene 4

Meanwhile, she receives a text alert from Spotify offering a free month's subscription to its premium music service if she buys the headset (the manufacturer's data show she isn't a subscriber).

Scene 5

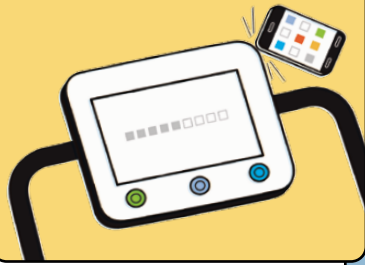


Friends like the headset in fuchsia, and Diane completes the purchase.

Diane's rising expectations will require companies to direct a variety of "scenes" in which technologies, messages, and choices engage her with products, services, and trusted communities.

Scene 10

At a gym a few weeks later, Diane gets an opportunity to buy and download an exercise program the gym offers. She can access the program by tapping her phone on a nearby display.



Scene 9

While Diane listens to songs, Spotify reminds her that the headset manufacturer has brought her this listening experience.

Scene 8



Every week, she gets a "club gig of the week" message offering discount access to a venue if she wears the headset when she walks in the door. A club video board welcomes her by name.

Scene 7

When she meets those friends in person, her cell phone reminds her of the NFC chip in the headset and offers her an additional free month of Spotify's service for each friend who taps and buys a headset.

Scene 6

When the headset is delivered the next day, a message asks if she would like to post a "wow" picture on Facebook of her wearing it, with a link for others to buy it as well.

Taken together, the scenes from Diane's consumer journey illustrate the four emerging areas of consumer demands we touched on above.

Now

Marketers have gotten a foretaste of the consumer's desire for more urgency and ubiquity. Bank balances running low? Send the consumer an alert on her cell phone. A question about fees shows up on the bank's Twitter handle? Post an immediate response. An executive of one major bank believes that the immediacy of smart-phone apps has already made brick-and-mortar contact unnecessary for many young consumers, who use a range of mobile services to manage their accounts and rarely interact with the brand physically. Yet having an entire bank in your phone may be only a baseline for the experiences on the horizon. Consider one European beverage company's beta test of beer coasters embedded with NFC technology. A club patron contemplating a new brew can tap a coaster with a cell phone and get a history of the beer, bars where it is served, upcoming promotions, and a list of friends who have given it a thumbs-up.

In this environment, a marketer's "publishing" extends to virtualized media such as the coaster or Diane's headphones, which become touch points for considering and evaluating products and services. Digital information technologies, operating behind the scenes to integrate data on all interactions a consumer has across the decision journey, will provide insights into the best influence pathways for companies, while also triggering new personalized experiences for consumers.

Can I

Most first-wave digital capabilities helped people access things they already did—shopping, banking, finding information. Consumers must often settle for compromises in their digital experiences. Yet robust programming, data-access, and interface possibilities now available could make every digital interaction an opportunity to deliver something exceptional.

Consider Commonwealth Bank of Australia's new smartphone app, which changes the house-hunting experience. A prospective home buyer begins by taking a picture of a house he or she likes.

Using image-recognition software and location-based technologies, the app identifies the house and provides the list price, taxes, and other information. It then connects with the buyer's personal financial data and (with further links to lender databases) determines whether the buyer can be preapproved for a mortgage (and, if so, in what amount). This nearly instantaneous series of interactions cuts through the hassle of searching real-estate agents' sites for houses and then connecting with the agents or with mortgage brokers for financing, which might take a week.

The mortgage app shows how the digital environment is now integrating disparate sources of information, at low cost and at scale, for many new domains. The challenge for companies is to look beyond today's interfaces and interactions and to see that moving past compromises will require a rethinking of aspects of packaging, pricing, delivery, and products.

For me

Some online marketers already use features in devices such as cameras and touch screens to help consumers see what apparel and accessories may actually look like when worn. Web retailer Warby Parker, for example, offers hundreds of customized views of eyeglasses overlaid on a Webcam picture of the consumer.

In the future, demands for more personalized experiences will intensify. A phone tap, a click, or a stylus jot will instantly personalize offers, using information captured on "likes," recent travel, income, what friends are doing or like, and much more. With each interaction, the consumer will be creating new data footprints and streams that complement existing digital portraits, sharpening their potential impact. Facebook will eventually be able to mine the world's largest database of photographs, linking individual people to their activities. Smartphones have rich data on every place where you have traveled with one in your pocket. This is just a start, and the privacy, security, and general trust implications are staggering. Yet consumers consistently show a desire to provide more data when companies use captured information to provide truly helpful feedback (you're over budget or you are doing well in your exercise program) or to offer recommendations, services, and customization tools rather than just push what might appear to be intrusive (and creepy) messaging.

Simply

The quest for simplicity led Amazon to create a subscriber model for delivering bulky repeat-buy items (such as diapers) and Starbucks to adopt a tap-and-go approach to mobile payments. Yet many interactions remain complex and fragmented: to name just a few, finding, organizing, and redeeming online coupons; turning weekly meal plans into online delivery orders; tracking your monthly cash flow; and staying on top of your health-insurance bills and reimbursements.

Evolving technologies and consumer behavior should make it easier to redesign many complex experiences. For example, companies offering inherently complicated products or services could overlay a game interface on certain Web pages, to let consumers play at trading off different options and prices. Visual-recognition technology could allow you to scan health-care bills, receipts, statements, and appointments into one integrated calendar and cash-management system. Already, start-ups in travel, expense, and sales-force management are experimenting with approaches that streamline processes and make interactions more inviting—using touch and swipe to make changes, gestures to activate large displays, and data in phones to recognize consumers and automatically customize interfaces.



Setting strategies and building capabilities

Consumers will soon make these demands of every interaction they have with companies. Although the marketing function may often be the best conduit to get customer input and to drive decisions about how to distinguish brands, coordinated efforts across the enterprise will be needed on three levels.

Designing interactions across the consumer decision journey

Today, many companies have successfully defined and addressed customer interactions across a few channels. What they need to be designing, however, is the entire story of how individuals encounter a brand and the steps they take to evaluate, purchase, and relate to it across the decision journey. Marketing or customer research can't do this alone. At one apparel retailer, managers from multiple functions go together into the field to do deep ethnographic research—watching how customers shop, going into their homes, and uncovering the triggers and motivations that drive behavior. These managers look for the compromises that people face as they try to get things done, probing for their higher aspirations. And the managers watch how customers react as they interact with brands.

Among the findings, the managers identified seven key “use cases”—customer situations that lead to satisfaction along different decision journeys. They found a wide range of trigger points for choosing an “outfit solution” for a social occasion, learning that shoppers became frustrated, especially online, when they couldn't see how items would look together. Customers wanted to drag and drop items on an on-screen model or to see great combinations in advance. But that required different merchants to work collectively and the stores to bring items together on sales floors.

Cross-functional teams also came together in workshops. With third parties such as fashion bloggers and thought leaders from online-media companies, they mapped out new ways to influence the decision journeys of customers with different attitudes toward the retailer's brand or different kinds of spending behavior. One of the most valuable outcomes was clarity on how the store's brand positioning could guide the design of new experiences. The teams knew that their story would always be “better value than the shopper expected, delivered

in a friendly way.” That meant warm visuals and messaging on the company’s Web site and across various media to reinforce the story of value to the customer. And the teams explored new ways social media could help customers show off the value they received.

Out of the work came not only a shared, company-wide sense of the decision journeys of consumers but also immediate buy-in to a wide range of initiatives that could boost market share. These initiatives are on track to provide an 8 percent sales lift above what the existing plan envisioned and were implemented more quickly because of the management team’s shared sense of engagement.

Making data and discovery a nonstop cycle

To win over on-demand customers, you must know them, what they expect, and what works with them, and then have the ability to reach them with the right kind of interaction. Data lie at the heart of efforts to build that understanding—data to define and contextualize trends, data to measure the effectiveness of activities and investments at key points in the consumer decision journey, and data to understand how and why individuals move along those journeys. To realize that potential, companies need three distinct data lenses.

Telescope. A clear view of the broad trends in your market, category, and brand is essential. Digital sources that track what people are looking for (search), what people are saying (social monitoring), and what people are doing (tracking online, mobile, and in-store activities) represent rivers of input providing constant warning signs of trouble or signals of latent opportunity. Many companies are drowning in reports from vendors providing these types of information tools, yet few have much clarity on which things they need to look for and who needs to know what.

One packaged-goods company got a jump on competitors when it saw a spike in online conversations about the lack of natural ingredients in shampoos and then recognized a corresponding rise in search inquiries on the subject. A new line of natural hair-care products, launched at record-breaking speed, has become a successful early mover in a growing segment. A telecommunications company has become similarly plugged in: it now has a war room to track every online comment anywhere. Besides being better able to address—in an open, friendly, and fast way—problems that could

escalate, it now has a great frontline source of line-outage signals that trigger repair crews and increases in call-center capacity.

Binoculars. Against this backdrop of market activity, few companies have a complete, integrated picture of where they spend their money, which interactions actually happen, and what their outcomes are. Most direct-sales companies (retailers, banks, travel services) measure the performance of their spending through isolated last-attribution analyses that look narrowly at what consumers do after confronting a search link, an e-mail, or an advertisement. Branded-goods companies try to throw all of their media spending together into an econometric model assessing the effects of their media mix. In the world of on-demand marketing, where multiple interactions take place along multiple journeys, last-action attribution explains only part of the impact of media spending, and media-mix models fail to account for touches and costs outside of paid channels.

What's next? Deploying tools that rapidly assemble databases of every customer contact with a brand, companies will need to push every customer-facing function to work together and form an integrated view of consumer decision journeys. With longitudinal pictures of customers' touches and their outcomes, companies can model total costs per action, find the most effective decision-journey patterns, and spot points of leakage. As more contacts become digitized—and they will—the data will gradually get easier to create. Getting a head start can help companies build ongoing test labs where they tune the ability to create and analyze the right data and immediately learn where to add investments. One bank has already realized millions of dollars in added value from the knowledge that weak points in the customer on-boarding process were undermining major marketing programs. Only when branches, call centers, and marketing worked together could the bank find the right fixes, improve customer satisfaction, and raise marketing's return on investment.

Microscope. Trust is essential, and personalization can show customers they matter. They expect a brand to be a good steward and user of data about them and, increasingly, have high expectations for what a brand should know. In the example described earlier, data about Diane powers the brand's ability to make it easy for her to

share photographs, to buy a headset, to set up and manage a free Spotify subscription, to receive information about a local event, to be recognized at it, and to get additional special offers. Information about Diane is the thread that keeps all of her brand interactions immediate (*now*), valuable (*can I*), relevant (*for me*), and easy (*simply*).

Yet given the laser focus on getting programs into the market to improve performance, few marketers (or even line executives) have stepped back and pulled their teams together to work through the scenarios and customer-data models they will now need to build. Even fewer have a strong sense of what the current plans of the company's IT department will deliver in which time frame. One company that addressed these issues has identified over 20 types of consumer decision journeys as archetypes of experiences it must support over the next three years. From those decision journeys, it has derived a core set of information capabilities it will need to build and is well down a tight road map of development that has already enabled it to launch products in breakthrough ways.

Delivering with new skills and processes

To deliver these new experiences, executive teams must rethink the role and structure of the marketing organization and how it engages with other functions. The changes are likely to cut deeply, transforming the way companies manage campaigns and communities, measure performance, provide customer support, and interact with outside agencies. It's still early days, but consider the breadth of recent efforts.

Raising a consumer-packaged-goods company's digital game. A European CPG company started by creating a digital-analytics group with worldwide operations. Rather than sprinkle digital experts across the globe, the company developed a unified structure with common standards for roles, common training, and digital career tracks to build an arsenal of future talent. The analytics team is part of a broader digital center of excellence that provides service support to the business units and drives major upgrades in IT capabilities. Defined commitments from managers in finance, legal, and HR help the center deal with challenges that arise as it seeks to offer customers a richer digital experience.

To deliver new experiences, executive teams must rethink the role and structure of the marketing organization and how it engages with other functions.

The company also reviewed all of its e-commerce trade accounts and decided that it needed a much more granular approach to serving customers. Says one executive, "It is not just an issue of managing our relationship with pure-play e-commerce sellers versus our traditional channels; it also is an issue of managing the online versus brick-and-mortar sides of the same traditional partner." A new e-commerce trade team with added digital-analytic support is helping both to enhance the online-merchandising mix and to improve the placement of the company's products in the search engines of e-commerce providers.

Finally, marketing leaders established a novel customer-relationship-management (CRM) team because they realized that the growth of the company's mobile services, coupon programs, sampling, and social communities was finally enabling it to gather huge amounts of direct data about how people interacted with its brands. (That information had previously been available only to retailers.) These structural and talent changes led the company to realize that it needed to reshuffle its agency relationships, replacing a single brand-and-ad agency with two agencies—one for brand programs, the other for digital and CRM direct marketing. The company also brought more media and digital analytics in-house.

Reorienting a bank. At one institution, a new understanding of emerging brand challenges led to a radical change in the status of the CMO. Marketing had earlier ranked low in this sales-driven organization, where the function's leaders focused mostly on corporate communications and brand campaigns. Now, a new CMO, much closer to her peers on the executive board, has been charged with directing the full consumer experience.

Each month, the bank's business-unit leaders gather to talk about their progress in improving different consumer decision journeys. As new products and campaigns are launched, these executives place a laminated card of such a journey at the center of a conference-room table. They discuss assumptions across the whole flow of the journey for different consumer segments and how various groups across functions should contribute to the campaign. Where should customer data be captured and reused later? How will the campaign flow from mass media to social media and to the bank's Web site? What is the follow-up experience once a customer sets up an account?

The bank has created a corporate center of excellence for digital marketing to give the strategy a forward tilt and to plan for needed capabilities. It has also appointed a new team of full-time executives who focus on mobile and social technologies—executives who have become evangelists, helping business units to raise their digital game along a range of consumer interactions. The first wave of fixes and new programs has already generated tens of millions of dollars in the first six months, and the bank expects these efforts to add more than \$100 million to its annual margins.



The forces enabling consumers to expect fulfillment on demand are unstoppable. Across the entire consumer decision journey, every touch is a brand experience, and those touches just keep multiplying in number. To mobilize for the on-demand challenges ahead, companies must:

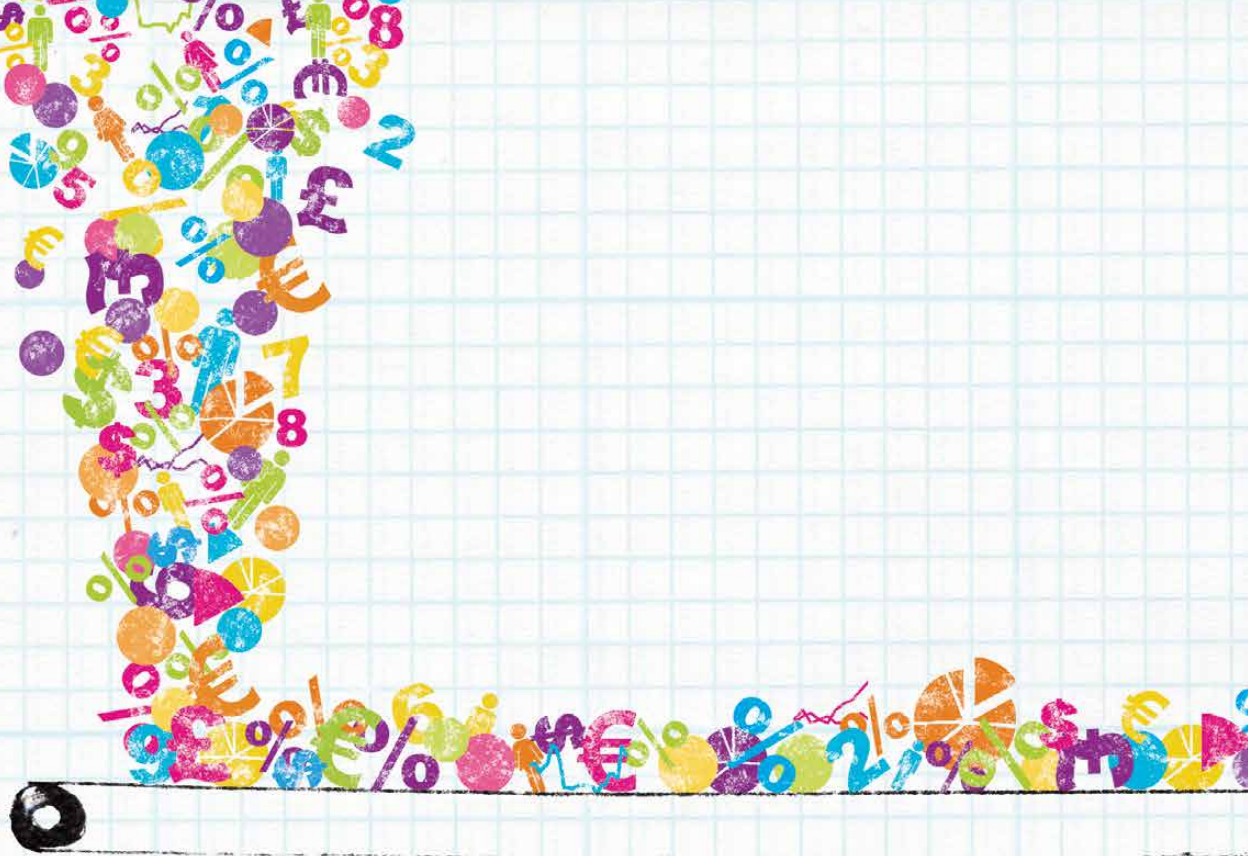
- bring managers together from across the business to understand consumers' decision journeys, to speculate about where they may lead, and to design experiences that will meet the consumer's demands (*Now, Can I, For me, and Simply*)
- align the executive team around an explicit end-to-end data strategy across trends, performance, and people

- challenge the delivery processes behind every touch point—are the processes making the best use of your data and interaction opportunities and are they appropriately tailored to the speed required and to expectations about your brand?

Executive recruiters tell us that corporate boards are looking for more people who can challenge and improve a company's approach to social media, big data, and the customer experience. Staying ahead of the design, data, and delivery requirements of on-demand customers is much more than a marketing issue—it will be a crucial basis for future competitive advantage. [o](#)

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Big data:

What's your plan?

Many companies don't have one. Here's how to get started.

**Stefan Biesdorf, David Court,
and Paul Willmott**



The problem

Technical and organizational challenges associated with “big data” and advanced analytics make it easy to pursue costly or ineffective solutions or to become paralyzed into inaction.

Why it matters

Exploiting data is an increasingly important source of advantage. Companies whose early efforts struggle risk getting lapped by competitors.

What to do about it

Craft a big-data plan. A successful one promotes strategic dialogue at the top of the company and helps to shape investment priorities and to establish trade-offs. Such plans rest on three elements:

- assembling and integrating extraordinary volumes of new data to mine fresh insights
- selecting advanced analytic models that optimize operations and predict the outcomes of business decisions
- creating intuitive tools that translate the output of models into tangible business actions and training key employees in the models’ use

The payoff from joining the big-data and advanced-analytics management revolution is no longer in doubt. The tally of successful case studies continues to build, reinforcing broader research suggesting that when companies inject data and analytics deep into their operations, they can deliver productivity and profit gains that are 5 to 6 percent higher than those of the competition.¹ The promised land of new data-driven businesses, greater transparency into how operations actually work, better predictions, and faster testing is alluring indeed.

But that doesn't make it any easier to get from here to there. The required investment, measured both in money and management commitment, can be large. CIOs stress the need to remake data architectures and applications totally. Outside vendors hawk the power of black-box models to crunch through unstructured data in search of cause-and-effect relationships. Business managers scratch their heads—while insisting that they must know, upfront, the payoff from the spending and from the potentially disruptive organizational changes.

The answer, simply put, is to develop a plan. Literally. It may sound obvious, but in our experience, the missing step for most companies is spending the time required to create a simple plan for how data, analytics, frontline tools, and people come together to create business value. The power of a plan is that it provides a common language allowing senior executives, technology professionals, data scientists, and managers to discuss where the greatest returns will come from and, more important, to select the two or three places to get started.

There's a compelling parallel here with the management history around strategic planning. Forty years ago, only a few companies developed well-thought-out strategic plans. Some of those pioneers achieved impressive results, and before long a wide range of organizations had harnessed the new planning tools and frameworks emerging at that time. Today, hardly any company sets off without some kind of strategic plan. We believe that most executives will soon see developing a data-and-analytics plan as the essential first step on their journey to harnessing big data.

¹See Dominic Barton and David Court, "Making advanced analytics work for you," *Harvard Business Review*, October 2012, Volume 90, Number 10, pp. 78–83.

The essence of a good strategic plan is that it highlights the critical decisions, or trade-offs, a company must make and defines the initiatives it must prioritize: for example, which businesses will get the most capital, whether to emphasize higher margins or faster growth, and which capabilities are needed to ensure strong performance. In these early days of big-data and analytics planning, companies should address analogous issues: choosing the internal and external data they will integrate; selecting, from a long list of potential analytic models and tools, the ones that will best support their business goals; and building the organizational capabilities needed to exploit this potential.

Successfully grappling with these planning trade-offs requires a cross-cutting strategic dialogue at the top of a company to establish investment priorities; to balance speed, cost, and acceptance; and to create the conditions for frontline engagement. A plan that addresses these critical issues is more likely to deliver tangible business results and can be a source of confidence for senior executives.

What's in a plan?

Any successful plan will focus on three core elements.

Data

A game plan for assembling and integrating data is essential. Companies are buried in information that's frequently siloed horizontally across business units or vertically by function. Critical data may reside in legacy IT systems that have taken hold in areas such as customer service, pricing, and supply chains. Complicating matters is a new twist: critical information often resides outside companies, in unstructured forms such as social-network conversations.

Making this information a useful and long-lived asset will often require a large investment in new data capabilities. Plans may highlight a need for the massive reorganization of data architectures over time: sifting through tangled repositories (separating transactions from analytical reports), creating unambiguous golden-source

data,² and implementing data-governance standards that systematically maintain accuracy. In the short term, a lighter solution may be possible for some companies: outsourcing the problem to data specialists who use cloud-based software to unify enough data to attack initial analytics opportunities.

Analytic models

Integrating data alone does not generate value. Advanced analytic models are needed to enable data-driven optimization (for example, of employee schedules or shipping networks) or predictions (for instance, about flight delays or what customers will want or do given their buying histories or Web-site behavior). A plan must identify where models will create additional business value, who will need to use them, and how to avoid inconsistencies and unnecessary proliferation as models are scaled up across the enterprise.

As with fresh data sources, companies eventually will want to link these models together to solve broader optimization problems across functions and business units. Indeed, the plan may require analytics “factories” to assemble a range of models from the growing list of variables and then to implement systems that keep track of both. And even though models can be dazzlingly robust, it’s important to resist the temptation of analytic perfection: too many variables will create complexity while making the models harder to apply and maintain.

Tools

The output of modeling may be strikingly rich, but it’s valuable only if managers and, in many cases, frontline employees understand and use it. Output that’s too complex can be overwhelming or even mistrusted. What’s needed are intuitive tools that integrate data into day-to-day processes and translate modeling outputs into tangible business actions: for instance, a clear interface for scheduling employees, fine-grained cross-selling suggestions for call-center agents, or a way for marketing managers to make real-time decisions on discounts. Many companies fail to complete this step in their thinking and planning—only to find that managers and operational employees do not use the new models, whose effectiveness predictably falls.

²The practice of storing a unit of information only once across an enterprise to ensure accuracy.

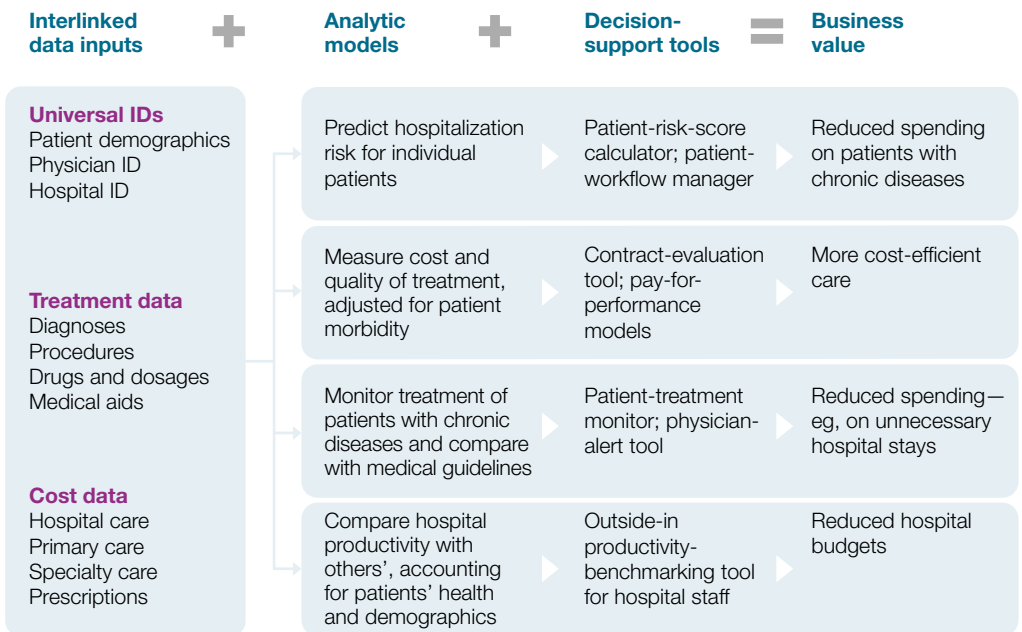
There's also a critical enabler needed to animate the push toward data, models, and tools: organizational capabilities. Much as some strategic plans fail to deliver because organizations lack the skills to implement them, so too big-data plans can disappoint when organizations lack the right people and capabilities. Companies need a road map for assembling a talent pool of the right size and mix. And the best plans will go further, outlining how the organization can nurture data scientists, analytic modelers, and frontline staff who will thrive (and strive for better business outcomes) in the new data- and tool-rich environment.

By assembling these building blocks, companies can formulate an integrated big-data plan similar to what's summarized in the exhibit. Of course, the details of plans—analytic approaches, decision-support tools, and sources of business value—will vary by industry. However, it's important to note an important structural similarity across industries: most companies will need to plan for major

Exhibit

A successful big-data plan will focus on three core elements.

Health-care industry, public-payer illustration



data-integration campaigns. The reason is that many of the highest-value models and tools (such as those shown on the right of the exhibit) increasingly will be built using an extraordinary range of data sources (such as all or most of those shown on the left). Typically, these sources will include internal data from customers (or patients), transactions, and operations, as well as external information from partners along the value chain and Web sites—plus, going forward, from sensors embedded in physical objects.

To build a model that optimizes treatment and hospitalization regimes, a company in the health-care industry might need to integrate a wide range of patient and demographic information, data on drug efficacy, input from medical devices, and cost data from hospitals. A transportation company might combine real-time pricing information, GPS and weather data, and measures of employee labor productivity to predict which shipping routes, vessels, and cargo mixes will yield the greatest returns.

Three key planning challenges

Every plan will need to address some common challenges. In our experience, they require attention from the senior corporate leadership and are likely to sound familiar: establishing investment priorities, balancing speed and cost, and ensuring acceptance by the front line. All of these are part and parcel of many strategic plans, too. But there are important differences in plans for big data and advanced analytics.

1. Matching investment priorities with business strategy

As companies develop their big-data plans, a common dilemma is how to integrate their “stovepipes” of data across, say, transactions, operations, and customer interactions. Integrating all of this information can provide powerful insights, but the cost of a new data architecture and of developing the many possible models and tools can be immense—and that calls for choices. Planners at one low-cost, high-volume retailer opted for models using store-sales data to predict inventory and labor costs to keep prices low. By contrast, a high-end,

high-service retailer selected models requiring bigger investments and aggregated customer data to expand loyalty programs, nudge customers to higher-margin products, and tailor services to them.

That, in a microcosm, is the investment-prioritization challenge: both approaches sound smart and were, in fact, well-suited to the business needs of the companies in question. It's easy to imagine these alternatives catching the eye of other retailers. In a world of scarce resources, how to choose between these (or other) possibilities?

There's no substitute for serious engagement by the senior team in establishing such priorities. At one consumer-goods company, the CIO has created heat maps of potential sources of value creation across a range of investments throughout the company's full business system—in big data, modeling, training, and more. The map gives senior leaders a solid fact base that informs debate and supports smart trade-offs. The result of these discussions isn't a full plan but is certainly a promising start on one.

Or consider how a large bank formed a team consisting of the CIO, the CMO, and business-unit heads to solve a marketing problem. Bankers were dissatisfied with the results of direct-marketing campaigns—costs were running high, and the uptake of the new offerings was disappointing. The heart of the problem, the bankers discovered, was a siloed marketing approach. Individual business units were sending multiple offers across the bank's entire base of customers, regardless of their financial profile or preferences. Those more likely to need investment services were getting offers on a range of deposit products, and vice versa.

The senior team decided that solving the problem would require pooling data in a cross-enterprise warehouse with data on income levels, product histories, risk profiles, and more. This central database allows the bank to optimize its marketing campaigns by targeting individuals with products and services they are more likely to want, thus raising the hit rate and profitability of the campaigns. A robust planning process often is needed to highlight investment opportunities like these and to stimulate the top-management engagement they deserve given their magnitude.

2. Balancing speed, cost, and acceptance

A natural impulse for executives who “own” a company’s data and analytics strategy is to shift rapidly into action mode. Once some investment priorities are established, it’s not hard to find software and analytics vendors who have developed applications and algorithmic models to address them. These packages (covering pricing, inventory management, labor scheduling, and more) can be cost-effective and easier and faster to install than internally built, tailored models. But they often lack the qualities of a killer app—one that’s built on real business cases and can energize managers. Sector- and company-specific business factors are powerful enablers (or enemies) of successful data efforts. That’s why it’s crucial to give planning a second dimension, which seeks to balance the need for affordability and speed with business realities (including easy-to-miss risks and organizational sensitivities).

To understand the costs of omitting this step, consider the experience of one bank trying to improve the performance of its small-business underwriting. Hoping to move quickly, the analytics group built a model on the fly, without a planning process involving the key stakeholders who fully understood the business forces at play. This model tested well on paper but didn’t work well in practice, and the company ran up losses using it. The leadership decided to start over, enlisting business-unit heads to help with the second effort. A revamped model, built on a more complete data set and with an architecture reflecting differences among various customer segments, had better predictive abilities and ultimately reduced the losses. The lesson: big-data planning is at least as much a management challenge as a technical one, and there’s no shortcut in the hard work of getting business players and data scientists together to figure things out.

At a shipping company, the critical question was how to balance potential gains from new data and analytic models against business risks. Senior managers were comfortable with existing operations-oriented models, but there was pushback when data strategists proposed a range of new models related to customer behavior, pricing, and scheduling. A particular concern was whether costly new data approaches would interrupt well-oiled scheduling operations. Data managers met these concerns by pursuing a prototype (which used a smaller data set and rudimentary spreadsheet analysis) in one

region. Sometimes, “walk before you can run” tactics like these are necessary to achieve the right balance, and they can be an explicit part of the plan.

At a health insurer, a key challenge was assuaging concerns among internal stakeholders. A black-box model designed to identify chronic-disease patients with an above-average risk of hospitalization was highly accurate when tested on historical data. However, the company's clinical directors questioned the ability of an opaque analytic model to select which patients should receive costly preventative-treatment regimes. In the end, the insurer opted for a simpler, more transparent data and analytic approach that improved on current practices but sacrificed some accuracy, with the likely result that a wider array of patients could qualify for treatment. Airing such tensions and trade-offs early in data planning can save time and avoid costly dead ends.

Finally, some planning efforts require balancing the desire to keep costs down (through uniformity) with the need for a mix of data and modeling approaches that reflect business realities. Consider retailing, where players have unique customer bases, ways of setting prices to optimize sales and margins, and daily sales patterns and inventory requirements. One retailer, for instance, has quickly and inexpensively put in place a standard next-product-to-buy model³ for its Web site. But to develop a more sophisticated model to predict regional and seasonal buying patterns and optimize supply-chain operations, the retailer has had to gather unstructured consumer data from social media, to choose among internal-operations data, and to customize prediction algorithms by product and store concept. A balanced big-data plan embraces the need for such mixed approaches.

3. Ensuring a focus on frontline engagement and capabilities

Even after making a considerable investment in a new pricing tool, one airline found that the productivity of its revenue-management analysts was still below expectations. The problem? The tool was too complex to be useful. A different problem arose at a health insurer:

³A model, based on algorithms that analyze a customer's purchase history, to predict the next product or service the customer is likely to buy. It then makes a specific recommendation.

doctors rejected a Web application designed to nudge them toward more cost-effective treatments. The doctors said they would use it only if it offered, for certain illnesses, treatment options they considered important for maintaining the trust of patients.

Problems like these arise when companies neglect a third element of big-data planning: engaging the organization. As we said when describing the basic elements of a big-data plan, the process starts with the creation of analytic models that frontline managers can understand. The models should be linked to easy-to-use decision-support tools—call them killer tools—and to processes that let managers apply their own experience and judgment to the outputs of models. While a few analytic approaches (such as basic sales forecasting) are automatic and require limited frontline engagement, the lion's share will fail without strong managerial support.

The aforementioned airline redesigned the software interface of its pricing tool to include only 10 to 15 rule-driven archetypes covering the competitive and capacity-utilization situations on major routes. Similarly, at a retailer, a red flag alerts merchandise buyers when a competitor's Internet site prices goods below the retailer's levels and allows the buyers to decide on a response. At another retailer, managers now have tablet displays predicting the number of store clerks needed each hour of the day given historical sales data, the weather outlook, and planned special promotions.

But planning for the creation of such worker-friendly tools is just the beginning. It's also important to focus on the new organizational skills needed for effective implementation. Far too many companies believe that 95 percent of their data and analytics investments should be in data and modeling. But unless they develop the skills and training of frontline managers, many of whom don't have strong analytics backgrounds, those investments won't deliver. A good rule of thumb for planning purposes is a 50–50 ratio of data and modeling to training.

Part of that investment may go toward installing “bimodal” managers who both understand the business well and have a sufficient knowledge of how to use data and tools to make better, more analytics-infused decisions. Where this skill set exists, managers will of course want to draw on it. Companies may also have to create incentives

that pull key business players with analytic strengths into data-leadership roles and then encourage the cross-pollination of ideas among departments. One parcel-freight company found pockets of analytical talent trapped in siloed units and united these employees in a centralized hub that contracts out its services across the organization.



When a plan is in place, execution becomes easier: integrating data, initiating pilot projects, and creating new tools and training efforts occur in the context of a clear vision for driving business value—a vision that's unlikely to run into funding problems or organizational opposition. Over time, of course, the initial plan will get adjusted. Indeed, one key benefit of big data and analytics is that you can learn things about your business that you simply could not see before.

Here, too, there may be a parallel with strategic planning, which over time has morphed in many organizations from a formal, annual, “by the book” process into a more dynamic one that takes place continually and involves a broader set of constituents.⁴ Data and analytics plans are also too important to be left on a shelf. But that's tomorrow's problem; right now, such plans aren't even being created. The sooner executives change that, the more likely they are to make data a real source of competitive advantage for their organizations. ○

⁴See Sven Smit, Lowell Bryan, and Chris Bradley, “Managing the strategy journey,” mckinseyquarterly.com, July 2012.

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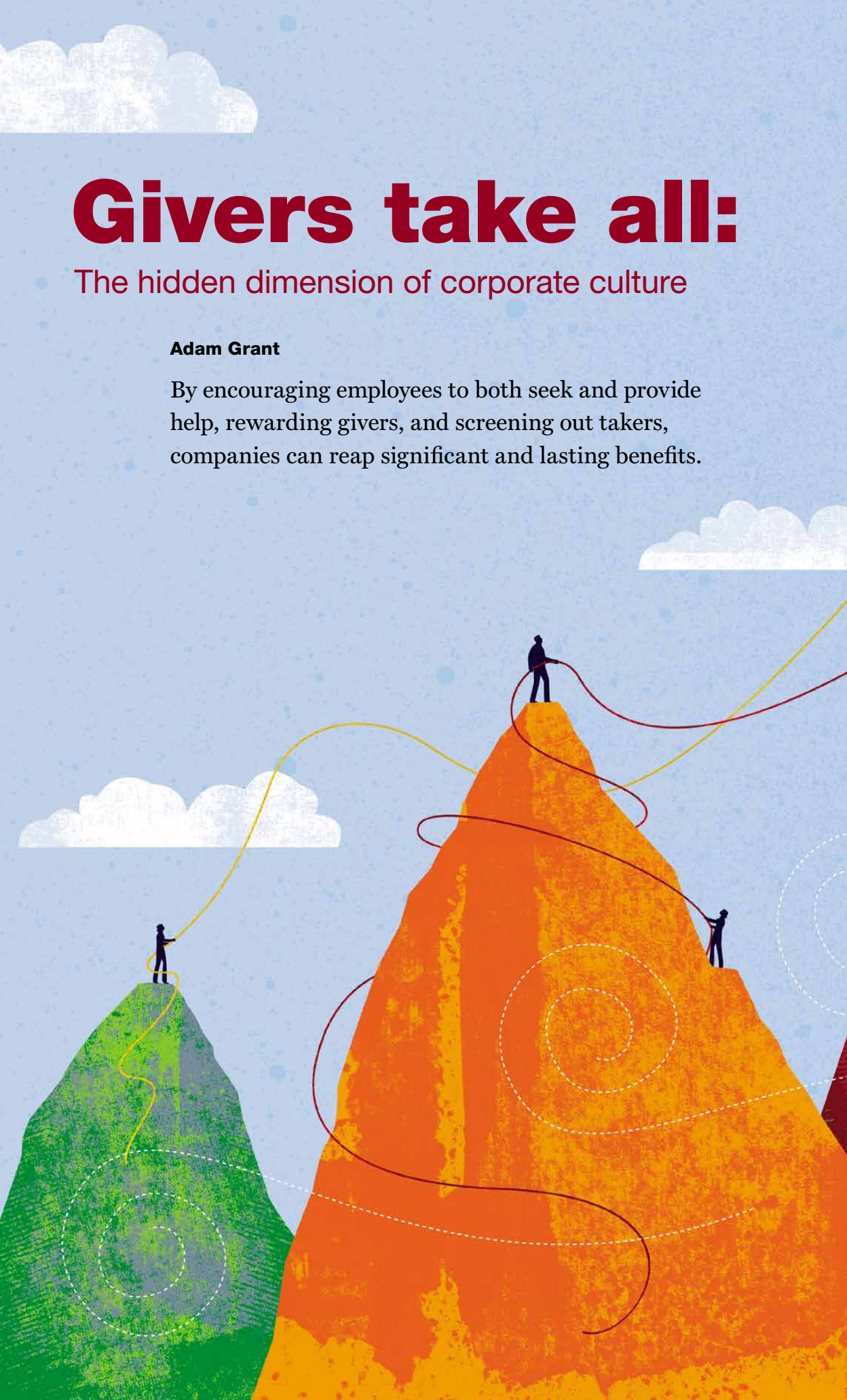
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Givers take all:

The hidden dimension of corporate culture

Adam Grant

By encouraging employees to both seek and provide help, rewarding givers, and screening out takers, companies can reap significant and lasting benefits.



The problem

Many organizations don't support information sharing. Worse, in "taker cultures" the norm is for employees to get as much as possible from others while contributing less in return.

Why it matters

The amount of help a group's members give one another is among the strongest predictors of group effectiveness. Building a "giver culture" pays.

What to do about it

Natural human tendencies often make it hard to seek help. Overcome them with straightforward exercises that encourage teams to use their knowledge, resources, and connections to better effect.

Develop practices to recognize and reward helping. Peer-bonus and -recognition programs promote giver cultures without undercutting the healthy competition that drives productivity.

Learn how to spot—and screen out—takers to minimize their corrosive effect on the organization; ensure that senior executives model good behavior.

After the tragic events of 9/11, a team of Harvard psychologists quietly “invaded” the US intelligence system. The team, led by Richard Hackman, wanted to determine what makes intelligence units effective. By surveying, interviewing, and observing hundreds of analysts across 64 different intelligence groups, the researchers ranked those units from best to worst.

Then they identified what they thought was a comprehensive list of factors that drive a unit’s effectiveness—only to discover, after parsing the data, that the most important factor wasn’t on their list. The critical factor wasn’t having stable team membership and the right number of people. It wasn’t having a vision that is clear, challenging, and meaningful. Nor was it well-defined roles and responsibilities; appropriate rewards, recognition, and resources; or strong leadership.

Rather, the single strongest predictor of group effectiveness was the amount of help that analysts gave to each other. In the highest-performing teams, analysts invested extensive time and energy in coaching, teaching, and consulting with their colleagues. These contributions helped analysts question their own assumptions, fill gaps in their knowledge, gain access to novel perspectives, and recognize patterns in seemingly disconnected threads of information. In the lowest-rated units, analysts exchanged little help and struggled to make sense of tangled webs of data. Just knowing the amount of help-giving that occurred allowed the Harvard researchers to predict the effectiveness rank of nearly every unit accurately.

The importance of helping-behavior for organizational effectiveness stretches far beyond intelligence work. Evidence from studies led by Indiana University’s Philip Podsakoff demonstrates that the frequency with which employees help one another predicts sales revenues in pharmaceutical units and retail stores; profits, costs, and customer service in banks; creativity in consulting and engineering firms; productivity in paper mills; and revenues, operating efficiency, customer satisfaction, and performance quality in restaurants.

Across these diverse contexts, organizations benefit when employees freely contribute their knowledge and skills to others. Podsakoff’s

research suggests that this helping-behavior facilitates organizational effectiveness by:

- enabling employees to solve problems and get work done faster
- enhancing team cohesion and coordination
- ensuring that expertise is transferred from experienced to new employees
- reducing variability in performance when some members are overloaded or distracted
- establishing an environment in which customers and suppliers feel that their needs are the organization's top priority

Yet far too few companies enjoy these benefits. One major barrier is company culture—the norms and values in organizations often don't support helping. After a decade of studying work performance, I've identified different types of reciprocity norms that characterize the interactions between people in organizations. At the extremes, I call them “giver cultures” and “taker cultures.”

Give, take, or match

In giver cultures, employees operate as the high-performing intelligence units do: helping others, sharing knowledge, offering mentoring, and making connections without expecting anything in return. Meanwhile, in taker cultures, the norm is to get as much as possible from others while contributing less in return. Employees help only when they expect the personal benefits to exceed the costs, as opposed to when the organizational benefits outweigh the personal costs.

Most organizations fall somewhere in the middle. These are “matcher cultures,” where the norm is for employees to help those who help them, maintaining an equal balance of give and take. Although matcher cultures benefit from collaboration more than taker

cultures do, they are inefficient vehicles for exchange, as employees trade favors in closed loops. Should you need ideas or information from someone in a different division or region, you could be out of luck unless you have an existing relationship. Instead, you would probably seek out people you trust, regardless of their expertise. By contrast, in giver cultures, where colleagues aim to add value without keeping score, you would probably reach out more broadly and count on help from the most qualified person.

In light of the benefits of more open systems of helping, why don't more organizations develop giver cultures? All too often, leaders create structures that get in the way. According to Cornell economist Robert Frank, many organizations are essentially winner-take-all markets, dominated by zero-sum competitions for rewards and promotions. When leaders implement forced-ranking systems to reward individual performance, they stack the deck against giver cultures.¹

Pitting employees against one another for resources makes it unwise for them to provide help unless they expect to receive at least as much—or more—in return. Employees who give discover the costs quickly: their productivity suffers as takers exploit them by monopolizing their time or even stealing their ideas. Over time, employees anticipate taking-behavior and protect themselves by operating like takers or by becoming matchers, who expect and seek reciprocity whenever they give help.

Fortunately, it is possible to disrupt these cycles. My research suggests that committed leaders can turn things around through three practices: facilitating help-seeking, recognizing and rewarding givers, and screening out takers.

Help-seeking: Erase the shadow of doubt

Giver cultures depend on employees making requests; otherwise, it's difficult to figure out who needs help and what to give. In fact, studies reviewed by psychologists Stella Anderson and Larry

¹ Indeed, studies by UCLA anthropologist Alan Fiske and German Graduate School of Management and Law professor Markus Vodosek find that individualistic systems work counter to the development of a giver culture.

Williams show that direct requests for help between colleagues drive 75 to 90 percent of all the help exchanged within organizations.

Yet many people are naturally reluctant to seek help. They may think it's pointless, particularly in taker cultures. They also may fear burdening their colleagues, lack knowledge about who is willing and able to help, or be concerned about appearing vulnerable, incompetent, and dependent.

Reciprocity rings

It's possible to overcome these barriers. For example, University of Michigan professor Wayne Baker and his wife, Cheryl Baker, at Humax Networks developed an exercise called the "reciprocity ring."² The exercise generally gathers employees in groups of between ten and two dozen members. Each employee makes a request, and group members use their knowledge, resources, and connections to grant it. The Bakers typically run the exercise in two 60- to 90-minute rounds—the first for personal requests, so that people begin to open up, and the second for professional requests. Since everyone is asking for help, people rarely feel uncomfortable.

The monetary value of the help offered can be significant. One pharmaceutical executive attending a reciprocity ring involving executives from a mix of industry players saved \$50,000 on the spot when a fellow participant who had slack capacity in a lab offered to synthesize an alkaloid free of charge. And that's no outlier: the Bakers find that executive reciprocity-ring participants in large corporate settings report an average benefit exceeding \$50,000—all for spending a few hours seeking and giving help. This is true even when the participants are from a single company. For example, 30 reciprocity-ring participants from a professional-services firm estimated that they had received \$261,400 worth of value and saved 1,244 hours. The ring encourages people to ask for help that their colleagues weren't aware they needed and efficiently sources each request to the people most able to fulfill it.

Beyond any financial benefits, the act of organizing people to seek and provide help in this way can shift cultures in the giver direction. Employees have an opportunity to see what their colleagues need,

² See www.humaxnetworks.com.

which often sparks ideas in the ensuing weeks and months for new ways to help them. Even employees who personally operate as takers (regardless of the company's culture) tend to get involved: in one study of more than 100 reciprocity-ring participants, Wayne Baker and I found that people with strong giver values made an average of four offers of help, but those who reported caring more about personal achievements and power than about helping others still averaged three offers.

During the exercise, it becomes clear that giving is more efficient than matching, as employees recognize how they gain access to a wider network of support when everyone is willing to help others without expecting anything in return rather than trading favors in pairs. After running the exercise at companies such as Lincoln Financial and Estée Lauder, I have seen many executives and employees take the initiative to continue running it on a weekly or monthly basis, which allows the help-seeking to continue and opens the door for greater giving as well as receiving.

Dream on

There are other ways to stimulate help-seeking. Consider what a company called Appletree Answers, a provider of call-center services, did back in 2008. John Ratliff, the founder and CEO, was alarmed by the 97 percent employee-turnover rate in his call centers. The underlying challenge, Ratliff believed, was that rapid expansion had cost the company its sense of community. Appletree had undergone 13 acquisitions in just six years and grown from a tiny operation to a company with more than 350 employees. As the cohesion of the group eroded, employees began prioritizing their own exit opportunities over the company's need for them to contribute, and customer service suffered.

After granting more than 100 requests, the program has helped promote a company culture where employees look to do things for each other and literally are 'paying it forward.'

During a brainstorming meeting, the director of operations suggested a novel approach to improving the culture: creating an internal program modeled after the Make-A-Wish Foundation. Ratliff and colleagues designed a program called Dream On, inviting employees to request the one thing they wanted most in their personal lives but felt they could not achieve on their own. Soon, a secret committee was making some of these requests happen—from sending an employee’s severely ill husband to meet his favorite players at a Philadelphia Eagles game to helping an employee throw a special birthday party for his daughter.

After granting more than 100 requests, the program has helped promote a company culture where, in the words of one insider, “employees look to do things for each other and literally are ‘paying it forward.’” Indeed, employees often submit requests on behalf of their colleagues. The program has helped reduce the uncertainty and discomfort often associated with seeking help: employees know where to turn, and they know they’re not alone. In the six months after Dream On was implemented, retention among frontline staff soared to 67 percent, from 3 percent, and the company had its two most profitable quarters ever. “You’re either a giver or a taker,” Ratliff says. “Givers tend to get stuff back while takers fight for every last nickel . . . they never have abundance.”

Such programs aren’t limited to small companies. In a study of a similar program at a Fortune 500 retailer, Jane Dutton, Brent Rosso, and I found that participants became more committed to the company and felt the program strengthened their sense of belonging in a community at work. They reported feeling grateful for the opportunity to show concern for their colleagues and took pride in the company for supporting their efforts.

Boundaries and roles

Despite the power of help-seeking in shaping a giver culture, encouraging it also carries a danger. Employees can become so consumed with responding to each other’s requests that they lack the time and energy to complete their own responsibilities. Over time, employees face two choices: allow their work to suffer or shift from giving to taking or matching.

To avoid this trade-off, leaders need to set boundaries, as one Fortune 500 technology company did when its engineers found themselves constantly interrupted with requests for help. Harvard professor Leslie Perlow worked with them to create windows for quiet time (Tuesdays, Thursdays, and Fridays until noon), when interruptions were not allowed. After the implementation of quiet time, the majority of the engineers reported above-average productivity, and later their division was able to launch a product on schedule for the second time in history. By placing clear time boundaries around helping, leaders can better leverage the benefits of giver cultures while minimizing the costs.

Alternatively, some organizations designate formal “helping” roles to coordinate more efficient help-seeking and -giving behavior. In a study at a hospital, David Hofmann, Zhike Lei, and I examined the importance of adding a nurse-preceptor role—a person responsible for helping new employees and consulting on problems. Employees felt more comfortable seeking help and perceived that they had greater access to expertise when the preceptor role existed. Outside of health-care settings, companies often develop this function by training liaisons for new employees and leadership coaches for executives and high-potential managers. Designating helping roles can provide employees with a clear sense of direction on where to turn for help without creating undue burdens across a unit.

Rewards: To the givers go the spoils

In a perfect world, leaders could promote strong giver cultures by simply rewarding employees for their collective helping output. The reality, however, is more complicated.

In a landmark study led by Michael Johnson at the University of Washington, participants worked in teams that received either cooperative or competitive incentives for completing difficult tasks. For teams receiving cooperative incentives, cash prizes went to the highest-performing team as a whole, prompting members to work together as givers. In competitive teams, cash prizes went to the highest-performing individual within each team, encouraging a taker culture. The result? The competitive teams finished their tasks

faster than the cooperative teams did, but less accurately, as members withheld critical information from each other.

To boost the accuracy of the competitive teams, the researchers next had them complete a second task under the cooperative reward structure (rewarding the entire team for high performance). Notably, accuracy didn't go up—and speed actually dropped.

People struggled to transition from competitive to cooperative rewards. Instead of shifting from taking to giving, they developed a pattern of cutthroat cooperation. Once they had seen their colleagues as competitors, they couldn't trust them. Completing a single task under a structure that rewarded taking created win-lose mind-sets, which persisted even after the structure was removed.

Johnson's work reminds us that giver cultures depend on a more comprehensive set of practices for recognizing and rewarding helping behavior in organizations. Creating such a culture starts with expanding performance evaluations beyond results, to include their impact on other individuals and groups. For example, when assessing the performance of managers, the leadership can examine not only the results their teams achieve but also their record in having direct reports promoted.

Yet even when giving-metrics are included in performance evaluations, there will still be pressures toward taking. It's difficult to eliminate zero-sum contests from organizations altogether, and indeed doing so risks extinguishing the productive competitive fires that often burn within employees.

To meet the challenge of rewarding giving without undercutting healthy competition, some companies are devising novel approaches. In 2005, Cory Ondrejka was the chief technology officer at Linden Lab, the company behind the virtual world Second Life. Ondrejka wanted to recognize and reward employees for going beyond the call of duty, so he borrowed an idea from the restaurant industry: tipping.

The program allowed employees to tip peers for help given, by sending a "love message" that adds an average of \$3 to the helper's paycheck. The messages are visible to all employees, making

reputations for generosity visible. Employees still compete for bonuses and promotions—but also to be the most helpful. This system “gives us a way of rewarding and encouraging collaborative behavior,” founder Philip Rosedale explained.

Evidence highlights the importance of keeping incentives small and spontaneous.³ If the rewards are too large and the giving-behavior necessary to earn them is too clearly scripted, some participants will game the system, and the focus on extrinsic rewards may undermine the intrinsic motivation to give, leading employees to provide help with the expectation of receiving.

The peer-bonus and -recognition programs that have become increasingly popular at companies such as Google, IGN, Shopify, Southwest Airlines, and Zappos reduce such “gaming” behavior. When employees witness unique or time-consuming acts of helping, they can nominate the givers for small bonuses or recognition. One common model is to grant employees an equal number of tokens they can freely award to colleagues. By supporting such programs, leaders empower employees to recognize and reinforce giving—while sending a clear signal that it matters. Otherwise, many acts of giving occur behind closed doors, obscuring the presence and value of helping-norms.

Sincerity screening: Keep the wrong people off the bus

Encouraging help-seeking and recognizing those who provide it are valuable steps toward enabling a giver culture. These steps are likely to be especially powerful in organizations that already screen out employees with taker tendencies. Psychologist Roy Baumeister observes that negative forces typically have a stronger weight than positive ones. Research by Patrick Dunlop and Kibeom Lee backs up this insight for cultures: takers often do more harm than givers do good.

³ Recognition may be more important than financial rewards. Research led by Dan Ariely, the Duke behavioral economist and author of *Predictably Irrational*, suggests that financial incentives are important for encouraging giving when behavior is private but are much less so once contributions are public. When givers are publicly recognized, others are compelled to contribute even if there is no financial incentive: generosity becomes a source of status.

As a result, Stanford professor Robert Sutton notes, many companies, from Robert W. Baird and Berkshire Hathaway to IDEO and Gold's Gym, have policies against hiring people who act like takers. But what techniques actually help identify a taker personality? After reviewing the evidence, I see three valid and reliable ways to distinguish takers from others.

First, takers tend to claim personal credit for successes. In one study of computer-industry CEOs, researchers Arijit Chatterjee and Donald Hambrick found that the takers were substantially more likely to use pronouns like *I* and *me* instead of *us* and *we*. When interviewers ask questions about successes, screening for self-glorifying responses can be revealing. Mindful of this pattern, Barton Hill, a managing director at Citi Transaction Services, explicitly looks for applicants to describe accomplishments in collective rather than personal terms.

Second, takers tend to follow a pattern of “kissing up, kicking down.” When dealing with powerful people, they're often good fakers, coming across as charming and charismatic. But when interacting with peers and subordinates, they feel powerful, which leads them to let down their guard and reveal their true colors. Therefore, recommendations and references from colleagues and direct reports are likely to be more revealing than those from bosses.

General Electric's Durham Engine Facility goes further still: candidates for mechanic positions work in teams of six to build helicopters out of Legos. One member is allowed to look at a model and report back to the team, and trained observers assess the candidates' behavior, with an eye toward how well they take the initiative while remaining collaborative and open. In such environments, the fakers are often easy to spot through their empty gestures: as London Business School's Dan Cable reports, the takers “try to ‘demonstrate leadership’ and ‘take initiative’ by jumping up first.” When it comes to predicting how people will actually treat others in a company, few pieces of information are more valuable than observing their behavior directly.

Finally, takers sometimes engage in antagonistic behavior at the expense of others—say, badmouthing a peer who's up for a promotion or overcharging an uninformed customer—simply to

ensure that they come out on top. To maintain a positive view of themselves, takers often rely on creative rationalizations, such as “My colleague didn’t really deserve the promotion anyway” or “that customer should have done his homework.” They come to view antagonism as an appropriate, morally defensible response to threats, injustices, or opportunities to claim value at the expense of others.

With this logic in mind, Georgia Tech professor Larry James has led a pioneering series of studies validating an assessment called the “conditional reasoning test of aggression,” a questionnaire cleverly designed to unveil these antagonistic tendencies through reasoning problems that lack obvious answers. It has an impressive body of evidence behind it. People who score high on the test are significantly more likely to engage in theft, plagiarism, forgery, other kinds of cheating, vandalism, and violence; to receive lower performance ratings from supervisors, coworkers, and subordinates; and to be absent from work or quit unexpectedly. By screening out candidates with such tendencies, leaders can increase the odds of selecting applicants who will embrace a giver culture.⁴

Walk the talk

Giver cultures, despite their power, can be fragile. To sustain them, leaders need to do more than simply encourage employees to seek help, reward givers, and screen out takers.

In 1985, a film company facing financial pressure hired a new president. In an effort to cut costs, the president asked the two leaders of a division, Ed and Alvy, to conduct layoffs. Ed and Alvy resisted—eliminating employees would dilute the company’s value. The president issued an ultimatum: a list of names was due to him at nine o’clock the next morning.

When the president received the list, it contained two names:
Ed and Alvy.

⁴ To see how you and your employees stack up on this dimension, use the free online assessment at www.giveandtake.com.

No layoffs were conducted, and a few months later Steve Jobs bought the division from Lucasfilm and started Pixar with Ed Catmull and Alvy Ray Smith.

Employees were grateful that “managers would put their own jobs on the line for the good of their teams,” marvels Stanford’s Robert Sutton, noting that even a quarter century later, this “still drives and inspires people at Pixar.”

When it comes to giver cultures, the role-modeling lesson here is a powerful one: if you want it, go and give it. ○

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This article is based in part on Adam Grant’s book, *Give and Take: A Revolutionary Approach to Success* (Viking, April 2013).

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Chip Heath is a professor of organizational behavior at the Stanford Graduate School of Business. He is the coauthor (along with his brother, Dan) of *Made to Stick*, *Switch*, and, most recently, *Decisive: How to Make Better Choices in Life and Work*.



Making great

decisions

Stanford's Chip Heath and McKinsey's Olivier Sibony discuss new research, fresh frameworks, and practical tools for decision makers.



Olivier Sibony is a director in McKinsey's Paris office. He has published numerous articles on business strategy and decision making in *Harvard Business Review* and *McKinsey Quarterly*.

Every few years, Stanford University professor Chip Heath and his brother, Dan, a senior fellow at Duke University's Center for the Advancement of Social Entrepreneurship (CASE), distill decades of academic research into a tool kit for practitioners. The bicoastal brothers offered advice on effective communications in *Made to Stick*, on change management in *Switch*, and now, in their new book, *Decisive*, on making good decisions. It's a topic that McKinsey's Olivier Sibony has been exploring for years in his work with senior leaders of global companies and in a number of influential publications.¹

Chip and Olivier recently sat down to compare notes on what matters most for senior leaders who are trying to boost their decision-making effectiveness. Topics included Heath's new book, research Sibony and

¹ See, for example, Dan Lovallo and Olivier Sibony, "The case for behavioral strategy," *mckinseyquarterly.com*, March 2010; and Daniel Kahneman, Dan Lovallo, and Olivier Sibony, "Before you make that big decision," *Harvard Business Review*, June 2011, Volume 89, Number 6, pp. 50–60.

University of Sydney professor Dan Lovallo have under way on the styles of different decision makers, and practical tips that they've found make a big difference. The discussion, moderated by McKinsey's Allen Webb, represents a state-of-the-art tour for senior executives hoping to help their organizations, and themselves, become more effective by benefiting from the core insight of behavioral economics: systematic tendencies to deviate from rationality influence all of our decision making.

The Quarterly: *What's the current state of play in real-world efforts to improve decision processes through behavioral economics?*

Olivier Sibony: The point we haven't conveyed effectively enough is that however aware you are of biases, you won't necessarily be immune. You should see yourself as the architect of the decision-making process, not as a great decision maker enhanced by the knowledge of your biases.

Chip Heath: The analogy I like is how we handle problems with memory. The solution isn't to focus harder on remembering; it's to use a system like a grocery-store list. We're now in a position to think about the decision-making equivalent of the grocery-store list.

Olivier Sibony: We're doing ourselves a disservice by calling it a decision-making process, because the word *process*, as you point out in your book—

Chip Heath: —It's boring.

Olivier Sibony: It immediately conjures up images of bureaucracy and slowness and decisions by committee—all things associated with bad management.

Chip Heath: Early in the history of decision making, people were optimistic about a better process called decision analysis. But nobody ever used it, because very few people have the math chops to fold back probabilities in a three-layer decision tree. The process that we're advocating runs away from decision analysis and bureaucracy. We wanted some tools that someone could use in five or ten minutes that may not make the decision perfect but will improve it substantially.

Olivier Sibony: There are individual solutions and organizational solutions. Perhaps because we're a consulting firm, we tend to look for organizational solutions. In an article you wrote long ago, Chip, you quote somebody who asks something like, "If people are so bad at making decisions, how did we make it to the moon?" Your answer was that individuals didn't make it to the moon; NASA did.² That insight has been translated into all sorts of operational decision making. It is the fundamental insight behind work in continuous improvement—for instance, when people are trained to go beyond the superficial, proximate cause of a problem by asking "five whys."

But we don't apply that insight when we move from shop floors to boardrooms. Partly, that's because of a lack of awareness. Partly, it's because the further up the hierarchy you go, the harder it becomes to say, "My judgment is fallible." Corporate cultures and incentives reward the kind of decision making where you take risks and show confidence and decisiveness, even if sometimes it's really overconfidence. Recognizing uncertainty and doubt—it's not the style many executives have when they get to the top.

Chip Heath: Yes, but we're never really sure when we're being overconfident and when we're being appropriately confident. That's where we go back to processes.

Olivier Sibony: It's a lot easier to say, "Let's build a good process so your direct reports have better recommendations for you" than "Let's come up with a process for you to be challenged by other people."

Chip Heath: I love that emphasis: "We're going to help others get you the right recommendations." We all tend to believe "I'm not subject to biases." But we can easily believe that *others* are. I'm curious about your batting average, Olivier. Suppose you walk into an executive group and start talking about the behavioral research and how they could change their processes to overcome biases. Are a third of the people interested? Five percent?

Olivier Sibony: If we tell the story like that, it's zero. But exactly as you just suggested, a lot of executives are open to discussing how their teams could help them make better decisions. So we will say,

² See Chip Heath, Richard Larrick, and Joshua Klayman, "Cognitive repairs: How organizational practices can compensate for individual shortcomings," *Research in Organizational Behavior*, 1998, Volume 20, pp. 1–37.

for example, “Let’s talk about what works and what doesn’t work in your strategic-planning process.” We don’t talk about biases, because no one wants to be told they’re biased; it’s a word with horrible, negative connotations. Instead, we observe that people typically make predictable mistakes in their planning process—for instance, getting anchored on last year’s numbers. That’s OK because we are identifying best practices. We end up embedding this thinking into processes that generate better strategic plans, R&D choices, or M&A decisions.

Chip Heath: The process changes don’t have to be very big. Ohio State University professor Paul Nutt spent a career studying strategic decisions in businesses and nonprofits and government organizations. The number of alternatives that leadership teams consider in 70 percent of all important strategic decisions is exactly one. Yet there’s evidence that if you get a second alternative, your decisions improve dramatically.

One study at a medium-size technology firm investigated a group of leaders who had made a set of decisions ten years prior. They were asked to assess how many of those decisions turned out really well, and the percentage of “hits” was six times higher when the team considered two alternatives rather than just one.

Olivier Sibony: You can make a huge number of those small changes. One thing we did, which worked quite well, was to always ask people making an investment recommendation to present their second-best choice. It’s rarely better than the first. But both might actually be good, and both recommendations of another business unit might not be. Considering just one recommendation from every business unit will deprive you of many investment opportunities you’d get if you asked for two.

The Quarterly: *Is the right approach to suggest a couple of simple things senior executives can do or to recommend that they take a step back and look at a whole checklist or framework to create a healthier process?*

Chip Heath: I’m a fan of frameworks, but you don’t have to be 100 percent there to improve dramatically. One legitimate criticism

of the decision-making field is that we have this overwhelming zoo of biases. In our most recent book, *Decisive*, we therefore came up with 4 intervention points in the decision process. Others propose 40 intervention points. Nobody will be successful intervening at 40 decision points.

Olivier Sibony: We too have looked at this zoo of biases and tried to sort out what really matters to executives. When people ask me what will make a difference as they build decision processes, I emphasize three things. First, recognize that very few decisions are one of a kind. You are not the first person to decide on an acquisition. Lots of M&A happened before, and you can learn many things from that experience.

Second, recognize uncertainty—have alternatives, prepare to be wrong, and have a range of outcomes where the worst case is real and not “best case minus 5 percent,” which is very common. Creating a setting where it’s OK to admit uncertainty is very difficult. But if you achieve that, you can make headway.

Third, create a debate where people speak up. It’s the most obvious but also the most difficult. If you’re the decision maker, when you get to the debate you’ve already got an idea of where you want it to lead. And if you’re an experienced executive, you’ve already influenced your people, consciously or unconsciously. A good intervention point, for instance, is to ask subordinates if anyone disagreed with them about a recommendation they bring to you. If everybody agreed, that’s a sign that there may have been “groupthink.”³

Chip Heath: All of the things you’ve highlighted are things we grappled with in designing the WRAP process we propose in our book (see “Four principles for making better decisions,” on page 112). A *Wider* set of options means you’re going to have more debate. By *Reality-testing* assumptions, you look at the reference class of events. If you make a decision about restaurants, you read reviews because that’s your reference class. Yet if you’re making a merger decision, you won’t look at the reference class of companies in similar situations. Why do this research for a \$200 dinner but not a

³ For more on this, and 11 other useful questions senior executives can ask, see Daniel Kahneman, Dan Lovallo, and Olivier Sibony, “Before you make that big decision,” *Harvard Business Review*, June 2011, Volume 89, Number 6, pp. 50–60.

\$200 million acquisition? Then there is the process of actually making a decision. It's now slightly more complicated because instead of one option you've got two, and you've done some due diligence on both. When you find yourself agonizing about a choice, it's important to step back and *Attain* some distance. Finally, you should be *Preparing* to be wrong at the end of the process—that's about hard-to-acknowledge uncertainty.

Olivier Sibony: How do you envision people using your WRAP framework—as a checklist when they make decisions, or as a tool to coach other people making decisions?

Chip Heath: We've heard from people doing both. One person had a career decision and had gone through the list blow by blow. "What are my alternatives? Can I ask disconfirming questions? How do I step back and make this decision?" In many situations, you could work through the WRAP framework in 30 minutes. And you can also have it running in the back of your mind as you're coaching others.

Olivier Sibony: I find people asking when to get the facts and figures for a decision. Usually, they assume that you get all the facts first and then discuss them, which is not the way to go. Only when you create a debate and identify what it would take to believe one option versus another will you look for facts that would disprove your initial hypothesis. Save time for fact finding at a later stage.

Chip Heath: That's really important. The trick is collecting information in the context of actual experience. At Intuit, founder Scott Cook developed what they call a culture of experimentation. As he put it, most decisions are based on "politics, persuasion, and PowerPoint," and none of these "three Ps" are fully trustworthy. So Intuit bases decisions on experiments.

For example, they had a team with an idea for a service that would let Indian farmers use their cell phones to get information about market prices in surrounding towns. The top-leadership team was unanimous in thinking it was a bad idea. Scott Cook said he thought it was the most ridiculous thing he'd ever heard—why would people in the markets give you this information, since it might be used to undermine them? Others said the information should be

valueless because in competitive markets, the price should be the same, controlling for transportation costs.

Nonetheless, Intuit has a culture of experimentation, and the leadership team said, “OK, run your experiment.” Twenty experiments later, they have 1.3 million Indian farmers using this service. It’s been tremendously successful. It has raised the income of typical farmers using it by 20 percent—enough to afford books and tuition fees for their kids.

Olivier Sibony: How did he create this culture?

Chip Heath: For years they’ve had it at the lower levels of the firm. Before they add a feature, say, to TurboTax, they will test out variations and see how people respond. They call it “Fake-O-Backend.” Imagine that they put up a Web page for a new “deduction analysis” service, and when people plug in their information on the Web site, the company goes to a tax attorney for the answers instead of programming all the computations. The back end is fake. The front end tests whether people would purchase a new service.

This tradition of testing, of collecting data that allows you to be surprised by the outcomes, helps cultures of debate evolve in certain firms. I don’t think it has to come from the very top of the organization. But as a CTO or a CFO, you can develop that culture within your area. Any manager at any level can start. If you create that culture in your team and you get into a disagreement, somebody will eventually say, “Look, it’s an empirical question. We can run a test.” If more people at more levels of organizations said that, the culture would start to change.

Olivier Sibony: I want to go back to this notion of helping people see when they’ve been wrong and helping them get better at learning from their own experience. We’ve tried to do this through the idea of decision-making styles (see sidebar, “Early-stage research on decision-making styles”), which is still at an early stage. Rather than telling someone he’s hopelessly biased, you say, for example, “Look, you’re a certain kind of decision maker—a real visionary—so you make fast decisions breaking with convention. The downside is that you could be wrong, so when you make an unusual decision

you might want to stop and listen a bit.” Whereas someone else will tend to fall into the opposite trap.

We’re trying to build a language that would help people see how to get better at making decisions. The hope is that it would make individuals more conscious of their own style and also enable debate. If you and I are around the same table, rather than telling you that you’re out of your mind, I can tell you, “We know that you’re a visionary, right? So you would see things in this way. Well, I’ve got a different style, so here’s how I think about it.” A bit like the Myers–Briggs Type Indicator.⁴ Does that sound like a promising idea? Again, I don’t want to get too excited about it, because it’s early stage.

Chip Heath: I think that’s very promising. I love the idea that you can create a language for helping people introspect about their decision process. People love personality approaches. Psychologists have always had this approach—avoidance relationship with them because we can’t get them to be as predictive as we want, but they provide this tremendous social language.

I got to be at a dinner one time when I was in graduate school, where Danny Kahneman and Amos Tversky listened to a group of consultants telling them about the Myers–Briggs. The consultants didn’t know they were talking to two Nobel-caliber psychologists, so they were a little condescending as they explained Myers–Briggs to their dinner companions, who should have known about it already. Kahneman and Tversky listened. And they weren’t telling the consultants, “Decades of social-psychology research says that it’s really hard to design a personality test that predicts anything useful about behavior.” Danny Kahneman walked out of the room and turned to Amos Tversky and said, “You know, that was a brilliant feat of social engineering. Instead of saying, ‘So-and-so is a jerk,’ they say, ‘Oh, he’s an INTP.’”⁵

The Quarterly: *Let’s talk about points in the business system where people can attack these problems. Start with budgeting and planning.*

⁴ The Myers–Briggs Type Indicator (MBTI) is a personality-assessment questionnaire that probes how individuals perceive the world. MBTI describes a personality type for an individual based on his or her expressed preferences.

⁵ INTP is one of the 16 personality types expressed by the Myers–Briggs Type Indicator. *I* refers to “Introversion,” *N* to “Intuition,” *T* to “Thinking,” and *P* to “Perceiving.”

Olivier Sibony: Clearly, the dominant bias is inertia—doing a budget that’s too close to last year’s, largely because of anchoring.⁶ You can re-anchor the budget around something different, typically a vision of the future, like where the growth will be. Usually, the discussion with a business unit would start, “Your budget last year was 100. You’re telling me it should be 105. I think it should be 95. Let’s argue.” Instead, start with something like, “Your budget last year was 100. My model says it should be 375. Let’s discuss why 105 is better than 375.”

The Quarterly: *What about M&A?*

Chip Heath: M&A is a classic confirmation-bias situation. Something becomes available or draws you to a target. You’ll start gathering data to confirm or deny that choice, but on average you’ll be tempted to confirm it because you were interested in the first place.

Olivier Sibony: We tried to address that in one large company by adding something to the existing routine, which was superb. A month before the anticipated time of the final decision, when everyone still has a cool head, we suggested that the M&A team write a memo to the CEO entitled “Reasons you would say no to this deal.” The CEO will look at the memo in a month and ask whether these questions have been fully addressed. In effect, you have a dialogue between yourself a month ago and yourself now.

Chip Heath: I’ve seen procedures for getting distance by picturing yourself in the future looking back on a decision. Your idea is to have a present self look back at a past one. I love that.

The Quarterly: *Let’s move to personnel choices for the senior team.*

Chip Heath: A headhunting firm that had done 20,000 executive placements at the C-suite level went over its records and found that about 40 percent are pushed out, fail, or quit within 18 months. That’s a shockingly high failure rate. Lots of confirmation biases kick in here. People who are taller or more attractive do exceptionally well in interviews. Those qualities have little to do with the job.

⁶ For more on the problem of strategic inertia, see Stephen Hall, Dan Lovallo, and Reinier Musters, “How to put your money where your strategy is,” mckinseyquarterly.com, March 2012.

The research says you can improve the interview process by treating it less like a conversation and more like a job sample. You can ask CFO candidates, say, to grapple with the financial decisions you've made over the last five years—what they would have thought about, what information they would have collected, what they would have done.

The Quarterly: *What about new-product launches?*

Chip Heath: Saras Sarasvathy, a professor at the Darden School, at the University of Virginia, has researched the differences between how entrepreneurs and very good senior managers at Fortune 500 firms think. She gives them a scenario about a new-product introduction. The typical Fortune 500 manager will run projections from the market data. But the entrepreneur says, "I don't trust the data. I'd find a customer and try to sell the product." The entrepreneur's reaction is, "I'm gonna experiment. I'll find my way into the market as opposed to project my way into it." The entrepreneurs' impulse to experiment is right. We don't breed that enough in corporate America.

The Quarterly: *Last question—there hasn't been much work done on decision making and organizational structure. The classical view is that structure rationally follows strategy. Yet we know that's not always the case. Should we be applying behavioral economics to this realm?*

Chip Heath: Dan and I are actually thinking about it. I think there's a systematic set of biases. For example, we favor division of labor over thinking about coordination. That underemphasizes the difficulty of coordinating across specialists that speak different business languages. I think that's a really interesting set of questions. ○

This discussion was moderated by **Allen Webb**, editor in chief of *McKinsey Quarterly*, who is based in McKinsey's Seattle office.

Early-stage research on decision-making styles

Dan Lovallo and Olivier Sibony

To develop a language for improved business decision making, we created a survey with questions that cover five classes of decision-making biases, which we summarized in earlier work: action-oriented, interest, pattern-recognition, social, and stability biases.¹ The questions drew out preferences by asking people to choose between two neutral, equally defensible statements. Responses fell along a range from a strong preference for intuitive decision making to a strong preference for making decisions after exhaustive deliberation.

We received nearly 5,000 responses to the survey from *McKinsey Quarterly* and *Harvard Business Review* readers, and we conducted detailed analysis of 1,021 respondents, whose demographics and response characteristics were statistically indistinguishable from the full sample's.² We used these responses and factor analysis to identify six objective dimensions of the respondents' preferences, which roughly correspond to common steps in the decision-making process. Cluster analysis then yielded five groups of decision-making preferences. This research is still in its early stages; presented below are the five decision-making styles, including the percentage of respondents who fell into each group. The percentages in particular are preliminary, since the self-selected nature of the respondent pool could have introduced sample bias. Also, the number of questions tested and the sample size are far below those of a standard psychometric tool such as Myers–Briggs. That said, we believe the current survey has within it the core of a tool to help individuals reflect upon the trade-offs they make as decision makers.

¹ See Dan Lovallo and Olivier Sibony, "The case for behavioral strategy," *mckinseyquarterly.com*, March 2010.

² We made the online survey available to readers of the following articles: Daniel Kahneman, Dan Lovallo, and Olivier Sibony, "Before you make that big decision," *Harvard Business Review*, June 2011, Volume 89, Number 6, pp. 50–60; and Andrew Campbell and Jo Whitehead, "How to test your decision-making instincts," *mckinseyquarterly.com*, May 2010.

Dan Lovallo is a professor of business strategy at the University of Sydney Business School, a visiting professor at Johns Hopkins University's Carey Business School, and an adviser to McKinsey. **Olivier Sibony** is a director in McKinsey's Paris office.



To learn more about your own decision-making preferences, take the survey, which appears in "The case for behavioral strategy," on mckinseyquarterly.com.

Five decision-making styles

Visionary 14% of sample

Pro: A champion of radical change with a natural gift for leading people through turbulent times.

Con: May be too quick to rush in the wrong direction.

Counteract: Seek out different perspectives from a broader group of counselors; encourage dissenters to voice their concerns.

Guardian 22% of sample

Pro: A model of fairness who preserves the health, balance, and values of the organization. Decision-making process is sound, carefully planned, and incorporates as many facts as possible.

Con: May be blind to a desperate need for change.

Counteract: Periodically ask outsiders to challenge deeply held beliefs about the company and its industry. Create ad hoc task forces to explore major changes in the environment.

Motivator 12% of sample

Pro: A compelling leader for change with an excellent ability to build alignment; a strong, charismatic storyteller.

Con: May believe the vision at the expense of facts.

Counteract: Examine alternate ways to interpret the facts. Create a formal process, such as a survey, to take the pulse of the organization.

Flexible 25% of sample

Pro: The most versatile of leaders, comfortable with uncertainty, open minded in adapting to circumstances, and willing to involve a variety of people in the decision making.

Con: Exploring too many potential solutions and decision outcomes can lead to “paralysis by analysis.”

Counteract: Try setting a deadline to reach a decision before the debate begins. Consider standardizing certain types of repetitive, ad hoc decisions, based on simple rules.

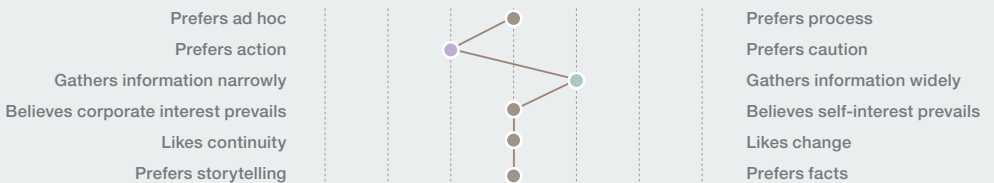
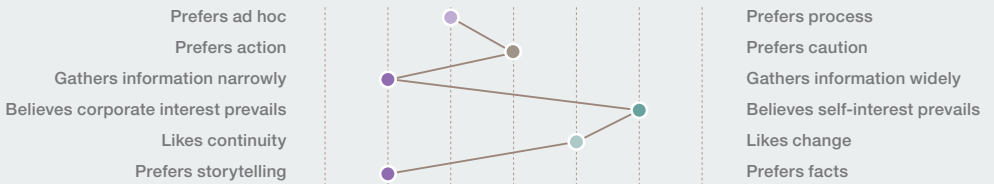
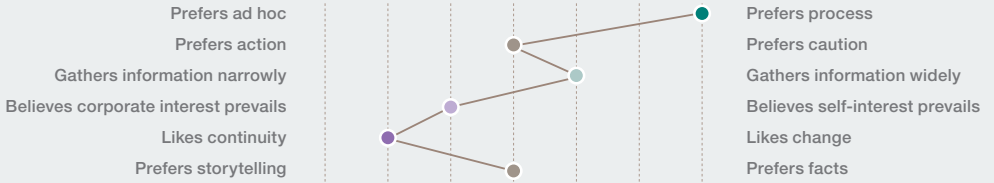
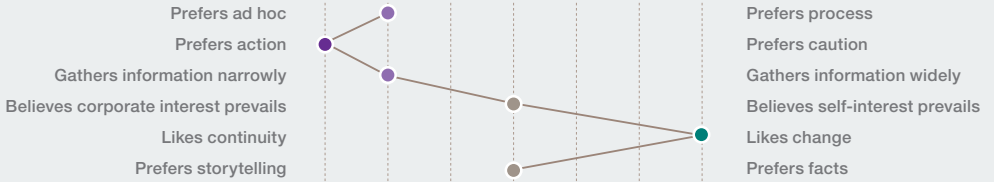
Catalyst 27% of sample

Pro: A true champion of group decision making and implementation. The most balanced of decision makers, relatively resilient to the biases inherent in the more extreme decision-making preferences.

Con: A middle-of-the-road decision style may yield average results.

Counteract: Be alert for the telltale signs of a high-stakes strategic decision that may require a different approach—for instance, assembling an ad hoc team to look afresh at the situation and make recommendations.

Aggregate of respondents' selected positions along a scale between 2 opposites





Five routes to more innovative problem solving

Olivier Leclerc and Mihnea Moldoveanu

Tricky problems must be shaped before they can be solved. To start that process, and stimulate novel thinking, leaders should look through multiple lenses.

The problem

Leaders using simple business frameworks to view complicated problems sometimes fail to see truly novel solutions.

Why it matters

The complexity of today's business environment means that complex, even chaotic, problems are quite prevalent.

What to do about it

Develop the discipline of looking at complex problems through multiple lenses, which can bring order to chaos, reveal creative paths that would otherwise remain hidden, and facilitate more thorough problem solving.

Get in the habit of applying five such lenses to boost the quality of solutions dramatically. Problems can be viewed as models akin to networks, system dynamics, and information processing; as an evolutionary process; and through the interaction of decision agents. Each lens broadens the solution space to boost the odds of uncovering more innovative answers.

Rob McEwen had a problem. The chairman and chief executive officer of Canadian mining group Goldcorp knew that its Red Lake site could be a money-spinner—a mine nearby was thriving—but no one could figure out where to find high-grade ore. The terrain was inaccessible, operating costs were high, and the unionized staff had already gone on strike. In short, McEwen was lumbered with a gold mine that wasn't a *gold mine*.

Then inspiration struck. Attending a conference about recent developments in IT, McEwen was smitten with the open-source revolution. Bucking fierce internal resistance, he created the Goldcorp Challenge: the company put Red Lake's closely guarded topographic data online and offered \$575,000 in prize money to anyone who could identify rich drill sites. To the astonishment of players in the mining sector, upward of 1,400 technical experts based in 50-plus countries took up the problem. The result? Two Australian teams, working together, found locations that have made Red Lake one of the world's richest gold mines. "From a remote site, the winners were able to analyze a database and generate targets without ever visiting the property," McEwen said. "It's clear that this is part of the future."¹

McEwen intuitively understood the value of taking a number of different approaches simultaneously to solving difficult problems. A decade later, we find that this mind-set is ever more critical: business leaders are operating in an era when forces such as technological change and the historic rebalancing of global economic activity from developed to emerging markets have made the problems increasingly complex, the tempo faster, the markets more volatile, and the stakes higher. The number of variables at play can be enormous, and free-flowing information encourages competition, placing an ever-greater premium on developing innovative, unique solutions.

This article presents an approach for doing just that. How? By using what we call flexible objects for generating novel solutions, or *flexons*, which provide a way of shaping difficult problems to reveal innovative solutions that would otherwise remain hidden. This

¹See Linda Tischler, "He struck gold on the Net (really)," *fastcompany.com*, May 31, 2002.

approach can be useful in a wide range of situations and at any level of analysis, from individuals to groups to organizations to industries. To be sure, this is not a silver bullet for solving any problem whatever. But it is a fresh mechanism for representing ambiguous, complex problems in a structured way to generate better and more innovative solutions.

The flexons approach

Finding innovative solutions is hard. Precedent and experience push us toward familiar ways of seeing things, which can be inadequate for the truly tough challenges that confront senior leaders. After all, if a problem can be solved before it escalates to the C-suite, it typically is. Yet we know that teams of smart people from different backgrounds are more likely to come up with fresh ideas more quickly than individuals or like-minded groups do.² When a diverse range of experts—game theorists to economists to psychologists—interact, their approach to problems is different from those that individuals use. The solution space becomes broader, increasing the chance that a more innovative answer will be found.

Obviously, people do not always have think tanks of PhDs trained in various approaches at their disposal. Fortunately, generating diverse solutions to a problem does not require a diverse group of problem solvers. This is where flexons come into play. While traditional problem-solving frameworks address particular problems under particular conditions—creating a compensation system, for instance, or undertaking a value-chain analysis for a vertically integrated business—they have limited applicability. They are, if you like, specialized lenses. Flexons offer languages for shaping problems, and these languages can be adapted to a much broader array of challenges. In essence, flexons substitute for the wisdom and experience of a group of diverse, highly educated experts.

² Lu Hong and Scott Page, “Groups of diverse problem solvers can outperform groups of high-ability problem solvers,” *Proceedings of the National Academy of Sciences of the United States of America*, 2004, Volume 101, pp. 16385–89. For more on the benefits of open innovation, see John Seely Brown and John Hagel III, “Creation nets: Getting the most from open innovation,” *mckinseyquarterly.com*, May 2006.

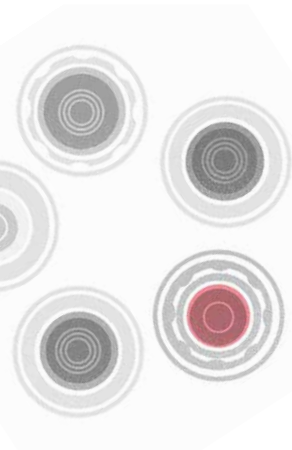
To accommodate the world of business problems, we have identified five flexons, or problem-solving languages. Derived from the social and natural sciences, they help users understand the behavior of individuals, teams, groups, firms, markets, institutions, and whole societies. We arrived at these five through a lengthy process of synthesizing both formal literatures and the private knowledge systems of experts, and trial and error on real problems informed our efforts. We don't suggest that these five flexons are exhaustive—only that we have found them sufficient, in concert, to tackle very difficult problems. While serious mental work is required to tailor the flexons to a given situation, and each retains blind spots arising from its assumptions, multiple flexons can be applied to the same problem to generate richer insights and more innovative solutions.



Networks flexon

Imagine a map of all of the people you know, ranked by their influence over you. It would show close friends and vague acquaintances, colleagues at work and college roommates, people who could affect your career dramatically and people who have no bearing on it. All of them would be connected by relationships of trust, friendship, influence, and the probabilities that they will meet. Such a map is a network that can represent anything from groups of people to interacting product parts to traffic patterns within a city—and therefore can shape a whole range of business problems.

For example, certain physicians are opinion leaders who can influence colleagues about which drugs to prescribe. To reveal relationships among physicians and help identify those best able to influence drug usage, a pharmaceutical company launching a product could create a network map of doctors who have coauthored scientific articles. By targeting clusters of physicians who share the same ideas and (one presumes) have tight interactions, the company may improve its return on investments compared with what traditional mass-marketing approaches would achieve. The network flexon helps decompose a situation into a series of linked problems of prediction (how will ties evolve?) and optimization (how can we maximize



the relational advantage of a given agent?) by presenting relationships among entities. These problems are not simple, to be sure.³ But they are well-defined and structured—a fundamental requirement of problem solving.

Evolutionary flexon

Evolutionary algorithms have won games of chess and solved huge optimization problems that overwhelm most computational resources. Their success rests on the power of generating diversity by introducing randomness and parallelization into the search procedure and quickly filtering out suboptimal solutions. Representing entities as populations of parents and offspring subject to variation, selection, and retention is useful in situations where businesses have limited control over a large number of important variables and only a limited ability to calculate the effects of changing them, whether they're groups of people, products, project ideas, or technologies. Sometimes, you must make educated guesses, test, and learn. But even as you embrace randomness, you can harness it to produce better solutions to complex problems.

That's because not all “guessing strategies” are created equal. We have crucial choices to make: generating more guesses (prototypes, ideas, or business models) or spending more time developing each guess or deciding which guesses will survive. Consider a consumer-packaged-goods company trying to determine if a new brand of toothpaste will be a hit or an expensive failure. Myriad variables—everything from consumer habits and behavior to income, geography, and the availability of clean water—interact in multiple ways. The evolutionary flexon may suggest a series of low-cost, small-scale experiments involving product variants pitched to a few well-chosen market segments (for instance, a handful of representative

³ For more on network analysis, see Robert L. Cross, Roger D. Martin, and Leigh M. Weiss, “Mapping the value of employee collaboration,” *mckinseyquarterly.com*, August 2006. For more on the role of brokers in filling organizational gaps, see Ronald S. Burt, *Structural Holes: The Social Structure of Competition*, first edition, Cambridge, MA: Harvard University Press, 1992.

customers high in influence and skeptical about new ideas). With every turn of the evolutionary-selection crank, the company's predictions will improve.



Decision-agent flexon

To the economic theorist, social behavior is the outcome of interactions among individuals, each of whom tries to select the best possible means of achieving his or her ends. The decision-agent flexon takes this basic logic to its limit by providing a way of representing teams, firms, and industries as a series of competitive and cooperative interactions among agents. The basic approach is to determine the right level of analysis—firms, say. Then you ascribe to them beliefs and motives consistent with what you know (and think they know), consider how their payoffs change through the actions of others, determine the combinations of strategies they might collectively use, and seek an equilibrium where no agent can unilaterally deviate from the strategy without becoming worse off.

Game theory is the classic example, but it's worth noting that a decision-agent flexon can also incorporate systematic departures from rationality: impulsiveness, cognitive shortcuts such as stereotypes, and systematic biases. Taken as a whole, this flexon can describe all kinds of behavior, rational and otherwise, in one self-contained problem-solving language whose most basic

Sometimes, you must make educated guesses, test, and learn. But even as you embrace randomness, you can harness it to produce better solutions to complex problems.

variables comprise agents (individuals, groups, organizations) and their beliefs, payoffs, and strategies.

For instance, financial models to optimize the manufacturing footprint of a large industrial company would typically focus on relatively easily quantifiable variables such as plant capacity and input costs. To take a decision-agent approach, you assess the payoffs and likely strategies of multiple stakeholders—including customers, unions, and governments—in the event of plant closures. Adding the incentives, beliefs, and strategies of all stakeholders to the analysis allows the company to balance the trade-offs inherent in a difficult decision more effectively.



System-dynamics flexon

Assessing a decision's cascading effects on complex businesses is often a challenge. Making the relations between variables of a system, along with the causes and effects of decisions, more explicit allows you to understand their likely impact over time. A system-dynamics lens shows the world in terms of flows and accumulations of money, matter (for example, raw materials and products), energy (electrical current, heat, radio-frequency waves, and so forth), or information. It sheds light on a complex system by helping you develop a map of the causal relationships among key variables, whether they are internal or external to a team, a company, or an industry; subjectively or objectively measurable; or instantaneous or delayed in their effects.

Consider the case of a deep-sea oil spill, for example. A source (the well) emits a large volume of crude oil through a sequence of pipes (which throttle the flow and can be represented as inductors) and intermediate-containment vessels (which accumulate the flow and can be modeled as capacitors). Eventually, the oil flows into a sink (which, in this case, is unfortunately the ocean). A pressure gradient drives the flow rate of oil from the well into the ocean. Even an approximate model immediately identifies ways to mitigate the spill's effects short of capping the well. These efforts could include reducing the pressure gradient driving the flow of crude, decreasing

the loss of oil along the pipe, increasing the capacity of the containment vessels, or increasing or decreasing the inductance of the flow lines. In this case, a loosely defined phenomenon such as an oil spill becomes a set of precisely posed problems addressable sequentially, with cumulative results.



Information-processing flexon

When someone performs long division in her head, a CEO makes a strategic decision by aggregating imperfect information from an executive team, or Google servers crunch Web-site data, information is being transformed intelligently. This final flexon provides a lens for viewing various parts of a business as information-processing tasks, similar to the way such tasks are parceled out among different computers. It focuses attention on what information is used, the cost of computation, and how efficiently the computational device solves certain kinds of problems. In an organization, that device is a collection of people, whose processes for deliberating and deciding are the most important explanatory variable of decision-making's effectiveness.⁴

Consider the case of a private-equity firm seeking to manage risk. A retrospective analysis of decisions by its investment committee shows that past bets have been much riskier than its principals assumed. To understand why, the firm examines what information was transmitted to the committee and how decisions by individuals would probably have differed from those of the committee, given its standard operating procedures. Interviews and analysis show that the company has a bias toward riskier investments and that it stems from a near-unanimity rule applied by the committee: two dissenting members are enough to prevent an investment. The insistence on near-unanimity is counterproductive because it stifles debate: the committee's members (only two of whom could kill any deal) are reluctant to speak first and be perceived as an "enemy" by the deal sponsor. And the more senior the sponsor, the more likely it is that risky deals will be approved. Raising the number of

⁴ See Dan Lovallo and Olivier Sibony, "The case for behavioral strategy," mckinseyquarterly.com, March 2010.

votes required to kill deals, while clearly counterintuitive, would stimulate a richer dialogue.

Putting flexons to work

We routinely use these five problem-solving lenses in workshops with executive teams and colleagues to analyze particularly ambiguous and complex challenges. Participants need only a basic familiarity with the different approaches to reframe problems and generate more innovative solutions. Here are two quite different examples of the kinds of insights that emerge from the use of several flexons, whose real power emerges in combination.

Reorganizing for innovation

A large biofuel manufacturer that wants to improve the productivity of its researchers can use flexons to illuminate the problem from very different angles.

Networks. It's possible to view the problem as a need to design a better innovation network by mapping the researchers' ties to one another through co-citation indices, counting the number of e-mails sent between researchers, and using a network survey to reveal the strength and density of interactions and collaborative ties. If coordinating different knowledge domains is important to a company's innovation productivity, and the current network isn't doing so effectively, the company may want to create an internal knowledge market in which financial and status rewards accrue to researchers who communicate their ideas to co-researchers. Or the company could encourage cross-pollination by setting up cross-discipline gatherings, information clearinghouses, or wiki-style problem-solving sites featuring rewards for solutions.

Evolution. By describing each lab as a self-contained population of ideas and techniques, a company can explore how frequently new ideas are generated and filtered and how stringent the selection process is. With this information, it can design interventions to generate more varied ideas and to change the selection mechanism. For instance, if a lot of research activity never seems to lead anywhere, the company might take steps to ensure that new ideas are presented more frequently to the business-development team, which can provide early feedback on their applicability.

Decision agents. We can examine in detail how well the interests of individual researchers and the organization are aligned. What financial and nonfinancial benefits accrue to individuals who initiate or terminate a search or continue a search that is already under way? What are the net benefits to the organization of starting, stopping, or continuing to search along a given trajectory? Search traps or failures may be either Type I (pursuing a development path unlikely to reach a profitable solution) or Type II (not pursuing a path likely to reach a profitable solution). To better understand the economics at play, it may be possible to use industry and internal data to multiply the probabilities of these errors by their costs. That economic understanding, in turn, permits a company to tailor incentives for individuals to minimize Type I errors (by motivating employees to reject apparent losers more quickly) or Type II errors (by motivating them to persist along paths of uncertain value slightly longer than they normally would).

Predicting the future

Now consider the case of a multinational telecommunications service provider that operates several major broadband, wireless, fixed, and mobile networks around the world, using a mix of technologies (such as 2G and 3G). It wants to develop a strategic outlook that takes into consideration shifting demographics, shifting technologies for connecting users with one another and with its core network (4G), and shifting alliances—to say nothing of rapidly evolving players from Apple to Qualcomm. This problem is complicated, with a range of variables and forces at work, and so broad that crafting a strategy with big blind spots is easy. Flexons can help.

Each view of the world described below provides valuable food for thought, including potential strategic scenarios, technology road maps, and possibilities for killer apps. More hard work is needed to synthesize the findings into a coherent worldview, but the different perspectives provided by flexons illuminate potential solutions that might otherwise be missed.

Decision agents. Viewing the problem in this way emphasizes the incentives for different industry players to embrace new technologies and service levels. By enumerating a range of plausible scenarios from the perspective of customers and competitors, the network service provider can establish baseline assessments of future pricing, volume levels, and investment returns.

Networks. This lens allows a company or its managers to look at the industry as a pattern of exchange relationships between paying customers and providers of services, equipment, chips, operating systems, and applications, and then to examine the properties of each exchange network. The analysis may reveal that not all innovations and new end-user technologies are equal: some provide an opportunity for differentiation at critical nodes in the network; others do not.

System dynamics. This flexon focuses attention on data-flow bottlenecks in applications ranging from e-mail and voice calls to video downloads, games, and social-networking interactions.⁵ The company can build a network-optimization map to predict and optimize capital expenditures for network equipment as a function of expected demand, information usage, and existing constraints. Because cost structures matter deeply to annuity businesses (such as those of service providers) facing demand fluctuations, the resulting analysis may radically affect which services a company believes it can and cannot offer in years to come.



Flexons help turn chaos into order by representing ambiguous situations and predicaments as well-defined, analyzable problems of prediction and optimization. They allow us to move up and down between different levels of detail to consider situations in all their complexity. And, perhaps most important, flexons allow us to bring diversity *inside* the head of the problem solver, offering more opportunities to discover counterintuitive insights, innovative options, and unexpected sources of competitive advantage. ○

⁵ The information-processing flexon, which focuses attention on the computational tasks required to give users access to assured data streams, is also relevant for evaluating bottlenecks and facilitating predictions about how networks and operators will fare in the future.

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Applied Insight

Tools, techniques, and
frameworks for managers

93

Facebook's Sheryl
Sandberg: 'No one can
have it all'

**Spotlight on
emerging markets**

98

Developing winning products
for emerging markets

104

Moving from education
to employment in emerging
markets

108

Timken CEO James Griffith
on his company's emerging-
market approach



Facebook's Sheryl Sandberg: 'No one can have it all'

Coming to terms with that reality is invaluable for women trying to find fulfillment as both great leaders and great parents.

Facebook COO Sheryl Sandberg has emerged as a leading voice for gender equality since she delivered, in late 2010, a provocative TEDWomen address on why a smaller percentage of women than men reach the top.¹ In this interview with McKinsey's Joanna Barsh, Sandberg (an alumnus of McKinsey, the US Treasury Department, and Google) expands on issues from her new book, *Lean In: Women, Work, and the Will to Lead* (Knopf, March 2013), and explains why women need to "lean in" to gain confidence, develop skills, and become more comfortable as leaders—herself included.

The Quarterly: *When were you first self-aware that you really were a leader?*

Sheryl Sandberg: I don't easily identify as a leader. Looking back on my childhood, I thought of myself as a little bossy. I think as a boy, I would have thought I was a leader. We need to change that if we want more women in leadership.

The Quarterly: *What drives you today?*

Sheryl Sandberg: I really want to do mission-based work. I believed in the

Google mission. I believe strongly in what Facebook's doing. That's why I get up and go to work every day. But probably for the first time in my life around these issues for women in leadership—maybe a "calling" is too strong of a word—it feels like something I was meant to do, supposed to do, have an opportunity to do, maybe have a responsibility to do. I spent most of my career, including my time at McKinsey, never acknowledging that I was a woman. And, you know, fast forward—I'm 43 now—fitting in is not helping us. Women have held 14 percent of the top jobs in this country for ten years. No progress. We need a new and much more honest and open dialogue on gender.

The Quarterly: *When did the shift happen for you?*

Sheryl Sandberg: I left McKinsey; I went into the government for four years. When I then left Treasury, it took me almost a full year to get a job. By the time I got my job at Google, I was so happy to have employment that I was no longer afraid, I just wanted to start. I began with a team of 4 people and wound up with a team of 4,000. So for the first

time, I really managed a large group of people. At every stage, the men were in my office, saying “I want the next job. We’re opening an office in India, I want to do it.” And the women, when I tried to talk them into taking on something new, said: “You really need a new role.” “*I’m still learning.*” “You really should think about doing something else.” “*I’m not sure I’m qualified for that job.*” Sentences I never heard from the men.

If you drill into the data, study after study shows exactly the same thing. Starting in junior high, if you ask boys and girls, “Do you want to lead? Lead your high-school class, lead your junior-high-school class, lead your club in college, lead the organization, team, or company you join as an adult?” More men than women want that. All the studies show this. And that’s how we get to a world where 14 percent of the top corporate jobs are held by women. We need to encourage women to lead, and we don’t do that.

The Quarterly: *How did you step into that?*

Sheryl Sandberg: I sit here today not having a comfortable relationship with power, ambition, or leadership. For men, *leadership, power, and ambition* are unambiguously good words. As men get more successful and lead more, they’re better liked. For women, those things are not encouraged and actually are actively discouraged, because all of us, men and women alike, dislike women who are more successful. As men get more successful, they are liked more. As women get more successful, they are

liked less. That is a really powerful negative incentive for women to lead.

The Quarterly: *Why is building communities of women so important to you?*

Sheryl Sandberg: The tension between work-at-home moms and work-in-the-office moms is real. All of us feel it. That needs to change. I look at what the women in my community who are working in their homes are doing not just for their children but for mine. And this is hard because I drop my kids off and they’re there. I volunteer some, but I don’t volunteer nearly as much as those mothers. I can feel guilty and jealous. Or I can feel grateful that my kids are getting a better education because of them. The reverse happens, too, as I’ve heard from my friends who are stay-at-home moms. They say that when they see women in the workforce, they can sometimes feel bad about their own choices. But sometimes they’ll say, “They’re setting a great example of what’s possible for my daughter.”

One of the most important things women can do working together is to make it clear that every bit of work a woman does—whether it’s in the home, in the school, in the community, or in the workplace—is valued as much as work that men do. Across the board, we are not there. Women are paid 77 cents for every \$1 men are paid. For the same work, we are paid less and are less valued. We are promoted less. We get fewer of the top jobs. We do not live in an equal world. An equal world

would be a world of equal opportunity and equal choice and equal encouragement. Compare a career to a marathon. Men and women arrive at the starting line equally trained and fit. You could argue, based on educational attainment, that the women are *more* trained and fit. But at least equal. And think of a career like a marathon: long, grueling, ultimately rewarding. What voices do the men hear from the beginning? “You’ve got this. Keep going. Great race ahead of you.” What do the women hear from day one out of college? “You sure you want to run? Marathon’s really long. You’re probably not going to want to finish. Don’t you want kids one day?” The voices for men get stronger, “Yes, go. You’ve got this.” The voices for women can get openly hostile. “Are you sure you should be running when your kids need you at home?”

The Quarterly: *Women in their 20s seem worried: “I’m working too hard to find a partner.” “I can’t have a baby and do this.” “I can’t do all these things.”*

Sheryl Sandberg: Women start worrying about balance at a really young age. We were raised in my generation with “You can do anything.” We didn’t have the example of trying to do both careers and families and it not working. We didn’t worry about this at all. I never thought about whether or not I could balance kids. It just never occurred to me. It would just all work out. But the girls in college today—they’re worrying about it. So I am worried that our leadership percentages at the top could actually go down.

In business, most trends that go up for a while, or are flat for ten years, then go down.

I fully understand that there are lots of reasons to take time out of the workforce or leave the workforce. And I’m fully supportive of any men or women who want to do that. But I really want to urge women: do that when you have a child. Not three years in advance. Because by leaning in and keeping your foot on the gas pedal, you just give yourself options. And then you can make better choices.

The Quarterly: *What about after women have a family?*

Sheryl Sandberg: No one can have it all. That language is the worst thing that’s happened to the women’s movement. You know, no one even bothers to apply it to men. It’s really pressure on women. I think what happens to women is we compare ourselves at home to the women who are work-at-home mothers and we fall short. Compared to them, I fall short every day. And then you can compare yourself at work to some women but mostly men who have no other responsibilities, really. They go home whenever they want. And you can feel bad there, too.

So we can spend all our time feeling terrible about how we’re lousy workers and lousy mothers. And, by the way, I do this a lot. All of us do. Or we can start realizing that we can be great mothers. The data on this is super clear: you can be a very successful parent with a

I want to change the numbers at the top. I'd like to know that in my daughter's generation, they are not going to be 14 percent of the top jobs.

great relationship with thriving children and have a full-time job. And you can be a great worker and a great colleague at work but not be there for 12 hours a day in person. And I think we have to let ourselves do that.

The move from Google to Facebook was scary. I was going from just running sales and operations to running the whole business side. Facebook's regular hours were often all-nighters. If I had just stayed there all night because that's what everyone did, I would have been exhausted. I would have decided that I was a bad mom, and eventually I would have quit. The other way it could have worked out was if I could come in early, work the hours I wanted to work, leave at 5:30 pm, get back online—which is exactly what I do to this day—and see if it worked out. And then if it did work out, I had a chance of staying.

What I think people don't see is, if you do it the first way—just do everything asked of you—you're not actually giving it a chance to really work. If you do it based on what you really need, then you can. And I'm not saying I don't make

sacrifices. You know, there has never been a 24-hour period in five years when I have not responded to e-mail at Facebook. I am not saying it's easy. I work long hours. I am saying that I was able to mold those hours around the needs of my family, and that matters. And I really encourage other people at Facebook to mold hours around themselves.

The Quarterly: *Your aspiration is to make “leaning in” a global trend for women. In fact, you are seeding a nonprofit called Lean In. What are your hopes for that?*

Sheryl Sandberg: I am hoping that my book is just the start of the conversation. I really want to help build a global community where we're giving women not just the desire to lead but the support and the tools they need to do it. So the Lean In community is doing three things. First, we're helping to foster a daily conversation. It will take place on Facebook, unsurprisingly: people telling their Lean In stories, people discussing issues—creating opportunities for people to come together around the issues and challenges women face in leadership.

The second thing we're doing is Lean In Education. We're getting great practitioners and professors who teach classes for usually very elite groups of women. We're taping them and putting them online where they're broadly accessible to anyone. And the third thing we're doing is based on the YPO² model, helping women and men set up Lean In circles: peer groups of 8 to 12 people who agree to meet once a month. The idea is that by giving women the tools, the education, and the support they need, we can encourage more women to lean in and encourage more men and more organizations to explicitly support women in leadership.

I want to change the numbers at the top. I'd like to know that in my daughter's generation, they are not going to be 14 percent of the top jobs. That we're no longer going to write headlines saying that women are taking over the Senate when they get 20 percent of the seats; 20 percent is not a takeover. I want real equality. ○

¹"Sheryl Sandberg: Why we have too few women leaders," ted.com, December 2010.

²Young Presidents' Organization.

Sheryl Sandberg is the chief operating officer at Facebook. She previously served as vice president of global online sales and operations at Google, as chief of staff to former treasury secretary Lawrence Summers, and as a consultant at McKinsey. This interview was conducted by **Joanna Barsh**, a director in McKinsey's New York office.

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Spotlight on emerging markets

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Developing winning products for emerging markets

Sauri Gudlavalleti, Shivanshu Gupta, and Ananth Narayanan

To master the extremes of a fast-changing competitive landscape, challenge your company's assumptions about designing, developing, and manufacturing products for these regions.

A large automaker designed, developed, and—with appropriate fanfare—launched a commercial truck in India's burgeoning and highly competitive market. The vehicle was engineered to let owners in a range of emerging markets run the trucks longer and faster, and at a relatively low operating cost. Higher asset utilization, company leaders believed, would improve profits for truck owners and, ultimately, the automaker.

The truck was a disappointment. The company hadn't adequately accounted for India's poor roads and infrastructure, which often prevent vehicles from maintaining the most efficient operating speeds. Even though the truck's price was competitive against local offerings—and half that of a comparable vehicle in developed markets—in the buyers' eyes the potentially higher utilization wasn't worth the expense.

Think this was a ham-fisted multinational dabbling in a market it didn't fully understand? Think again: the automaker was based in India. To be sure, multinationals tend to suffer such setbacks more often than local players do, but this company's example underscores the difficulty of understanding customer needs in fast-changing emerging markets.

Indeed, around the same time, another domestic competitor suffered a similar fate. That company's commercial vehicle, offered at an even lower price, was also tailored for India; it featured a lower-capacity, low-cost engine well-suited to run efficiently on the country's grid-locked roads. Yet it too proved a let-down. The cause: an unfairly earned reputation for unreliability that the company ultimately attributed to owner-operators who, to maximize profits, overloaded the trucks far beyond recommended weight limits. Within a couple of years, the overloaded engines began to malfunction, customers became angry, and the vehicle's sales plummeted.

Such cases underscore the challenges of designing, developing, and manufacturing products for fast-changing emerging markets—environments where customers are both extremely price conscious *and* demanding. Against this backdrop, a growing number of companies find that they must reexamine their traditional approaches to product development and tailor them to these realities. We call this process “design to value.” In some cases, designing to value means applying traditional tools in new ways, in others adopting a new mind-set about what customers want and how to deliver it.

It's still early days in this space, and no organization has yet mastered the challenges. But a look at the practices that leading product developers use offers at least three lessons for companies wrestling with the extremes of competition in emerging markets. The urgency to adapt will only increase as consumption in these markets contributes a growing share of global economic growth in the decade ahead.¹

1. Shake up your thinking

The combination of rapid change and heightened competition in emerging markets puts a premium on useful customer insights, even as they become harder to get. Indeed, poor infrastructure, vast distances, and fast-changing customer segments make traditional fact-gathering approaches (such as ethnographic research or even focus groups) expensive and time-consuming. Therefore, top companies don't pass up any opportunity, however modest, to sharpen their understanding of customer needs.

Collision workshops—which might include customers but primarily convene suppliers, marketers, product engineers, and other company representatives—can help. They offer a low-tech way of quickly generating and discussing customer insights and a forum to identify hypotheses that companies can later test more traditionally. To some extent, these meetings represent a cheaper and more flexible way of generating the kinds of insights that R&D pioneers such as Bell Labs and IBM's Watson Research Group achieved through

formal, multidisciplinary R&D labs. As with these venerable examples, an important goal of collision workshops is to challenge ingrained habits of thought by pulling together representatives from functional groups that normally don't interact.²

The resulting insights can be quite useful. An automotive-parts manufacturer in a fast-growing Asian market used a collision workshop to identify a new niche in its wheel business. During a discussion about products for passenger vehicles, a marketer mentioned that the company's wheels were heavy—an observation he'd heard from a customer. This comment, made in passing, intrigued the engineers in the room, who went on to sketch out a counterintuitive proposal that the company ultimately refined and adopted: using a slightly higher grade of steel to make wheels lighter and more fuel efficient. Even though the new steel was more expensive, the company lowered its total costs because the wheels now required less steel than they had before.

A large telecommunications and data-services provider used a collision workshop to discuss how B2B customers in smaller, tier-two and -three cities differed from those in the largest urban areas. The "aha moment" came when marketing and pricing experts teamed up with product engineers to ask whether the company might offer price discounts to some customers in smaller cities in exchange for slightly lower network uptime than the near-100 percent guaranteed to commercial customers in major metropolitan areas. The company ultimately found it could lower its price for some cus-

tomers in tier-two cities, making its offer highly competitive there, while slashing the cost to serve by a factor of four through the use of a different network architecture and a simpler, redesigned version of its standard network-switching equipment.

Another way companies shake up their thinking is to look beyond traditional competitors for design ideas. A low-cost appliance maker learned of a more high-tech approach for coating its fans by studying painting techniques developed in the automotive industry. The fan maker's executives had always resisted technological solutions, preferring to substitute labor for capital because of low workforce costs. But after studying the automakers' approach, which kept the thickness of each coat of paint to specified levels, the executives changed their minds. Ultimately, a 4 percent savings in paint costs more than offset the expense of new equipment.

Similarly, a global farm-equipment manufacturer looked to an adjacent vehicle category in which it didn't compete to create a simpler, cheaper design for the claw mechanism in a new low-cost rice-transplanting machine. By applying this thinking to other products, the company also identified comparable improvements in a different low-cost product line.

2. Start from scratch

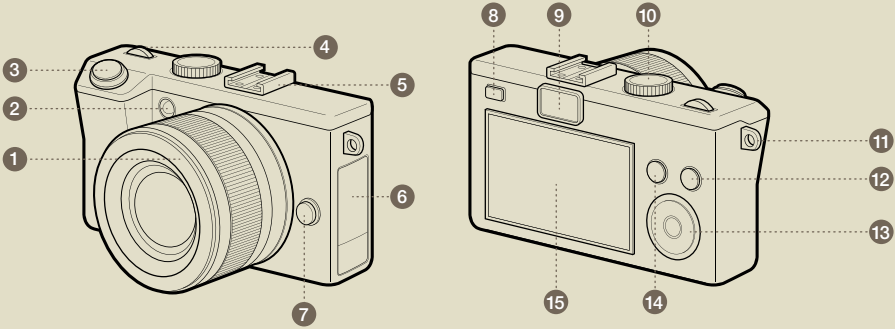
By now, most companies recognize that trying to interest discerning emerging-market consumers in stripped-down, low-cost versions of the products they sell globally is a recipe for letdown. Yet many

Exhibit

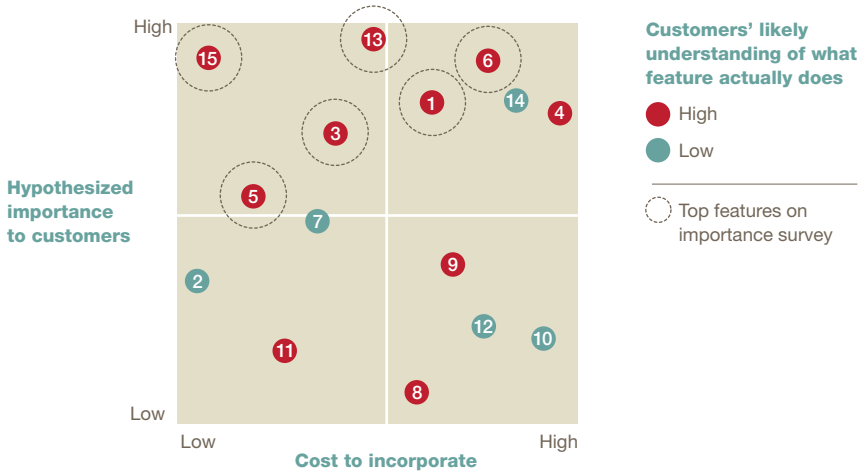
Identifying and prioritizing the right features for emerging markets requires discipline.

Illustrative example

Step 1. Identify all modifiable features of the product.

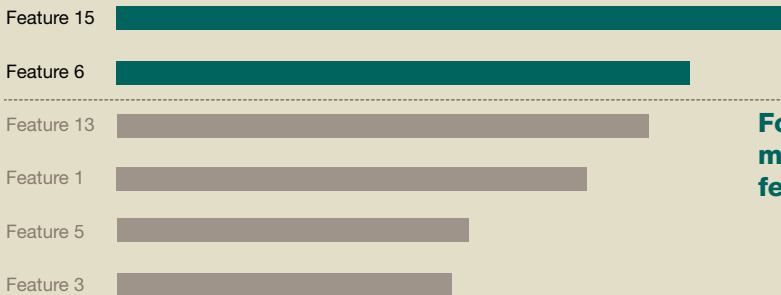


Step 2. Categorize all features along three dimensions.



Step 3. Conduct a forced ranking of the top six to eight features.

Scores of top 6 features on importance survey



Focus on the most important features

companies still aren't fully aware of how far they must go to differentiate their products for these customers. Top companies, by contrast, are highly disciplined, even relentless, about setting priorities and putting aside existing assumptions. Leaders start by identifying the most important feature or two and focusing heavily on them (exhibit). This approach is quite different from the one that many companies tend to have: regarding all features as equally valuable and preferring more rather than fewer of them—an attitude deeply ingrained in some engineering cultures.

The farm-equipment maker started with a feature that its analysis showed mattered most to small-scale farmers: the durability of tires. Farming in one region required considerable back-and-forth driving in mixed terrain (tar roads and soil). By redesigning tires to maximize their useful life, the company made its vehicle far more appealing to local customers. This company's crucial willingness to challenge its assumptions ultimately led to a broader set of improvements.³

By contrast, companies that fail to reexamine the assumptions inherent in their product designs risk making ill-informed decisions. A global maker of electrical products learned this the hard way when it introduced a minicircuit-breaker system to offer customers in India better protection from the country's frequent power fluctuations and brownouts. The product, adapted from a comparable developed-world model, was technically sound and arguably superior to the alternatives. Yet sales suffered as customers turned to products from competitors offering an older—and cheaper—"use and throw"

fuse technology. Not until the company started over with a new design incorporating the older technology did the product become competitive.

A handful of leading companies extend this thinking further still, approaching their product portfolios with a "zero-based design" mentality. The benefits can be profound. A global consumer-products company, for example, was losing share in an important Asian market to a domestic competitor offering a lower price for a common personal-care product. Instead of responding with a marketing push or a price cut, the consumer-goods maker ran a head-to-head comparison of the two products—including a sophisticated analysis of chemical ingredients. This investigation showed that the low-cost company, using a formulation that was half as costly as the global player's, was achieving the same levels of efficacy. What's more, the rival's pump bottle maximized margins by delivering 10 percent more "product per pump." After receiving this wake-up call, the global company redesigned its product from the ground up, ultimately changing the formulation, packaging, and even design of its pump bottle. The rejuvenated product, vastly cheaper to produce and no less effective than its predecessor, generated a 40 percent margin improvement.

Similarly, the telecommunications and data-services provider recognized that its mobile-phone towers were overdesigned compared with those of its competitors. By starting over from scratch, the company lowered its cost to build each tower by almost 30 percent, while still meeting or exceeding local safety regulations.

3. Design for manufacturability

A final way top product makers separate themselves from the competition is to go on challenging their assumptions well into the manufacturing process.

Surprisingly, perhaps, though most global companies have manufactured products in emerging markets for years, they typically don't go as far as they could to design them with emerging-market customers *and* workers in mind. By contrast, clever product makers look for easy opportunities to tweak their products and processes further and thereby lower their capital costs.

To be sure, this is good practice *anyplace* companies operate, but an especially important one in emerging markets given the fierce levels of competition there.

For example, a large producer of engines and industrial equipment recognized that by making straightforward design changes to one of its drive-shaft assemblies, it could reduce the complexity of the machines needed to build them. Just allowing for more generous radii and bends in a few key spots would make it possible to produce the components with hot forging hammers, a cheaper technology than the high-speed cold-forging machines the company used at home. The changes helped reduce costs for materials by 10 percent, in part by enabling the company to source more goods and equipment from local suppliers.

The farm-equipment maker lowered its costs in a similar fashion by identifying places where its frontline workers could replace expensive fasteners with cheaper welds during product assembly. This reduced not only the company's

manufacturing costs but also the cost of maintenance for farmers, who otherwise had to replace the fasteners as they fell off.



Traditional approaches to product development are coming under strain as emerging markets start to dominate the global economy. Companies that learn to shake up their thinking and effectively challenge the assumptions about how they design, develop, and manufacture products are more likely to master the extremes of this new competitive landscape. ○

¹For more, see Yuval Atsmon, Peter Child, Richard Dobbs, and Laxman Narasimhan, "Winning the \$30 trillion decathlon: Going for gold in emerging markets," *mckinseyquarterly.com*, August 2012.

²See Bernard T. Ferrari and Jessica Goethals, "Using rivalry to spur innovation," *mckinseyquarterly.com*, May 2010.

³The farm-equipment manufacturer's willingness to challenge its assumptions didn't stop with product design and development. The company also used the customer insights it gathered during its product-redesign efforts to inform changes to its business model—for example, by adding a "lease for the season" option that boosted revenues significantly.

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Spotlight on emerging markets

Moving from education to employment in emerging markets

Diana Farrell and Mona Mourshed

Qualified candidates are often scarce in these countries. Forward-looking companies tackle the challenge through smart partnerships, helping local communities—and themselves.

Companies eyeing growth or expansion opportunities in emerging markets often face a paradox: qualified candidates for entry-level jobs are scarce, despite high levels of youth unemployment (exhibit). Moreover, looming imbalances in global labor pools suggest that the problem could get worse. Research from the McKinsey Global Institute finds that

by 2020, developing economies could face a shortfall of 45 million workers with secondary-school educations and vocational training.¹ Such outcomes, which heighten the risk of social unrest, are bad for business *and* society.

Against this backdrop, McKinsey undertook a comprehensive study of the

education-to-employment journey, interviewing 2,700 employers, 4,500 young people, and 900 education providers in nine countries.² While just 31 percent of employers overall believe they are doing a good job in recruiting, training, and keeping young hires, we did observe numerous individual programs that work well—many in emerging markets and many the result of clever partnerships that support companies in their efforts to create a workforce. The following four examples offer insights for senior executives hoping to bolster their talent base anywhere—but particularly in the developing markets rapidly beginning to dominate the global economy.

Manufacturing in Morocco

With a youth-unemployment rate near 30 percent and a growing population of young people, Morocco needs large-scale investment.

Recognizing an opportunity, the global automaker Renault partnered with the Moroccan government in 2011 to develop the country's auto industry. The result: Renault invested more than €1 billion in a new automotive-assembly plant, and the government founded the Institute for Training Automotive Professionals.

Renault created the curriculum and trained the faculty, while the government provided the institute's initial capital



For more, see the full report, *Education to employment: Designing a system that works*, on mckinsey.com.

investment. Morocco will subsidize operating costs until 2014, and the automotive industry will pay for the institute thereafter. The program is expected to go on training Renault's 6,000 Moroccan employees until 2014. At that point, the institute plans to target the employees of Renault's 125 small and midsize suppliers in Morocco.

Similarly, a local Moroccan foundation worked with Bombardier, the Canadian aircraft manufacturer, to train 1,000 youths for jobs in its Casablanca plant. Graduates of the program began making flaps and ailerons for the company's CRJ regional airliners—work that had previously been done in Europe. By 2020, the Bombardier plant is expected to have 850 workers.

Coalition building in Brazil

Brazil's oil giant, Petrobras, which is majority owned by the state and competes against domestic and foreign players, lacks the talent it needs to fully develop the country's vast petrochemical reserves, despite a 17.8 percent youth-unemployment rate. Further, protectionist labor policies and a shortage of Portuguese speakers from other countries have inhibited the company from hiring foreign experts.

So Petrobras works closely on the problem with the Brazilian Oil and Gas Industry Mobilization Program (Prominp), a coalition of more than two dozen government agencies, private companies, trade associations, and labor unions. The first step is to develop detailed projections, based on a rolling five-year analysis, of how many people with

specific kinds of skills (say, shipyard welders, pipefitters, and petroleum engineers) the industry needs. Then Prominp identifies the best available provider to codevelop a curriculum with a specific oil or gas company to meet those requirements. Petrobras, by far the biggest player, pays 90 percent of the costs of training, the government the rest. Prominp trains 30,000 students a year and had qualified 90,000 of them by the end of 2012. It wants to scale up to bridge the projected skill gap of more than 200,000 professionals by 2014.

Searching for gold in South Africa

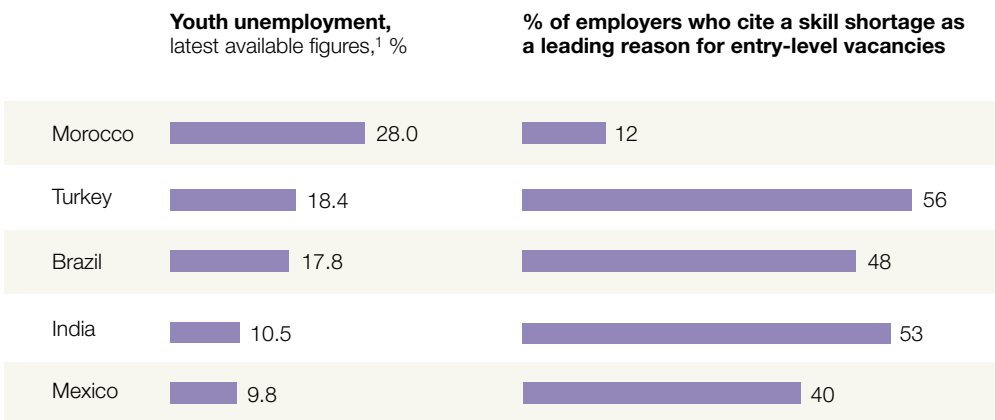
In some countries, the constrained supply of workers forces competitors to address the challenge collectively.

For example, Go for Gold, a partnership among more than 20 South African companies and the government, takes a long-term approach to increasing the number of qualified candidates in the construction, building-services, and engineering fields. Promising students, chosen for the program while in secondary school, receive tutoring in math, science, and general life skills. Before enrolling in a university, they are assigned to a company for a year of paid work experience to test their interest in and suitability for a career in that company's industry.

The company can then choose to sponsor the students through college and guarantee them employment after graduation. Mentoring arrangements help ensure that participants are guided, monitored, and assisted in making

Exhibit

Youth unemployment in emerging markets is high, yet many employers report that qualified candidates for entry-level jobs are scarce.



¹ For Mexico and Turkey, 2011; Brazil, 2009; Morocco, 2008; India, 2005.

Source: Organisation for Economic Co-operation and Development (OECD); 2012 McKinsey education-to-employment survey; McKinsey analysis

informed decisions. “Because of the way [the] program’s run, and the values that we instill in these young people,” explained the program’s director in an interview, companies “know that it is a good investment.” Since 1999, 360 students have gone through the program, and almost two-thirds are still working in the industry in which they trained.

Changing stereotypes in Jordan

Despite high levels of youth unemployment, people are reluctant to take certain kinds of jobs. In Jordan, for example, educated locals have been decidedly unenthusiastic about becoming retail pharmacists, in a country with a youth-unemployment rate of about 33 percent.³ (One hypothesis: the country’s large number of resident foreign nationals tend to take the least prestigious jobs, reinforcing cultural stereotypes.)

Even though around half of Jordan’s recent university graduates fail to find work, Pharmacy 1, the country’s largest pharmacy chain, could not persuade people to enter the field. Jobs in the sector were thought to be “for those who had no other option,” founder and CEO Amjad Aryan told *Jordan Business* magazine. “We really wanted to get students thinking of it as a viable career path.” So the company created training programs with four universities, even donating replicas of its pharmacies so that students could get an accurate sense of what the work was like. Pharmacy 1 employees, volunteering to serve as faculty, are in a position

to guide and recruit students into the industry. Aryan himself has taught leadership and communication classes. The program has thus far been successful: about 90 percent of the company’s new pharmacists are graduates of these courses; 70 percent are female. And because the graduates are trained on Pharmacy 1 equipment, they are ready to contribute from their first day on the job.



To find qualified candidates in emerging markets, businesses can’t wait for education to improve or for governments to institute the right policies. Forward-looking companies seek ways to help their communities—and themselves—through smart partnerships. ○

¹See Richard Dobbs, Susan Lund, and Anu Madgavkar, “Talent tensions ahead: A CEO briefing,” mckinseyquarterly.com, November 2012.

²Brazil, Germany, India, Mexico, Morocco, Turkey, Saudi Arabia, the United Kingdom, and the United States.

³Areej Abuqudairi, “Youth unemployment remains a major challenge for Jordan,” jordantimes.com, December 31, 2012.

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Spotlight on emerging markets

Timken CEO James Griffith on his company's emerging-market approach

Timken CEO James Griffith describes the skills, costs, and challenges of transforming the iconic bearings maker in an age of emerging-market growth.

Creating value

I look at it from a 30-year perspective. There have been a series of waves that changed the world of manufacturing. First, in the '80s the Japanese came to America and the world globalized. Then, in the '90s the American consumer rose and took advantage of that globalization by buying things from China. What that caused, in the 21st century, was

the rise of the middle class of China, which has created an opportunity—for those of us that make equipment for infrastructure—to sell on a global basis.

Timken is 113 years old. We were founded by a carriage maker who patented the tapered bearing with the idea that he would help mechanical-power transmission. For a hundred years, all we made were bearings and steel. As we entered

our second century, we had to go back to the fundamental value that the company creates—and that is we make machines more reliable. We had to change the markets, the products, the geographies we've served, and that's required a radical change in the human face of the company.

I recall when I was flying to China one time and I heard that they're going to make 18 million cars this year. I thought, "Well, this is a megachange." You really have to step back and say, "Where in that value chain do you create value?" For a company like Timken, you would think the answer is obvious: you'd sell to the carmakers.

Except we recognized that our value was much stronger up the value chain—from the miners in Australia, running the big, heavy drag lines and heavy trucks, to the steelmakers and cement makers in China. So as we went to Asia, we executed a major shift to become a diversified industrial company and actually have chosen not to play in the auto industry at all in China.

When we looked at the auto industry, we recognized that we make something that creates a more reliable product. We could make a car last for a million miles, but nobody cares. On the other hand, if we can make a 400-ton truck go 8,000 hours instead of 4,000 hours between major rebuilds, that's of incredible value.

We recognized that that's where we were—where the applications were the hardest, the dirtiest, and the most challenging. Those were the industrial

markets, the infrastructure markets. Where did the infrastructure get developed in the last decade? In Asia. So that's been our fastest-growing market.

On my watch, in the past ten years, virtually 100 percent of our new plant capacity has gone to Asia. And yet in 2011, we exported \$660 million worth of product out of the United States to those markets because we learned how to play in those markets. That drives the demand for American goods and allows us to employ 11,000 people in the United States.

Skills, not costs

When we look for a place to manufacture, we look for three things: we need to be in a place that's got a significant market for our product, we need to have access to raw materials, and we need a high-skilled workforce because even the people who run the machines are dealing with CNC¹ controls, computerized process controls, and fairly complex math just in order to understand the tolerancing of the product. So we start with the idea that we're going to go someplace that's got a good educational program. Then we invest in it as a company. We invest as individuals to build that capability.

I inherited a company with a strong North American and Western European manufacturing base. Over the last ten years, we've added a very strong Eastern European, Indian, and Chinese manufacturing base. We added it not because it had low labor costs but because those were the markets that were growing.

“We have a steel business. It doesn’t sound very innovative until you recognize that 30 percent of what we sold this year didn’t exist five years ago.”

Over time, we try to manage a natural hedge from a currency point of view, so that we balance what we manufacture in a particular currency region with the markets in that region. For us, people skills are far more important than people costs. We opened a plant in Chennai, India, five years ago. And we did it with a complete Indian workforce, top to bottom, because our most senior people in India now have 20 years with us.

Innovation

When we started our transformation, one of the things we recognized was that our knowledge about mechanical power transmission was unmatched. It’s based on a century of investments in R&D and technology. What we also recognized was that we had become rigid in how we took that knowledge to market.

So the majority of our innovation has been around how you change business models to unlock the value of that technology for a customer. The rail industry is probably the best example. We invented the wheel bearings for freight cars. We’ve incrementally changed them over time, but the

fundamental design hasn’t changed for 50 years. And 50 years into that product line, you don’t make very much money making the product.

In the middle ’90s, we bought a company that remanufactures wheel bearings. Today, 75 percent of the global revenue in our rail business is in remanufacturing—a service we provide to customers that gives them a lower cost of use and greater security or safety on the rails but actually takes away volume from our manufacturing base.

Our first major customer in China was a company called Shanghai Heavy Industries that makes coal pulverizers for electrical-power generation. We developed with them in China; now they’re exporting coal pulverizers to Indonesia. We’re building a service base to provide the Indonesian power generators with a lifetime of value.

We have a steel business. It doesn’t sound very innovative until you recognize that, in our steel business, 30 percent of what we sold this year didn’t exist five years ago. In the aftermarket, we’re building a broader portfolio of products and having on-time delivery that’s better than

anybody else in the world. Again, it starts with the customer. What creates value for the customer? Then we just innovate backward to create the value stream that brings it.

Risks and opportunities

Volatility is something we've worked incredibly hard to deal with. We do it with contractual terms—with our customers in the steel business, for example. They take the volatility of raw-material prices. We deal with it in the way we structure our workforce. In all of our plants, we try to do a mix of “fixed,” permanent Timken people and a contingent workforce that allows us to deal with volatility. And we're open with our people.

The other piece, from a market-portfolio point of view, is that we have worked very hard to move ourselves from an OEM market. The capital-goods market is what drives a lot of volatility of demand, whereas the aftermarket is much less volatile.

So if you looked at the acquisitions that we've done over the past five years, virtually all of them are in this aftermarket space. We're trying to take some of the volatility of demand out, so that our people aren't impacted so dramatically. To put it in perspective, our industrial aftermarket when we started the transformation, in 2000, was around \$200 million. Today, it's about \$1.2 billion. 

¹Computer numerical control.

This commentary is adapted from an interview with **Katy George**, a director in McKinsey's New Jersey office.

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To watch the full interview, see “Manufacturing's new era: A conversation with Timken CEO James Griffith,” on mckinsey.com.

Extra Point

Four principles for making better decisions

Authors (and brothers) Chip and Dan Heath propose four steps for improving decision making. Below is an overview of that process, whose initials spell “WRAP.” It’s elaborated in their new book, *Decisive: How to Make Better Choices in Life and Business* (Crown Business, March 2013).



For example: Consider at least two robust options for every decision.

Important because: Adding just one alternative makes very good strategic decision making more likely—*six times* more likely, according to one research study.



For example: Enforce vigorous debate on both sides of an issue and resolve debates with data by running small experiments to test assumptions.

Important because: We are two times more likely to consider information that tends to confirm our assumptions than information that tends to disconfirm them.



For example: “Fire” yourself and ask what your successor would do. That’s how Andy Grove broke through Intel’s indecision in the mid-1980s about whether to divert resources from the company’s long-standing core business in memory chips and go full force into microprocessors.

Important because: The status quo is powerful. Research shows that over time, even arbitrary choices are regarded as valuable and right.



For example: Set a clear tripwire now: “If we don’t achieve a market share greater than 20 percent in the first year, we’ll revisit our idea of entering the Southern market.”

Important because: Our predictions are often incorrect, even when made with high confidence. In one study, doctors who expressed complete certainty in a diagnosis were wrong 40 percent of the time.



For more on this topic, see “Making great decisions” on page 66, a conversation between Chip Heath and McKinsey’s Olivier Sibony.

Highlights:

The coming era of 'on-demand' marketing—glimpse into a future where real and virtual experiences collide

Big data: What's your plan?

New tools and frameworks for making great decisions; plus early-stage research on five distinct decision-making styles

Facebook's Sheryl Sandberg: 'No one can have it all'

Five routes to more innovative problem solving

Givers take all: The hidden dimension of corporate culture

Emerging-market focus: product development, the education-to-employment journey, Timken CEO James Griffith on a new era of global manufacturing, and the latest research on African and Indonesian consumers



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