The CIO role is integral to today’s increasingly digital businesses, but transformational IT executives aren’t necessarily shedding their functional responsibilities – get used to it.

STATE of the CIO

BY BETH STACKPOLE

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The New Reality
The CIO role is integral to today’s increasingly digital businesses, but transformational IT executives aren’t necessarily shedding their functional responsibilities – get used to it. 11

BY BETH STACKPOLE
As roles evolve...

A year ago, we wrote about the emerging “bimodal CIO” role. We looked at how IT leaders were being asked to keep their IT shops running efficiently while the business pushed for innovation driven by digital technologies. The results of last year’s 15th State of the CIO survey revealed a complicated role for IT executives. Based on this year’s results, it’s clear that the life of the CIO isn’t getting any easier.

Any CIO worth his or her C-suite executive office space knows that the job is more complex than ever. Moving apps and workloads to the cloud, ensuring legacy software can talk to off-premises apps, and keeping networks and systems secure remain core functional tasks of the CIO role. At the same time, boards of directors, CEOs and business colleagues are turning to the CIO to lead digital transformations, win customers and drive revenue.

For example, our research shows that while CEOs still expect CIOs to simplify and upgrade IT and improve security, their marching orders for CIOs include focusing on customer acquisition and retention, leading product innovation and collaborating on customer initiatives.

“The role of the CIO is changing, and it’s a good thing,” Kevin Vasconi, executive vice president and CIO at Domino’s Pizza, tells Beth Stackpole in our cover story, “The New Reality.” Vasconi adds, “Most of us like the change and embrace it, but it’s difficult at times — like having to run two different businesses.”

Based on survey responses, Vasconi has drawn a bead on CIO success in the current climate. Seventy-two percent of those polled admitted they are struggling to balance business innovation and operational excellence. And 87 percent said the CIO role is more challenging than ever.

While current challenges aren’t easy to overcome, today’s IT leaders are embracing them. Sixty-two percent said that rather than feeling overwhelmed they find the job more rewarding than in previous years.

It’s a good thing that IT leaders are finding the dual role gratifying because meeting both transformational and functional responsibilities has become a job requirement, not a short-term challenge. “We’re maybe midstride through disrupting the entire corporate business model, so we’re still going to be juggling both sides of the business,” Vasconi says.

IT executives aren’t the only leaders who find themselves in a dual role. Consider how digital marketing has upended the CMO role, demanding that today’s CMOs also be technologists — or at least tech-savvy enough to converse with IT. So, yes, as a CIO, you’re being asked to maintain core competencies while developing new critical competencies, but you’re not alone.

Here’s to a great 2017 as we all adjust to our new reality.

– Dan Muse, editor in chief, CIO.com
The CIO role grows more strategic

**Our 2017 State of the CIO** data shows positive movement in the three KPIs I track: reporting structure, tenure and evolution of the CIO role. Here’s a snapshot of trends in these areas.

**REPORTING STRUCTURE** | Most C-level executives want to report to the CEO. This year, 46 percent of the nearly 650 CIOs we surveyed said they report to the CEO, marking the third straight year that that figure has approached 50 percent. It hasn’t dipped below 40 percent since 2012. As technology continues to permeate every aspect of an organization, and as CIOs are called upon to drive innovation and customer experience, it makes sense that the CEO wants a direct reporting line.

**TENURE IN THE ROLE** | From 2012 to 2016, we saw average CIO tenure increase from five and a half years to six and a half years. This year, the average tenure of our survey respondents fell back to five and a half years. I’ve identified a few factors that could be causing that shift. First, merger-and-acquisition activity is at a record high. Second, our research shows that CIOs are increasingly moving into leadership roles in operations. Finally, most C-level executives are baby boomers in their 50s or 60s, and some observers have calculated that 10,000 members of that generation are retiring every day. These forces, taken together, are bound to lead to a decrease in tenure.

**EVOLUTION OF THE CIO ROLE** | The final KPI I track is movement within the three primary types of CIOs, which we label functional, transformational and strategic. We determine which respondents go into which group based on how they say they spend their time. For more than five years, the largest share of CIOs responding to our survey (consistently around 50 percent) have been categorized as transformational. Where we see movement is in the functional and strategic categories, and this is influenced by what is happening with the economy and security.

When the economy is rocky or new security threats arise, respondents report spending more time managing security and cutting costs — which we categorize as functional activities. When the economy is stable or growing and security is under control, CIOs can spend more time driving business innovation, creating competitive advantage and developing new strategies and technologies. This year, we saw the share of functional CIOs shrink to 20 percent (down from 27 percent in 2016) and the share of strategic CIOs jump to 31 percent (up from 27 percent in 2016), the highest level since 2014.

These KPIs indicate that it’s a great time to be a CIO. And considering how important technology is to the business, the future looks bright.

– Adam Dennison, SVP and publisher, CIO.com
(adennison@idgenterprise.com)
Judging by recent headlines, you might think blockchain technology has gone mainstream. Not so fast, says former UBS CIO Oliver Bussmann, who jump-started blockchain efforts when he was leading IT at the Swiss bank last year. “This is real, this will come, but in a very regulated environment. We will go through a lot of validation,” says Bussmann.

A web-based digital ledger, blockchain makes copies of data for all of the relevant stakeholders in a
transaction, using cryptography to secure data and ensure trust. Its decentralized architecture and encryption make it difficult to crack, so it’s viewed as a credible tool for facilitating the exchange of monies or verifying the provenance of goods moving through a supply chain. Blockchain’s authentication capabilities also make it a potential cornerstone technology for the internet of things (IoT).

Disruptive technology
Bussmann says blockchain “will disrupt the financial services industry.” Banks can use the technology to slash processing and infrastructure costs while accelerating transaction processing.

However, Bussmann is also a pragmatist, citing recent IBM research finding that just 30 out of 200 banks expect to launch blockchain solutions into commercial production in 2017.

Bussmann says factors that will hinder adoption in the near term include a lack of messaging and business standards and the fact that there are no formats for shared data, business processes and responsibilities for addressing complex financial transactions. “Blockchain is not only a technology play,” he says. “It is also a change of business process and business logic, which involve multiple parties.”

Banks will also need to wait for regulatory approval for collecting, storing and sharing customer data. Cross-border trades will prove particularly challenging, as they will require approval between regulators from different countries.

Moreover, embracing emerging technologies requires rigorous validation, verification and signoff by internal compliance teams, which are bound to be extra wary of the technology in light of the hack against blockchain VC firm The DAO, in which perpetrators exploited a vulnerability to steal $60 million worth of the digital currency known as ether. “This is totally new technology, and it has to be bulletproof,” Bussmann says.

Bussmann says blockchain is more likely to be launched into commercial production in supply chain operations and in the real estate, healthcare and government sectors. This will put more pressure on financial services to join the field, but that won’t happen for 12 to 24 months, Bussmann says. Indeed, IBM says it expects 65 percent of large banks to have blockchain projects in production in three years’ time.

A chorus of contrarians
Bussmann’s caution may seem surprising in light of the numerous headlines about blockchain, which is being tested so eagerly in the financial services industry that it’s hard to keep track of who’s doing what.

Bussmann says the testing is encouraging and essential for financial services companies that wish to become competitive with
blockchain early in the game. “The earlier they are part of the learning curve, the earlier they can learn about blockchain’s limits and benefits to reduce uncertainty, which will attract business,” Bussmann says.

Other analysts who follow blockchain agree. David Schatsky, a managing director at Deloitte, says the fact that the financial services and banking sectors are putting the most money into blockchain means they, as an industry, will likely generate the most applications of the technology.

However, Schatsky says that banks will have to overcome the obvious regulatory and compliance hurdles, in addition to finding successors for the legacy trade and payment systems that have served them well for decades. “If you have a system that works, the hurdles that are involved in replacing it are high,” Schatsky says.

Zilvinas Bareisis, an analyst at banking consultancy Celent, says not enough people understand the technology — the capabilities promised in all the hype surrounding blockchain far exceed the grasp of most enterprises and regulators. For instance, regulators and businesses alike will have to carefully assess and govern shared digital ledgers, where multiple parties can access customer data.

Bareisis takes a pragmatic view, saying, “Blockchain as we know it is going to be very hard for banks to adopt.”

Clint Boulton is a senior writer at CIO.com.
Customer experience is one of the key transformational drivers in nearly every industry. In the pharmaceutical industry, customer experience has been cultivated, in part, by paying healthcare professionals to discuss new products at professional meetings and events. However, that decades-old practice, which is predicated on the belief that medical professionals are inclined to trust the opinions of their peers, raises some ethical red flags. One pharmaceutical company is hoping to eliminate questions about conflicts of interest by adopting a digital alternative to face-to-face conversations.

Earlier this year, GlaxoSmithKline (GSK) became the first pharmaceutical company to stop paying healthcare professionals to discuss its products. Ethical concerns drove the move, says Matt Lasmanis, vice president and CIO at GSK U.S. “There’s a potential conflict of interest because, in essence, we’re paying medical professionals to speak about our products on our behalf,” he says. “Those same people could potentially be prescribing our products, right? Whether that’s a perceived or real conflict of interest, we feel like that’s not

GlaxoSmithKline has stopped paying healthcare professionals to promote its products, turning instead to a digital platform that offers a more neutral way to spread the word.

BY BRENDAN McGOYAN
something we’d like to engage in anymore.”

**A digital approach**
GSK’s alternative to face-to-face conversations is a digital platform designed to make information about products accessible across multiple channels. It provides a neutral venue where people should be able to evaluate the information on its merits alone.

With the new platform, Lasmanis says, medical professionals can learn about GSK products through “more virtual means,” such as webinars, click-to-chat discussions (in certain markets) and external portals built with responsive web design. All of those options can be accessed from mobile devices, desktop systems and other types of devices, he adds.

Physicians and other medical professionals “expect the same level of information convenience from the people they work with that they have in the rest of their lives,” Lasmanis says. “They use digital devices. They use mobile devices. They want convenient, on-time access to information. So we quickly realized that it wasn’t just about stopping payments [to spokespeople]. True transformation was about changing the dialogue and making it much more digitally enabled.”

GSK’s shift into digital terrain, complemented the company’s separate November 2015 launch of an ecommerce platform for healthcare professionals in the U.S.

**Healing the experience**
GSK’s digital information platform and its ecommerce platform are both part of a larger trend in healthcare: the direct application of IT systems and the integration of IT leader perspectives into an evolving end-user experience. Lasmanis says that as “healthcare and pharmaceuticals become much more digitally enabled, much more data-intensive,” he expects IT organizations to play an increasingly important role in “helping to deliver customer experience.”

Digital technology, and its attributes of speed, accessibility and transparency, are enabling other transformative initiatives at GSK. For example, in 2016, the company made all of the clinical trials conducted by the combined GSK Corp. available for use in external studies. As long as they have appropriate proposals, third-party

[Physicians] “want convenient, on-time access to information. . . . True transformation was about [making] the dialogue . . . much more digitally enabled.”
researchers can get access to GSK data, Lasmanis says.

The psychology of change
While digital technology is transforming GSK, Lasmanis is aware that change can have a big impact on a company and its employees. “If there’s one thing I’ve learned over several years of delivering transformative change, it’s that coming up with new ideas to do new things is the relatively easy part of the equation,” he says.

The bigger challenge is that “ultimately you’re always dealing with mindset and human behavior,” he says. “Getting people and organizations to let go of what’s currently working — or what they perceive as currently working but is not a fit for the future necessarily — that’s the hard part of the equation.”

But it’s important to get people to accept change because the ability to change course — in clinical trials and in relations with medical professionals — is fundamental to GSK’s ongoing strategy.

Fresh perspectives
Recognizing the important role employees play in transformational projects, GSK is trying to bring fresh perspectives into play through a new rotational internship program in which young employees learn about the intersection of healthcare, technology and commerce. Lasmanis says the initiative, known as the Future Leaders Program, is a source of ideas and enthusiasm.

New ways of thinking will be especially important because GSK is pursuing critical initiatives with partners. For example, the company is working with Verily Life Sciences on a bioelectronics project, and it’s teaming up with the National Cancer Institute and the Department of Energy to find ways to use high-performance computing systems in cancer studies.

“I learn from the new generation,” Lasmanis says of the Future Leaders. “How are they thinking about business problems? How are they approaching issues, and what new thinking are they bringing? It’s about finding the right mentors, but it’s also about how you’re bringing new talent into the team and how you’re learning from the next generation of leaders.”

Brendan McGowan is global media bureau and client research manager at the CIO Executive Council.

“I learn from the new generation. How are they thinking about business problems? How are they approaching issues, and what new thinking are they bringing?”
As technology grabs the lead role in modern business, all eyes are on the CIO's ability to lead initiatives that radically transform how companies sell products, reach customers and drive opportunities for new revenue streams. At the same time, the digital era’s wholesale dependence on technology means there’s little room for the slightest hiccup in operations — resulting in another
mandate on the CIO’s agenda.

If you’re hoping for a break, you’d better strap in for a lengthy ride, because neither dynamic shows any sign of abating, according to CIO.com’s 2017 State of the CIO survey, which found the bimodal role clearly established as the next chapter in the CIO journey. The balancing act that CIOs started to take on last year has shifted into overdrive, putting pressure on IT leaders to master this game of double duty or risk being marginalized.

Seventy-two percent of respondents to the State of the CIO survey said they were struggling to strike the right balance between business innovation and operational excellence. An even greater number, 87 percent, said they found the CIO role to be more challenging than ever before, in part because juggling transformational and functional responsibilities has become a permanent job requirement, not a short-term challenge.

“This current model of keeping one eye on the strategic and the other on keeping the lights on is a matter of course now.”

—ANDREW HO, VICE PRESIDENT OF TECHNOLOGY, GLOBAL STRATEGY GROUP

Embracing the role

While acknowledging the challenges of their new reality, a majority of respondents to the State of the CIO survey said that they’re embracing the bifurcated role with enthusiasm, relishing the heightened visibility from top executives and eyeing a potential upside for their careers.

Rather than feeling overwhelmed by the responsibilities, 62 percent of those polled said they see the job, in its current form, as more rewarding than it was in the past. The changes have also sparked a shift in how CIOs view their role: Just 20 percent of survey respondents...
identified their roles as strictly functional this year, down from 27 percent last year.

Meanwhile, more CIOs categorized themselves as transformational or strategic this year: 50 percent of the respondents said they view themselves as transformational, up from 45 percent last year, and 31 percent identified their roles as strategic, compared to 27 percent in the 2016 State of the CIO study. Moreover, 63 percent of the CIOs who identified as transformational and 71 percent of the strategic CIOs said they strongly or somewhat agree that the CIO job is more rewarding today than it has been in the past. In contrast, only 46 percent of functional CIOs said they feel that way.

“The role of the CIO is changing, and it’s a good thing,” says Kevin Vasconi, executive vice president and CIO at Domino’s Pizza. “Most of us like the change and embrace it, but it’s difficult at times — like having to run two different businesses.”

The dividends
The added responsibilities appear to be paying dividends. The survey results show that CIOs are getting paid more money these days and have more involvement with top management and more interaction with customers.

Nearly half (46 percent) of the CIOs polled said they report directly to the CEO, the same percentage as last year and the highest since 2004. Moreover, 29 percent of the respondents reported that they frequently meet with customers, up substantially from last year’s 19 percent, and 61 percent said they are communicating with their organizations’ boards of directors more than they did in the past, up from 58 percent in 2016.

Those results are a testament to how integral IT leaders are to defining and executing strategic business objectives. And the fact that the CIO has become a more strategic position could be leading to new opportunities: The average tenure of CIOs participating in the 2017 State of the CIO survey was 5.47 years, down slightly from 6.47 years in the 2016 report.

A seat at the table
For Vasconi, who’s been CIO at Domino’s for five years, being recognized as a full-fledged member of the executive team is the payoff for covering both strategic and functional roles. “It still amazes me that some CIOs don’t report into the C-suite and are buried in another part of the organization,” he says. “That says to me that technology is not strategic to that organization, because if it was, the CIO would have a seat at the table.”

Vasconi’s turn at double duty has him spearheading the vision for Domino’s ongoing digital transformation and groundbreaking efforts like the AnyWare ordering technology while also retaining responsibility for security, corpo-

Going digital: What matters most
What’s the most important role your IT shop could play in a digital transformation?

<table>
<thead>
<tr>
<th></th>
<th>Heads of IT</th>
<th>Business executives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify business areas ready for digital transformation</td>
<td>41%</td>
<td>24%</td>
</tr>
<tr>
<td>Identify emerging technologies</td>
<td>19%</td>
<td>20%</td>
</tr>
<tr>
<td>Integrate digital innovations into business systems</td>
<td>17%</td>
<td>14%</td>
</tr>
<tr>
<td>Mitigate security risks</td>
<td>10%</td>
<td>14%</td>
</tr>
<tr>
<td>Manage digital project implementations</td>
<td>9%</td>
<td>23%</td>
</tr>
</tbody>
</table>

MULTIPLE RESPONSES ALLOWED
rate financial systems and sophisticated data warehouse and analytics efforts related to building a multi-channel customer profile. Aligning IT initiatives with key business goals and cultivating IT-business partnerships is as much a priority as controlling costs, improving IT operations and handling day-to-day crisis management.

Vasconi doesn’t see that multifaceted workload changing over the next three to five years. “We’re maybe midstride through disrupting the entire corporate business model, so we’re still going to be juggling both sides of the business,” he says. “The reality is you still have to close the books and pay people. That’s never going to go away.”

The CIO at work

Functional IT duties may not be going away, but they’re being minimized to some degree, perhaps due to automation or because CIOs are just more seasoned in handling those responsibilities.

The 2017 State of the CIO survey found that CIOs are spending less time on activities like cost control, vendor negotiation, IT operation improvement and IT crisis management while devoting more time to strategic and transformational activities like driving business innovation (cited as a focus by 33%

Skill gap

Will you experience IT skills shortages in the next 12 months?

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>21%</td>
<td>49%</td>
<td>30%</td>
</tr>
<tr>
<td>2016</td>
<td>19%</td>
<td>49%</td>
<td>32%</td>
</tr>
<tr>
<td>2017</td>
<td>14%</td>
<td>26%</td>
<td>60%</td>
</tr>
</tbody>
</table>

What are the 10 most difficult-to-find skills?

- Big data/data science/BI and analytics: 38%
- Security/ risk management: 30%
- Application development: 19%
- Enterprise software (ERP, CRM): 18%
- Project management: 17%
- Cloud services: 17%
- Mobile technologies: 16%
- Enterprise architecture: 15%
- DevOps: 15%
- Internet of things: 13%

The CIO at work

Frequent IT duties may not be going away, but they’re being minimized to some degree, perhaps due to automation or because CIOs are just more seasoned in handling those responsibilities.

The 2017 State of the CIO survey found that CIOs are spending less time on activities like cost control, vendor negotiation, IT operation improvement and IT crisis management while devoting more time to strategic and transformational activities like driving business innovation (cited as a focus by 33%
percent of the CIOs who identify their role as strategic this year, up from 26 percent in 2016), cultivating the IT-business partnership (a focus of 38 percent of transformational CIOs this year, up from 35 percent last year), and developing new go-to-market strategies and technologies (a focus of 17 percent of strategic CIOs this year, up from 12 percent last year).

Asked to look ahead three to five years, survey respondents anticipated spending less time on functional and transformational activities and more time on strategic undertakings: 20 percent of those polled said they currently spend time on functional activities, but only 7 percent said they’d like to spend more time on such activities in the future. On the other hand, 31 percent said they currently spend time on strategic initiatives, while 65 percent said they’d like to spend more time on such activities in the future.

One functional responsibility that CIOs don’t expect to spend less time on in the future is security management: 26 percent of the respondents to this year’s survey said they expect to devote more time to that task in the next three to five years, up from 21 percent in last year’s survey.

Priorities

Improving customer experience, increasing operational efficiency and transforming business processes will be among CIOs’ top priorities this year, though the first two have declined in importance since last year. Asked to name business initiatives that will drive IT investments, 40 percent of respondents cited improving customer experience, down from 45 percent last year; 35 percent chose increasing operational efficiency, down from 46 percent in 2016; and 34 percent named transforming business processes, up from 25 percent.

CEOs’ top objectives for their CIOs remain consistent with last year: Helping to drive corporate revenue growth and upgrading IT security infrastructure were at the forefront. Security, in particular, is still a hot topic and a hotbed of activity in light of the recent high-profile cyberattacks.

Security and IT strategies continue to dovetail more closely: 51 percent of respondents to this year’s survey described the two as tightly integrated, compared to 37 percent last year. Security also represents a healthy share of IT spending, accounting for 11.58 percent of the average IT budget this year, which is about the same as in 2016. More executives are getting involved with security — 81 percent of CIOs and 66 percent of business executives this year said they are more involved with security.
involved in security initiatives than they have been in the past.

Beyond the security and revenue growth mandates, CEOs are also tasking CIOs with fostering partnerships with business executives — 17 percent of the CIOs polled said collaborating with the CMO or chief digital officer (CDO) was a major directive from their CEOs. And 46 percent of the CIOs responding to the survey described the CMO-CIO relationship as much or somewhat closer than it had been a year earlier.

**Tech investments**

To get all of this work done, companies are making a variety of technology investments, with big data/business analytics and cloud computing capabilities grabbing top billing: 33 percent of respondents named big data/analytics and 28 percent cited the cloud when asked what tech initiatives will drive IT investments at their organizations.

Analytics ranks high on the agenda at Haggar Clothing, which hopes to make better use of data to drive a more personalized, richer customer experience, says David Walsh, vice president of technology at the men’s apparel company. “We’re collecting a wealth of data, and we’re not getting all of the value out of it that we can,” says Walsh. “Data is coming to us faster and faster, and the window we have to respond is getting smaller and smaller. We need to understand what’s going on across all of our customers — that’s the chore.”

Despite the emphasis CIOs place on improving customer experience, the 2017 State of the CIO survey indicates that spending on technologies to achieve that goal will decline: 20 percent of respondents said customer experience initiatives are driving IT spending, compared to 27 percent last year. The gap could indicate that companies have already made IT purchases in this area and are now in the throes of deployment, or that another department (such as marketing) has taken ownership of that piece of the technology stack.

While cutting-edge technologies like artificial intelligence and wearables generate lots of hoopla, they account for only a fraction of the IT budget. For example, only 13 percent of this year’s respondents said that they’re investing in mobile application development, and even smaller numbers are making purchases related to machine learning and cognitive systems (5 percent), AI (4 percent), virtual reality/augmented reality (2 percent) and wearables (1 percent).

**Struggles ahead**

Business alignment isn’t the only organizational challenge confronting CIOs in 2017.

The share of respondents who said they feel that IT is scapegoated by other departments rose to 58 percent this year from 54 percent last year. Moreover, CIOs continue to face turf battles as they duke it out for technology control: 26 percent of the IT leaders polled this year said they agreed that the CIO
is being “sidelined” in their organizations — a viewpoint shared by just 15 percent of business executives. Moreover, 36 percent of CIOs said they believe that people in other departments see IT as an obstacle to the corporate mission, while 31 percent of business executives agreed with that sentiment.

The ongoing talent crunch is another thorn in the side of CIOs. Last year, 49 percent of respondents to the State of the CIO survey said they expected to face challenges related to an IT skills shortage in the coming 12 months; that number rose to 60 percent this year. Just like last year, CIOs expect it to be most difficult to fill jobs related to big data/data science/business intelligence and security: 38 percent of respondents cited big data and 30 percent chose security when asked to name the areas in which it will be hardest to find IT professionals with the necessary skills. Other IT pros with in-demand skills may not be as hard to come by: Just 16 percent of respondents said they expect to have trouble finding people with mobile expertise, and 15 percent said DevOps specialists will be in short supply.

Moving forward, CIOs envision a third dimension being added to their bimodal role: Manager of outside services. Slightly more than half (51 percent) of CIOs surveyed and 48 percent of business executives said future CIOs will have to manage contractors, cloud vendors and IT service providers.

As part manager, part strategist and part agent of transformation, the CIO will continue to wear multiple hats. “It’s the new reality, but it’s very positive,” says Todd Finders, CIO of the Commercial and Residential Solutions group of Emerson Electric. “Technology has never been more important to the business, so we can do more if we do our jobs right.”

Beth Stackpole is a frequent contributor to CIO.com.

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**Show me the money**

Which other groups in your organization have budgets specifically earmarked for technology products?

<table>
<thead>
<tr>
<th>Which other groups in your organization have budgets specifically earmarked for technology products?</th>
<th>Currently</th>
<th>Within the next 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>40%</td>
<td>37%</td>
</tr>
<tr>
<td>Marketing</td>
<td>38%</td>
<td>42%</td>
</tr>
<tr>
<td>Finance/Accounting</td>
<td>29%</td>
<td>26%</td>
</tr>
<tr>
<td>Sales</td>
<td>26%</td>
<td>27%</td>
</tr>
<tr>
<td>Engineering</td>
<td>24%</td>
<td>23%</td>
</tr>
<tr>
<td>Human resources</td>
<td>25%</td>
<td>22%</td>
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</tbody>
</table>

*Multiple responses allowed.*

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**METHODOLOGY**

CIO.com’s 2017 State of the CIO Survey was conducted among the CIO brand audience between Sept. 7, 2016, and Oct. 17, 2016. To be considered qualified, respondents had to identify themselves as the head of IT for their company or a division within it. Respondents were offered a PDF of the survey results as an incentive for completing the survey.

Results are based on 646 qualified responses. The margin of error on a sample size of 646 is +/- 3.8 percentage points. Percentages on single-select questions may not add up to 100 due to rounding.

For the purposes of this report, large companies refer to those with 1,000 or more employees. Small and midsize companies refer to those with fewer than 1,000 employees.
The IT-business GAP remains

IT generally still has control of the tech purse strings, but business and IT leaders disagree about the CIO’s role  BY BETH STACKPOLE

In light of its increasingly prominent and strategic role, IT continues to remain in control of technology budgets. One-third of the CIOs responding to CIO.com’s 2017 State of the CIO survey said IT controls 71 percent or more of their organizations’ technology budgets. Nevertheless, other groups increasingly command their own technology budgets. For example, 40 percent of respondents said operations had its own tech budget, and 38 percent said marketing did.

Across industries, IT’s role in purchases of marketing technologies is declining. That’s certainly the case at Haggar, where the chief digital officer has ownership of the company’s online operation and web presence – and all the marketing systems that go with them. Nonetheless, “there’s still a partnership between us,” says David Walsh, vice president of technology at the menswear company. “We get the right plumbing to feed them information and help them put it together from an infrastructure perspective.”

Plenty of work to do

To get a better handle on how business colleagues view IT and the CIO role, CIO.com asked 200 line-of-business (LOB) managers the same questions we posed to IT executives in the 2017 State of the CIO survey. A look at the results of our separate surveys of IT and business leaders suggests that while IT helps steer other departments’ technology decisions, there is still plenty of work to be done on IT-business relationship-building, and the two groups often have different views on IT’s role and its strengths and weaknesses.

Take digital transformation, for example. In the survey of IT leaders, 41 percent of those polled said their most important role in digital transformation initiatives was identifying business units that would benefit the most from using digital technologies. In contrast, only 24 percent of the business executives said that they see IT contributing in that manner.
84% of IT leaders say the CIO is becoming more important to the business. 59% of business executives agree.

CIOs and business leaders also have different views of IT's role in other initiatives. For example, 64 percent of the CIOs surveyed said IT is actively involved in recommending technology solutions when IT and a business unit collaborate on a project. However, only 27 percent of the business executives said IT recommends technologies to support business initiatives.

Likewise, 59 percent of CIOs said IT collaborates with business units to build business cases for new technology initiatives, while only 24 percent of business leaders said that was the case. There were similar discrepancies between the two groups' responses to other questions: 49 percent of CIOs said IT regularly helps develop technical requirements for business systems, and 31 percent of business leaders agreed; and 84 percent of IT leaders said the CIO's role is becoming more important to the business, while 59 percent of business leaders said they saw it that way and 21 percent were unsure.

The Commercial and Residential Solutions group of Emerson Electric is dealing with the fallout of a lingering IT-business disconnect, a situation revealed to CIO Todd Finders about 18 months after he initiated a survey to get business feedback on IT. “The business didn’t view us as strategic. They didn’t feel we were being innovative, and we weren’t doing as much as they needed us to do,” he says. “It’s an ongoing challenge: As we continue to do more, they want more, but we have limited resources.”

Embedded techies

To address the problem, Finders has assigned IT people to work in business units, making them available to listen to problems and identify needs. Many
of the 2017 State of the CIO respondents said they’re taking similar steps – but again, there’s a discrepancy between what IT thinks it’s doing and what business leaders see being accomplished. For example, 56 percent of CIOs said IT works with business units to reach a consensus about IT project priorities, but only 33 percent of business leaders agreed. Moreover, 40 percent of CIOs said the IT leadership team spends the majority of its time with the business, but only 20 percent of business leaders said that was the case. And when asked whether IT has improved its governance framework process as part of an effort to boost IT-business alignment, 25 percent of CIOs said that was the case, but only 13 percent of business leaders concurred.

At Merchants Fleet Management, a provider of vehicle fleets and related services, IT has taken steps that have made a real difference in bolstering IT-business alignment, says CIO Ken Kauppila. The relationship used to be “caustic,” he says, but changes such as opening up dialogue and forming an IT steering committee made up of business managers and the CEO have dramatically improved the dynamic.

“One measure of a successful IT organization is when you get invited to the party,” he says. “In the past, when customers came in, IT was never invited in. Today, I am invited every time and I’m now asked to go on customer visits to talk about technology.”

Beth Stackpole is a frequent contributor to CIO.com.

“The business didn’t view us as strategic. They didn’t feel we were being innovative, and we weren’t doing as much as they needed us to do.” —TODD FINDERS, CIO, EMERSON ELECTRIC

How IT is helping
What are the top steps the IT organization has taken to improve its IT/Business working relationship in the past year?

| Develop consensus around prioritization of IT projects | 56% |
| Spend the majority of its time with the business | 40% |
| Employ more agile development techniques to deliver projects faster | 29% |
| Improve IT governance framework process | 25% |
| Help the business to source technology outside the organization | 27% |

Multiple responses allowed

HEADS OF IT BUSINESS EXECUTIVES

Results are based on 200 qualified responses. The margin of error on a sample size of 200 is +/- 6.9 percentage points. Percentages on single-select questions may not add up to 100 due to rounding.

For the purposes of this report, large companies refer to those with 1,000 or more employees. Small and midsize companies refer to those with fewer than 1,000 employees.

LINE OF BUSINESS METHODOLOGY
A version of CIO.com’s 2017 State of the CIO Survey was conducted among line-of-business (LOB) managers in the U.S. This survey was fielded online between Sept. 22 and Sept. 24, 2016. To be considered qualified, respondents had to identify themselves as employed in a director or higher role in an executive or non-IT business function.

Results are based on 200 qualified responses. The margin of error on a sample size of 200 is +/- 6.9 percentage points. Percentages on single-select questions may not add up to 100 due to rounding.

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Why agile needs DevOps

Fannie Mae has doubled its software output in the last 18 months, thanks to agile software development and DevOps.

BY CLINT BOULTON

Enterprises are quickening the pace at which they build and roll out software to better satisfy customers who expect new features as often as they get mobile app upgrades. But those that wish to reap the rewards of agile development must also embrace the DevOps model, says Fannie Mae CIO Frederic Veron.

“If you do agile without DevOps, it’s like you’re trying to race with a tractor instead of a car,” says
Veron. “You can go and do the laps, but it’s not going to go very fast, you’re probably going to consume a lot of fuel and it won’t be a lot of fun.”

Veron says that embracing DevOps has helped the mortgage provider deliver software in as little as 10 weeks, down from six to nine months two years ago. The accelerated pace improves time to market and reduces the risk of failure, he says.

**DevOps begets agile**

In agile, IT and business leaders are often collocated and meet frequently to hash out software development. This allows companies to cut time to market by a third or more. DevOps enables an agile methodology by automating formerly manual software development, with applications pushed into production as so-called “minimally viable products” that are then continually refined based on user and customer feedback.

Before the shift to agile and DevOps, Fannie Mae’s product managers would compose a set of product requirements and email them to IT, waiting several months for the application to be delivered. Now product managers are trained in agile and they partner with IT to communicate requirements in regular meetings. Developers engage in coding scrums and two-week sprints, stringing together several sprints to formulate a software product, such as the Loan Delivery application, a web app through which lenders submit loans.

To do this, IT leans on DevOps applications that help automate planning, code development, configuration, testing and deployment. For instance, Veron’s team uses code-quality scanning tools from CAST Software to analyze software as it’s being developed and alert developers to bugs.

Veron says his team has also reduced time spent on server and database provisioning from days to hours. Using container technology, which packages an application and all its dependencies, developers move software from one computing environment to another across the company’s hybrid cloud. These changes enable IT to continually release and refine features, consistent with continuous integration and deployment practices.

Fannie Mae is seeing **productivity gains** ranging from 28 percent to 40 percent at nearly a third of the cost.

**How DevOps mitigates risk**

Based on those statistics, you’d be tempted to think that speed is the biggest impact DevOps has had at Fannie Mae. But Veron says that the risk of software failure is mitigated as well. By continually tweaking and redeploying
“[With agile and DevOps] you get the value you expect from the software faster.”

— FREDERIC VERON, CIO, FANNIE MAE

From the editors of CSO magazine, Security Smart is a quarterly newsletter ready for distribution to your employees—saving you precious time on employee education! The compelling content combines personal and organization safety tips, making it applicable to many facets of employees’ lives.

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- Most security breaches happen due to human error
- 4 out of every 5 data breaches caused by human error are unintentional
- 4 out of every 5 security events caused by insiders have a negative impact on their enterprise organization (including loss of confidential information, critical system disruptions, reputational harm, lost customers and more)
Heroes emerge from ones and zeroes

Change is always hard, and the transformation IT is now experiencing is unprecedented. But it’s giving CIOs an opportunity to play leading roles.

BY MICHAEL JENNETT

Change happens, and it can be scary. But it also creates opportunities. Heroes emerge during times of change.

Whether you lead IT at a 1,000-person organization or a 15-person startup, the changes you’re facing today are like nothing we have seen in the past. And if you embrace the change, you can be a hero.

The role of the CIO is shifting dramatically from that of a back-office curator of knowledge and infrastructure to that of a customer-facing connoisseur driving the backbone of the technology that will take the company to the next level. The successful CIOs of 2017, who must — as always — do more with less, will have to be ringmasters who not only manage systems that keep the lights on, but also develop, sometimes out of thin air, new product capabilities based on huge stores of data that have been sitting dormant for years. On top of that, they have to create exciting work environments in order to lure the best talent.

At IDC, we talk about this as the need to lead in three dimensions,
or Leading in 3D. Those dimensions are innovation, integration and incorporation, and our CIO Sentiment Survey, released in December of 2016, reveals that CIOs across the country are following this path to success.

Digital transformation

We found that CIOs who are leading the charge are focusing on digital transformation as a core competency. They’re making a case for digital transformation to their executive boards, and they’re demonstrating the power of digital transformation through IT innovation. But they’re also aware of the challenges that digital transformation poses to legacy systems. To ensure that their systems and people won’t be left behind, they have devised multiyear plans that incorporate their innovation teams back into the very DNA of their organizations, creating a never-ending cycle of innovation that touches every system.

At the core of digital transformation is the understanding that IT can no longer simply provide back-end systems. Instead, IT must innovate in a way that impacts the bottom line and provides customer-facing products.

IT is in a position to do this because it has technical expertise and had mastered big data long before it became hip. IT often has a lot of data on customers, trends and products that has never been used for customer-facing functions. Our CIO Sentiment Survey survey shows that more than one out of three CIOs expect to introduce products out of IT that drive new business and allow their companies to compete in new markets.

Legacy issues remain

While all this change is exciting and is leading IT in new directions, CIOs are still facing issues with legacy systems, methodologies and people. Change is hard, and what we are finding is that organizations are more like aircraft carriers than speed boats, making it difficult to implement change. Organizations have old systems that need to be updated and organizational structures that don’t lend themselves to innovation and agile practices.

To facilitate this shift, IT shops are partnering with their business counterparts to bridge the gaps between talent and teams. An influx of business knowledge enables IT to better understand what the business needs from their systems and data. In our survey, we found that over half of organizations now require IT teams to participate in innovation, and almost 40 percent have begun to create a singular culture that aligns business and IT.

This cultural shift allows for the incorporation of new ideas from the innovation groups into legacy systems and teams and sets the stage for luring new talent that can continue to spark innovation.

We’re seeing CIOs becoming integral members of leadership teams, and they’re doing it through innovation that isn’t simply for innovation’s sake. They’re changing the way IT functions, creating innovation engines that are constantly refreshing systems, methodologies and employees with a culture of inclusion.


Michael Jennett is vice president of Mobility Strategies for IDC’s IT Executive Programs.
What it takes to be a sysadmin

Despite dire predictions, the role of the systems administrator is far from obsolete. Nick Bush’s career is proof that the job remains critical to IT even as it evolves.

BY SHARON FLORENTINE

With the ubiquity of cloud technology and the availability of modern systems administration tools that allow anyone from developers to administrative assistants to procure and provision servers and services, it’s tempting to think that the role of the systems administrator, or sysadmin, is obsolete.

But the sysadmin role isn’t going anywhere. It’s evolving and becoming less focused on hardware and infrastructure and more on services delivery — a shift that’s leading organizations to see systems administration as an innovation engine rather than a cost center. And that’s great news for IT pros looking to further their careers.
Constantly evolving
The constant evolution has kept Nick Bush engaged and fulfilled in his role as a sysadmin, a career that began back in his high school days.

"My friends and I were sort of the stereotype: We joined the A/V club and worked in the computer lab for the school district," Bush says. "I worked for the district as a computer tech during summers, too. And then after I graduated, I went to DeVry University expecting to focus on computer engineering."

Once at DeVry, though, Bush realized engineering wasn’t for him, so he changed to information systems. Even then, his skills were in such high demand that he decided to leave school to work in systems support. He later took a job as a “technology engineer” — a one-man IT shop — for his old school district.

"I couldn’t see myself sitting at a computer writing code for 40 hours a week; that wasn’t for me," Bush recalls. "When the school district offered me the technology engineer job, I knew that was where I wanted to be. It was me and another person handling around 200 teachers, 2,200 students over six buildings — that was a great challenge."

After working in various roles at the school district for 10 years, Bush moved on to network administrator positions — one of which was at a global retail company where he was part of an IT team for the first time. When that company downsized and laid off a number of IT folks, Bush found himself unemployed for the first time in his life. But he was out of work for only three weeks.

The fact that he was able to find a new job in less than a month “speaks to how important these roles and responsibilities are,” Bush says. “Even without a college degree, the experience I’d had and the skills I’d acquired meant I wasn’t stuck. Back then, and even now, job descriptions will say, ‘four-year degree or equivalent experience,’ and [when] you’re interviewing . . . you’re more likely to get questions about how you handled certain problems [that focus on] experience rather than education.”

Bush now works for Southfield, Mich.-based Meadowbrook Insurance Group, where he holds the title of systems administrator, Level 2. He works out of Meadowbrook’s Columbus, Ohio, office, where he supports around 200 users and manages many of the 80 physical servers and more than 200 virtual servers.

Experience trumps training
Like Bush, a significant number of sysadmins have little formal training but instead have learned on the job, according to a survey from IT infrastructure monitoring software company Paessler, which polled 650 sysadmins from 49 countries about...
their education, their responsibilities and their everyday work.

According to Paessler, 41 percent of those polled said they have academic degrees, 36 percent said they have vocational training and 24 percent said they learned on the job.

“University training generally doesn’t cover sysadmin tasks. Vocational training would, but it would go out of date quickly,” says Kimberley Parsons Trommler, a product evangelist at Paessler.

As sysadmin roles have evolved, the education system hasn’t kept pace, so real-world experience is critical, says Jason Hand, DevOps evangelist and incident and alerting specialist at collaborative incident management software company VictorOps.

“Having that formal education, even having certifications, doesn’t help as much as it used to, because so much of the success in the role can go back to cultural fit and experience,” Hand says. “If we hire you, we’ll send you to training and make sure you know what tools we’re using.”

**DevOps, sysadmin skills overlap**

If you’re planning to get a formal degree with the intention of becoming a systems administrator, Hand says your best bet is to focus on the same areas of study as someone in DevOps would, since that’s how sysadmin roles are evolving.

Robert Scott, director of the University of Michigan’s Center for Engineering Diversity and Outreach, says classes in computer science and engineering as well as the design and deployment of infrastructure, software, algorithms and tools provide a strong technical background, while coursework in managing and maintaining structured and unstructured data is important from the information systems side, and a knowledge of business fundamentals, strategy, business process development and analytics offer a solid business foundation.

Hand says it would be helpful to master specific hard skills, such as knowledge of tools like Puppet and Chef that help automate infrastructure and services management, containers like Docker, and cloud computing and virtualization technologies.

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— KIMBERLEY PARSONS TROMMLER, PRODUCT EVANGELIST, PAESSLER

So, the next time someone tries to tell you that being a systems administrator is a dead-end career, take it with a grain of salt, because while the job is certainly evolving, it’s not going away, Bush says.

The sysadmin role “is so necessary in every company that uses IT,” he says. “There still needs to be people to manage and maintain networks, to help spin up and configure infrastructure, to serve customers and to innovate. There may be fewer of us, but that makes us more valuable.”

Sharon Florentine is a senior writer at CIO.com.
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