



**Harvard  
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A REPORT BY HARVARD BUSINESS REVIEW ANALYTIC SERVICES

# Delivering on the Promise of Digital Transformation



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**RAPID SHIFTS IN** the ways that technology and information are consumed and delivered—through cloud computing, big data, social networking, and smart devices—are transforming how companies compete. Make no mistake, says Andrew McAfee, cofounder of the Initiative on the Digital Economy at the MIT Sloan School of Management, this bundle of technology disrupters is the real thing.

When fully deployed, these technologies will move most organizations to a new operating foundation, a move that McAfee says is comparable to the shift from steam power to electricity 100 years ago. “Once in a while there is a wave of technology that is such a big deal that transformation becomes the right word,” he says.

In the early 1900s, many companies struggled to understand and financially justify investments in electric power. And few leaders of the steam-powered economy mastered the transition. “It’s a pattern we see over and over when very powerful new technologies hit the business world,” says McAfee. “If you don’t navigate that wave properly, you’re just in a huge amount of trouble.”

This time, IT is at the center of the fray, working with business leaders to develop and execute a digital transformation strategy that capitalizes on these major new technologies. A 2014 study of 537 IT and business decision makers by Harvard Business Review Analytic Services found that by adopting cloud, mobile, big data, and social media technologies together, companies were more likely to reap the transformational benefits of them all. figure 1

For a digital transformation strategy to succeed, though, technology executives must also transform their IT organizations to address the expectations of business users and customers for fast and easy access to IT services, according to Erik Dorr, senior research director with The Hackett Group. In a recent report, “Reinventing IT to Support Sustainable, Innovation-Based Growth,” Dorr and his colleagues write that IT has to “redefine its value proposition and revisit the way its success is monitored, measured, and reported.”

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## HIGHLIGHTS

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**70%**

of companies say data is driving business transformation

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**67%**

of CIOs expect to focus mainly on business strategy within five years

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**35%**

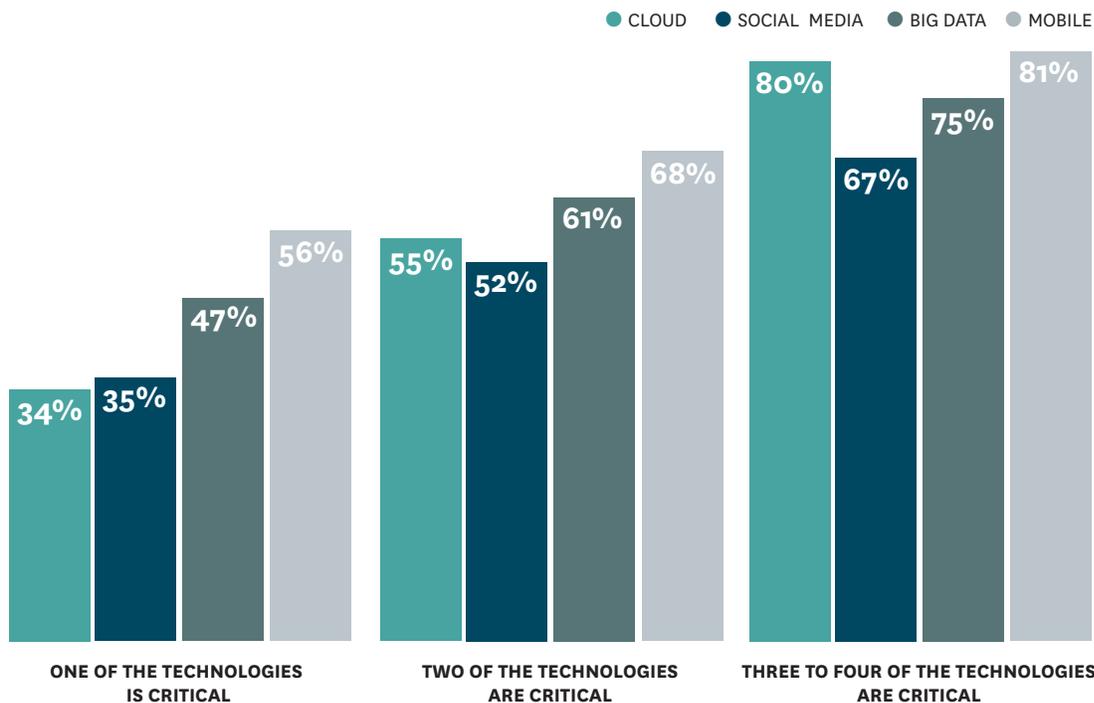
of corporate spending on technology is outside IT

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Figure 1

## Adopting Multiple Technologies Increases Transformation

The greater number of technologies that companies indicated are critical to them, the more likely they were to report each having a transformational effect on their overall business.



SOURCE HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, MARCH 2014

In order to lead this transformation, IT executives must focus on three areas: collaborating with business leaders to build a strategic vision, modernizing technology infrastructure, and rebuilding IT organizations to execute against new digital business goals.

## A Transformed Business Technology Landscape

End-user expectations of IT are high. “Younger people entering the workforce these days find it ridiculous that the technologies they’re asked to work with on Monday morning are—in every important sense that they can perceive—inferior to the ones that they were using on Sunday night,” observes McAfee.

Whether technology users are inside or outside the company, the customer experience shapes everyone’s thinking, says Joe Topinka, CIO and vice president of multichannel commerce for Red Wing Shoes. “It means that IT has to be more converged with business, integrated, and externally focused, because the customer experience can make or break your success.”

Internally, CIOs need to support users’ demands for easy and fast access to information and applications. If IT can’t respond quickly enough, cloud computing makes it easy for business users to go elsewhere for help. *CIO* magazine found in its 2014 State of the CIO survey that so-called shadow IT accounts for 35 percent of corporate IT spending.

“Every year, the percentage [of IT funding] that lives outside the CIO’s budget increases,” says Chris Curran, chief technologist and principal in the advisory practice at PwC, who has been asking companies for years about where the money for IT investments comes from.

Meanwhile, IT executives must find a way to integrate new technologies with their existing infrastructures, while at the same time increasing operational efficiencies and cutting costs. As Topinka suggests, companies that are succeeding at digital transformation know that it involves much more than IT. Leadership and a strategic approach to using IT across the enterprise are also critical.

“It’s not just a matter of checking off a laundry list of innovative technologies,” says The Hackett Group’s Dorr. “They are part of a bigger picture. How much an organization has internalized the importance of being tech-centric into the mind-set and culture translates into how companies think about solving problems, committing resources, and creating opportunities.”

In fact, McAfee and his colleagues found that having a plan for digital transformation was one of the hallmarks of leading-edge digital companies. Among the companies they studied for a forthcoming book, *Leading Digital: Turning Technology into Business Transformation*, so-called digital masters were distinguished by how cleanly that vision was communicated and whether or not employees at all levels could articulate the strategy. (For more about McAfee’s findings, listen to his HBR webinar, [“Leading Digital Transformation.”](#))

## IT’s Enterprise Vision

Although digital innovators lead with a vision, the CIO is integral to executing that vision. “We have found that virtually none of the companies we call digital masters are doing it without including IT,” says Didier Bonnet, senior vice president and head of global practices at Capgemini Consulting. Bonnet is a coauthor of *Leading Digital* with McAfee and George Westerman, research scientist with the MIT Center for Digital Business. “IT is a fundamental component of the solution.”

Nowhere is the collaboration between IT and other business leaders more important than when it comes to identifying and prioritizing digital projects. The CIO may not own the entire corporate IT budget, but he needs to own what PwC’s Curran refers to as “the enterprise view of IT,” which covers both investment prioritization and IT architecture. Companies that don’t treat digital as an enterprise capability run the risk of building new business stovepipes, he warns.

This high-level collaboration requires change by both the IT and line-of-business sides of the house. Jeanne Ross, director and principal research scientist at the MIT Sloan School’s Center for Information Systems Research, says that it’s vital to map digital IT projects to strategic objectives and to have the discipline to say no if someone’s pet project doesn’t measure up. “It’s really hard for companies to stay on target,” she says. “They either haven’t mapped the projects or they aren’t committed to a limited set of strategic objectives.”

“IT has to be proactively involved in strategic initiative development,” says Red Wing Shoes’ Topinka. “We have to get better at helping them realize that we are rowing the boat with them.” The *CIO* magazine survey corroborates the heightened strategic profile of many CIOs. Sixty-seven percent say they will be focused mainly on strategic activities within the next three to five years.

Topinka developed a framework that weighs any new investment ideas against six business criteria: strategic fit, operational fit, cost/benefit, risk, cost certainty, and whether it helps IT retire a system at the end of its life. Each proposal then receives a weighted score depending on how many of the criteria it benefits. “Every investment uses that framework now,” he says, not just technology expenditures. “It came out of IT and now is used throughout the company.”

## Transforming Technology

While the conversation with business users focuses on the business value and the strategic contribution of new technology, CIOs must also take an architectural view of these new technologies as IT investments by evaluating them in terms of how they affect the overall business processes and technology infrastructure of the company. What will happen to existing business processes when new technologies are deployed? How will new systems impact the functioning of existing systems? CIOs must consider important elements such as data flow, access, integration, and security as well as how they can find ways to make existing environments cost less and run more efficiently.

While these operational elements of digital transformation may not be as sexy as developing cutting-edge mobile apps for customers, CIOs have to get them right. “Architecture is one of the key critical capabilities, but most non-IT people don’t get it,” says Ross.

For example, if you have built a mobile self-service app for customers to check order status, you will likely need to pull data from a variety of systems, such as ERP and CRM databases, in order to provide customers with instant access to the information they need. “If your back office is a mess of disconnected customer databases, you won’t get far,” says Bonnet. “The biggest nightmare is how to get data to flow reasonably freely and integrate it in a form that makes sense to the business community.”

Once again, business input is required—only this time, IT must help business users understand technology requirements rather than vice versa. For example, Ross describes the way that Tetra Pak International SA, a \$15 billion Swiss-based packaging and processing company, built a transformation group comprised of IT, strategic planning, and the global owners of seven major business processes, including customer management, product creation, and supplier management. Each process owner works with an affiliated global data owner to build process and data standards; the team then works with local business groups to implement the processes while maintaining data integrity. “IT is a strategic part of the transformation team in these efforts,” she says.

Collaboration between IT and business users on technical questions enables CIOs to integrate previously siloed tools and applications, especially when it comes to making data that employees need more easily accessible and keeping it secure. “A lot of customer experience and improvement opportunities boil down to how much of a handle do we have on our data,” says Dorr. The HBR-AS study found that, among the four transformational technologies, big data is poised to have the greatest impact on business overall in the coming year.

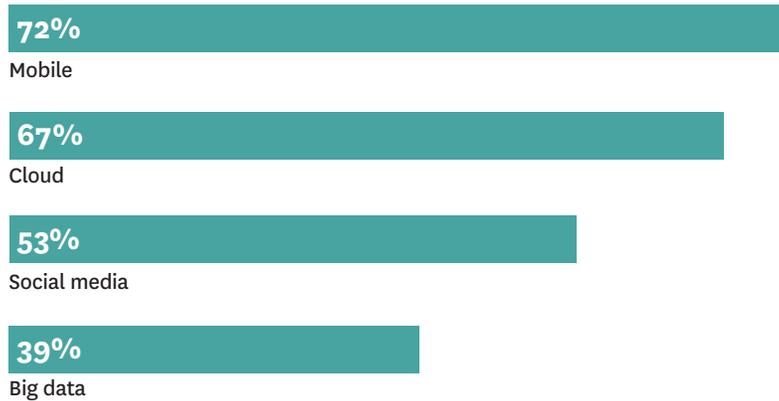
However, integrating new technologies, including cloud-based tools or mobile applications, with existing systems cannot mean rebuilding the IT infrastructure from scratch. “We can’t afford that, and the business probably couldn’t survive that much change,” says Mike Heim, CIO with appliance maker Whirlpool. Rather, IT and business users at Whirlpool need to figure out how to identify and integrate key data sources without gutting existing databases, networks, and storage systems. “The trick is to morph it and find the places where integration really matters,” Heim explains. For Whirlpool, it was most important to provide a clear flow of data from existing systems to applications such as e-commerce or customer service in order to build a flexible, interactive customer experience.

Integration is not the only architecture challenge. The technologies essential for digital business also pose access and security problems. Tauf Chowdhury is an IT service management architect who is helping several large U.S. government agencies improve their IT processes and services. He says that employees at these agencies use an ID card with a chip to log in to their laptops and applications. Those credentials must be extended to cloud applications to ensure that only authorized users can access them, he says. “That’s a big integration to consider.”

Figure 2

## Security Worries Dampen Transformation Efforts

Companies cite data security as a barrier to or risk of using key digital business technologies.



**SOURCE** HARVARD BUSINESS REVIEW ANALYTIC SERVICES SURVEY, MARCH 2014

The Harvard Business Review Analytic Services survey found, in fact, that companies consider data security to be an important barrier to or risk of using cloud, social media, mobile, and big data technologies, even when these are integral to their businesses. [figure 2](#)

Topinka, for example, recently finished a project designed to give consistent information to customers and business users across multiple channels, from retail stores to e-commerce sites. The project required him to tie together information from multiple systems such as sales, CRM, and retail point of sale that resided on premises and in the cloud. Integrating security across the entire infrastructure required all-new security protocols, identification management, and single-sign-on capability. “It’s been a huge challenge to manage,” he says.

Other issues are subtler. For example, how do you manage the pipeline that delivers data between a cloud-based sales application and existing on-premises systems such as ERP? Companies need to consider how much network bandwidth to allocate for such requirements, says Chowdhury. Otherwise, applications won’t run fast enough for users to get their work done.

## A Service-Focused IT Department

Modernizing IT infrastructures addresses the structural and technical hurdles to digital transformation. But supporting the more interactive processes business users and customers want also requires an underlying change in the operating model of the IT group. IT groups that continue to try to control deployment and spending decisions without significant business input risk irrelevance, because business users aren’t going to wait for permission to get the technology and applications they need.

Revamping IT to execute against new digital business goals means, once again, that IT and business must work together more collaboratively. CIOs must reexamine not only how IT is organized but also whether technologists have the right skills to perform well in the new environment. In addition, the IT team needs new methods of learning and working together in order to be responsive to its internal and external con-

Figure 3

## IT's Top Organization Priorities

Technology leaders are focused on transforming how IT operates.

- 1 Strengthen the IT-business partnership
- 2 Redesign IT performance reporting
- 3 Become business-driven instead of technology-driven
- 4 Improve IT resource prioritization
- 5 Improve business intelligence and analytics competency
- 6 Implement technology to support knowledge-centric processes
- 7 Develop externally facing IT skills

**SOURCE** "KEY ISSUES STUDY," THE HACKETT GROUP, 2014

stituents. CIOs, academic experts, and consultants interviewed for this report identified seven areas to target. These areas largely align with findings of The Hackett Group, which identified them among IT's highest priorities. [figure 3](#)

### CHANGE THE ORG CHART

Restructuring the organization to promote IT-business communication and collaboration has become increasingly common, says Capgemini's Bonnet. Companies know digital business is "a two-headed animal," he says, "so they bring IT into the business and business into IT. We've seen models where IT, marketing, and product development have a dual reporting structure into both business and IT."

Mike Heim tackled this issue when he took over as CIO at Whirlpool two years ago. The business side of Whirlpool is run regionally in order to service the wide variety of appliance shapes, sizes, and functions sold in different parts of the world. IT, however, was largely centralized and still used time-consuming traditional development processes. The result was a fundamental disconnect between the business users' needs for fast access to region-specific applications and IT's ability to deliver them.

As a result, business users saw IT as too slow and unresponsive. So Heim instituted agile methodologies, a faster, more interactive way to develop software than the traditional "waterfall" development process. He also moved the e-commerce and application development teams to the regions, under regional CIOs. Colocating some of IT with business users helped his group understand regional business needs better and respond faster, he says.

For example, the company is rolling out a cloud-based mobile e-commerce project in Latin America, where online purchasing is very popular. Heim expects the project to take about five months, a far cry from the old days. "Typically, we would have asked for specifications, then done design and testing. The business would change things, and maybe 15 months later we'd have a live site," he says. "To collapse it into just a few months is huge."

## **CREATE A BUSINESS-FOCUSED CULTURE**

As CIOs reorient their staff to work more closely with business users and customers, many are also seeking ways to bridge what McAfee calls the “geek divide,” in which both business and IT struggle to understand each other’s differing priorities and processes. Nearly half of respondents to the *CIO* magazine survey (47 percent) reported it was difficult to get their IT staffs to be more business-oriented and customer-facing.

“The digital wave that we’re seeing at the enterprise now is either going to make that conversation even less productive or it’s going to force people to come together and start finding ways to talk productively,” McAfee suggests.

At Whirlpool, Heim realized that the structural reorganization would be doomed if IT carried the same old ways of interacting with them. “We had to teach groups that were historically centralized and control-oriented to understand that their role is to support their regions and find the right way to say yes,” he says.

Changing that mind-set became one of IT’s global strategic objectives. Heim had the entire IT organization run through a business relationship management training program aimed at eliciting more responsive, collaborative behavior from IT. “We talked about important behaviors, such as being urgent, proactive, and accountable, and talked a lot about why this matters,” he says.

## **OPEN STRONGER COMMUNICATION CHANNELS**

CIOs increasingly view IT’s ability to engage effectively with business partners as crucial. Many are either building new communications channels or strengthening existing ones.

One way is to hire more “bilingual” staff, says Chowdhury. “It’s important to find and close the gaps where we are not communicating effectively,” he adds. For example, one of the agencies he works with has established a new position for the organization, a customer relationship manager. “It’s designed to make sure that business users are getting the help and responsiveness they need from IT,” he says. Such positions are not new; companies have often appointed liaisons to business groups to understand needs, address problems, or manage change. But Chowdhury says his clients are using these roles to engage internal users collaboratively.

Some CIOs have IT staffers get involved in calls to external customers and internal clients. At Red Wing Shoes, IT staffers participate in Reboot, a cross-functional program that sends workers out into the field for a week to get a stronger sense of frontline business priorities. “They could be fitting customers in a store, doing back-office work, or meeting distributors,” says Topinka.

IT developers at Mitchell International, a San Diego-based property and casualty claims management company, now regularly observe end users at work to look for ways to streamline processes or create more responsive tools. “The focus on business processes rather than just coding has been a significant shift for us,” says Pauline Mulvey, vice president of enterprise business technologies. “Working with them as partners really helps us understand how they do business.”

## **STAFF UP FOR DIGITAL BUSINESS ROLES**

According to Dorr, the real key to succeeding at digital transformation is to ensure that you have staff to fill new roles that are being created—and re-created—as a result of new technologies. “The only sustainable, true competitive advantage continues to be talent and what that talent can do to innovate with these technologies to develop new products and services,” he advises.

It’s one thing, however, to identify the skills needed for more customer-focused, service-oriented roles that support a digital business model and another to find people who can do these jobs.

According to a McKinsey survey, IT organizations have a long-standing problem with talent development, particularly in areas that require more business experience. The survey found that the top five most pressing talent shortages are in analytics and data science, joint business and IT expertise, mobile and online development, enterprise application architecture, and cloud and distributed computing. All of these expertise areas are critical, according to the survey, to executing a digital transformation. *figure 4*

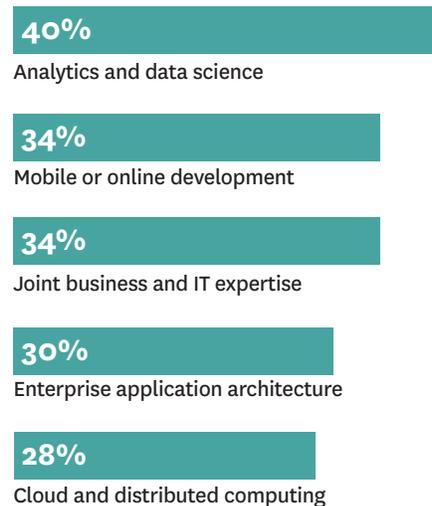
To find people with the skills they require, CIOs need to cast a wide net, Bonnet advises. “There is a capability ‘arms race’ out there. There’s no silver bullet—you need a plan to try every possible avenue, including skill acquisition,” he says. Companies are gleaning insights from the third-party partners, including resellers and consultants that help implement digital projects. They’re also working closely with the vendors that sell the new technology or developing skills in house. “Lots of people are starting incubators” internally to experiment and learn in concert with innovators, Bonnet says.

PwC’s Curran says that enterprise IT is often not the first choice for workers with in-demand skills such as data scientists or mobile developers. They want to work with leading innovators such as Facebook, Google, or Twitter. Curran suggests that CIOs must make IT attractive by creating an “outside-in” learning environment, where employees are encouraged to experiment with cutting-edge technologies and concepts. When, for example, employees participate in innovative projects through open source development, labs such as maker spaces (physical locations where design and development tools are available for public use), and crowdfunding sites such as Kickstarter and similar communities, they can bring those creative approaches—and the excitement they generate—in house.

Figure 4

## Top Technology Talent Shortages

Companies’ most pressing needs are for analytics, business, and mobile expertise.



**SOURCE** “IT UNDER PRESSURE: MCKINSEY ON BUSINESS TECHNOLOGY 2014,” MCKINSEY, 2014

## **REINVENT IT GOVERNANCE**

Companies that are succeeding at digital transformation are also revamping how they conduct the governance of their digital programs, not only so that IT and business leaders can make technology investment decisions more quickly but also to ensure that the implementations are driven by business needs, not technology per se, says Bonnet.

For example, before any new classroom software is deployed in the Anne Arundel County, Maryland, public school district, it has to pass through a governance process that examines the effect that the new technology will have on existing systems. “People go to conferences and come home talking about this great new cloud-based tool, but we have to know whether it works with the existing infrastructure too,” says Kim Olds, a senior user support specialist with the district. Prospective purchases are vetted by a cross-functional committee, which includes educators, administrators, and IT staff, ensuring that all voices are heard.

Smarter governance can also help business users implement shadow IT projects in compliance with IT security and access requirements. Mulvey’s group at Mitchell International worked with accounting and legal to build automated queries into the contract and expense management processes that ensure compliance.

“One of the things about a cloud is that you can buy licenses fairly cheaply and expense them,” she says. “When Finance sees software expenses being submitted, it automatically triggers a query about whether the purchase has gone through our governance process. If it hasn’t, Finance will not sign off on the purchase until they do so.” The same trigger kicks in when purchasing contracts are submitted to the legal department for approval.

## **FOCUS ON SERVICE DELIVERY**

Business units aren’t the only groups that can work more effectively with new technology. IT groups have to implement disruptive tools themselves to be more agile and responsive. For example, Mulvey has not only moved most of her company’s business applications to the cloud, but she has also deployed cloud platforms for her application developers. “You can spin up an application development environment so much faster and easier in the cloud than doing it internally.”

Mobile applications are helping many IT groups automate service delivery. Chowdhury explains that one of his clients is using a service management platform to provide end users and IT field workers with a self-service portal that they can access using their mobile devices. “They have workers in remote locations, such as volcanoes in Hawaii or the deep woods,” he says. “They are not always going to have a place to plug in, so everything is mobilized for them.”

Mulvey says that offloading business applications to a cloud provider has freed her team to concentrate on transforming business processes rather than focusing on operational IT chores. “Before, we were buried in maintenance, storage, and OS upgrades—it was more like working in plumbing rather than being able to design the room,” she says.

# Conclusion: Seize Digital Business Leadership

Companies can't opt out of digital transformation and expect to survive. A recent study by MIT and Capgemini attaches significant competitive advantage to companies that are on the leading edge of this transformation. The companies that do best have a strong vision; those who lag behind are already declining.

figure 5

The vision for digital transformation comes from the top, but it cannot succeed without a CIO and an IT group that function as business partners rather than operational tacticians.

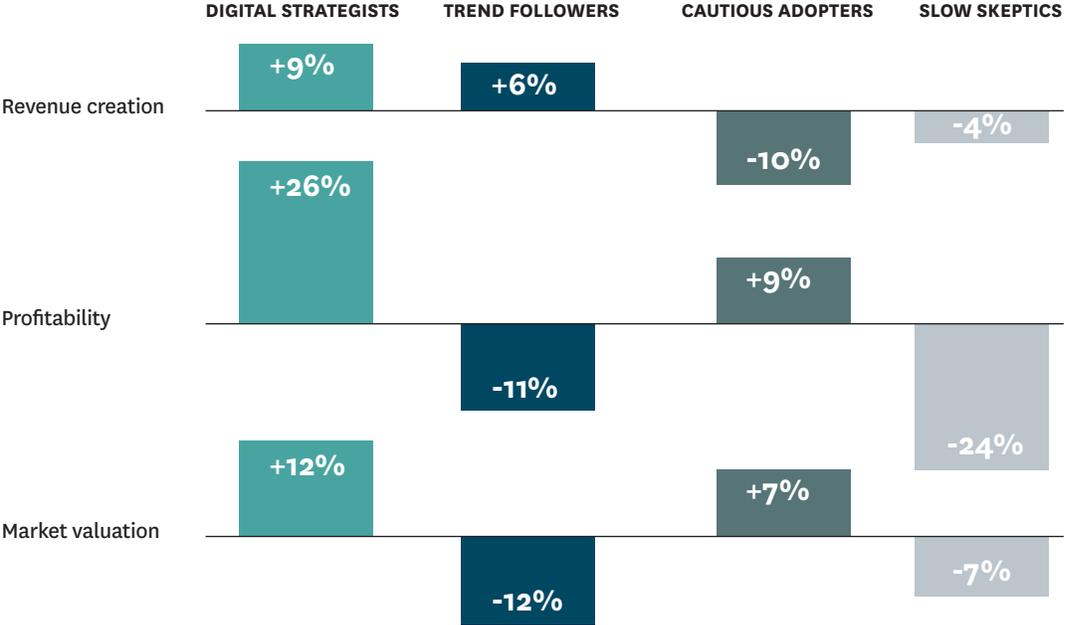
“If you're laying out a compelling idea, understand the business, and have a good vision for where we should take digital, that's something that senior management wants at the table,” says McAfee. Successful CIOs combine strategic vision with interactive processes and responsive technologies that make innovations faster and easier to execute.

There are plenty of signs to let CIOs and business leaders know whether their company is a leader or a laggard.

Figure 5

## The Digital Advantage

Companies with a strong vision for how they will implement digital business technologies perform better on average than less strategic, cautious, or skeptical competitors.



**SOURCE** “THE DIGITAL ADVANTAGE: HOW DIGITAL LEADERS OUTPERFORM THEIR PEERS IN EVERY INDUSTRY,” MIT CENTER FOR DIGITAL BUSINESS AND CAPGEMINI, 2013

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- You're leading if senior management across all functions understands that digital transformation is an enterprise strategy. You're going to fall behind if you're implementing projects piecemeal with no connecting theme.
  - You're leading if your CIO is reaching out to line-of-business peers with strategic ideas. A strong relationship with marketing is critical, Curran says, because "marketing tends to be the most vocal driver of new demands." You're lagging if you're not engaged in digital strategy conversations.
  - You're leading if you're using interactive, iterative development processes that enable continuous feedback from business users. If you're not, "you're making a big mistake," says Jeff Kaplan, managing director of THINKstrategies, a consultancy in Wellesley, Massachusetts, because you won't be able to keep up with user and customer demands.

As the steam-powered factory owners discovered a century ago, failing to master a disruptive technology and build a business strategy around it puts future competitiveness in jeopardy. The companies that lead the way in the digital economy will have a vision of the future and a plan for implementing that vision—collaboratively—across the organization.

# Sponsor's Perspective

## Delivering on the Promise of Digital Transformation

In racing, the winner is often the master of turns. While cars can perform equally on the straightaways, it takes skill to work the turns of the track for a competitive advantage. The more talented the driver, the better chance he has of taking the lead coming out of the turn.

Being able to compete successfully in the digital economy requires a similar strategy. Businesses face many more expected and unexpected turns than they did in the past. Your competition, for example, may blindside you with a new product they rapidly brought to market.

Disruptive technologies such as cloud, social media, and mobile have leveled the playing field. Smaller companies can now access the same state-of-the-art applications and services as larger organizations, and they don't have to worry about maintaining and integrating a large legacy IT infrastructure.

The competitive advantage lies not with the technology itself but your skill in using it. Winning in the turns of the digital economy requires the ability to spot trends and the agility to quickly turn those insights into digital services that delight customers—and increase brand loyalty.

What does this involve? First you must find ways to commoditize or outsource the effort devoted to keeping the lights on—all the necessary things that don't add competitive advantage. Build interactive processes that help IT and the business work toward shared goals. Keep a sharp eye out for new technical innovations and put them to work fast. And finally, make sure that the digital services and applications you build have rock-solid support on the back end.

It's not enough to build beautiful customer-facing mobile apps. If you can't seamlessly access and tie together information from back-end systems to drive that app, you'll lose customers. For example, if you travel a lot, your airline's mobile app has to work every time. Your electronic boarding pass may be on a mainframe halfway around the world, but if it doesn't instantly appear when you hit the button right before the gate agent scans it, you'll lose trust—and find an airline that supports you better.

The skilled companies—the ones that win in the turns—know the value of investing in IT management solutions that work behind the scenes to make sure information is always and instantly available. Those who don't seize this opportunity will be quickly replaced by their “digital native” competitors.

For more information please visit: [www.bmc.com](http://www.bmc.com)



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