

## Technology in the mid-market

### Taking ownership

A Deloitte Growth Enterprise Services report  
August 2016

# About the survey

From June 17 to July 5, 2016, a Deloitte survey of mid-market companies was conducted by OnResearch, a market research firm. The survey examined technology trends taking place in this market segment to determine the role that technology plays and how it influences business decisions.

The 500 survey respondents represented mid-market companies with annual revenues ranging from \$100 million to more than \$1 billion. Nearly six out of every 10 respondents were C-suite executives, while the remaining executives held other management roles. Eighty percent of the respondents represented companies that are privately held, while the remainder represented publicly-traded firms. Just over one third of the respondents were from technology, media and telecommunications companies; one quarter hailed from consumer and industrial products companies; the remainder were divided among energy and resources, financial services, life sciences and health care, and other industries.

The full survey results are included in a separate appendix; some percentages in the charts throughout this report may not add to 100 percent due to rounding, or for questions where survey participants had the option to choose multiple responses.

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# Executive summary



Roger Nanney



Steve Keathley

Forget “show me the money”—it’s value that paves the way for bigger budgets and greater responsibility. This lesson has been one of the more pronounced themes in Deloitte’s annual survey of mid-market technology leaders: if you want more money to invest, your initial bets need to pay off first.

By all indications, that’s exactly what’s happening in the US middle market. Companies in this segment are increasingly realizing value through early investments in the cloud, social, mobile, and data analytics. After using such solutions to leapfrog bigger competitors and differentiate their customers’ experience, IT leaders now have greater license to invest in other technologies and attain more influence in setting the technology agenda.

For four years running, Deloitte has conducted an annual survey of US mid-market companies to better understand the goals and governance of their technology pursuits. Over the span, we have seen mid-market company leaders consistently put more resources behind this agenda. This year, though, the responses suggest these executives have reached a new level of technology maturation, moving from mere adoption to deeper integration. Today, technology leaders are pushing harder than ever to ensure that IT investments generate value.

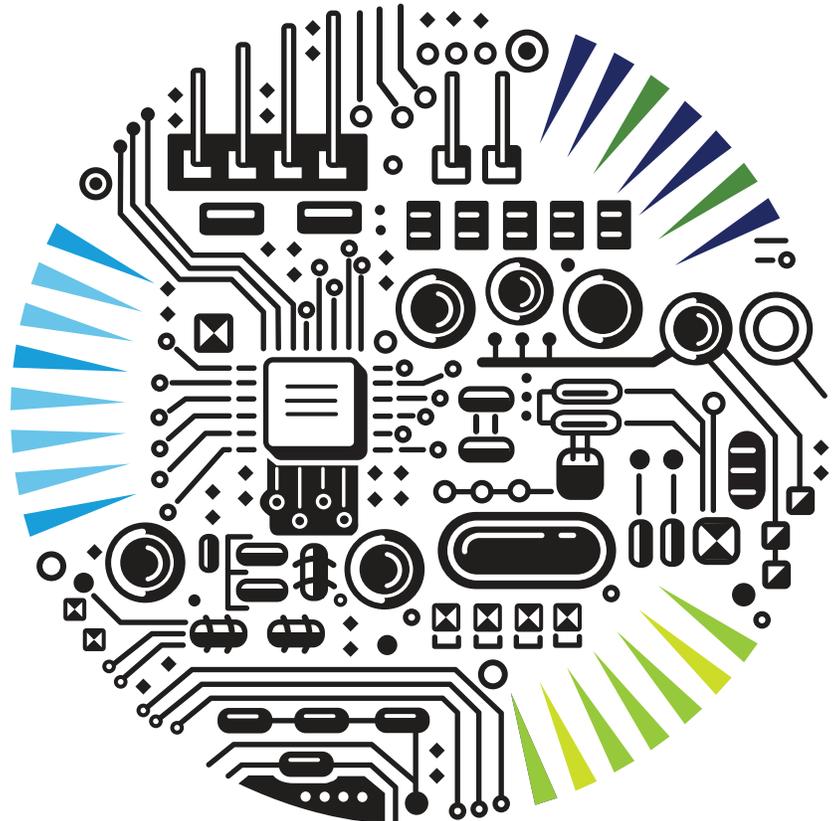
We see this across a range of survey answers:

- The majority of respondents now see the value of technology as “strategic” instead of “critical,” suggesting that more companies have caught up with must-have investments and are now thinking more long term.
- More companies in our survey are focused on understanding the business drivers and value proposition of the cloud, along with generating greater “speed to value” from such applications.
- Increased productivity ranked first of all the reasons companies have for investing in technology, and half of the respondents picked increased productivity as the biggest change technology would foment within their organizations.

The success of these efforts is helping technology leaders take ownership of the IT agenda: compared to 2015, IT is much more likely to be leading technology adoption than sharing leadership with the business units.

Today, mid-market CIOs are more empowered to invest across the technology spectrum. We see evidence of this “buy in” through increased investments in a broad range of emerging technologies, including augmented reality and the Internet of Things (IoT). The extent of these forays suggests that many companies may soon generate value in ways never before imagined. In the pages that follow, we highlight a few forward-thinking employers that are challenging the notion of “business as usual” by integrating new technology solutions into their everyday operations.

It’s not surprising for mid-market businesses to be viewed as vanguards of change, given how instrumental entrepreneurs and smaller organizations have been to America’s competitiveness. If these trends hold, as we suspect they will, mid-market technology leaders look primed to gain more influence and help their companies achieve even greater success in the months and years to come.



**Roger Nanney**  
National Managing Partner,  
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National Technology Leader,  
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# The maturing mid-market technology agenda



## Looking further out

More than half—52 percent—of respondents in the survey say they approach technology investments for strategic value, up from just under 40 percent in the past two years.



In the four years we have conducted this survey, we've tracked a notable maturation of mid-market companies' technology agendas and related investments.

Early on, many were faced with pressing needs to upgrade or maintain their current IT systems, but still found room in the budget to make investments in cloud, social and mobile applications. Today, these investments are paying off in a number of ways, helping mid-market companies to level the playing field with bigger competitors, differentiate their products and services among their customers, and free up their employees to focus on more value-added tasks.

A number of questions in this year's survey depict a middle market that is no longer playing catch-up with technology. Instead, these companies are viewing technology investments as a means to strengthening their businesses' competitive advantage over the long term. For instance, more companies report shifting their IT spending toward implementation and away from maintenance.

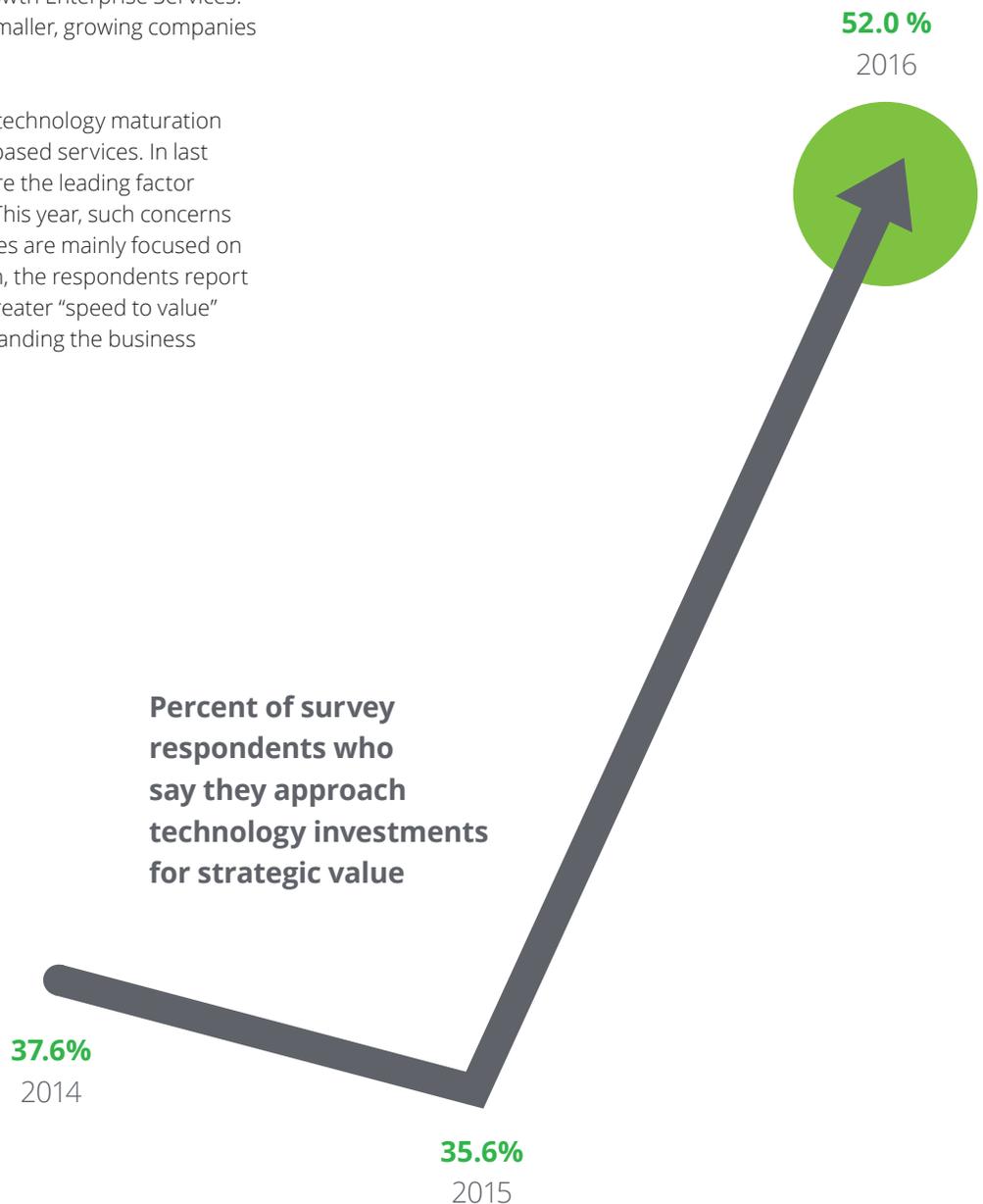
### Implementation over upkeep

Spending is shifting from maintenance to implementation, suggesting that complexity of technology has brought on new challenges; 83 percent of companies devote at least 40 percent of IT spending on implementation.

This shift parallels a change in executives' attitudes about technology investments: 52 percent of respondents in the survey say they approach technology investments for strategic value, up from just under 40 percent in the past two years. At the same time, the percentage of respondents who see the value of technology as "critical" slipped from 48 percent in 2015, to 36 percent in our most current survey.

"Technology is becoming more of a differentiator in the middle market," said Harvey Michaels, principal, Deloitte Consulting LLP, and National Consulting Leader for Deloitte Growth Enterprise Services. "At a strategic level, technology is helping smaller, growing companies scale faster and increase their valuations."

Other evidence of mid-market companies' technology maturation includes their shifting focus around cloud-based services. In last year's survey, privacy and security risks were the leading factor deciding the pace of their cloud adoption. This year, such concerns took a big step back, and now the companies are mainly focused on issues around cloud integration. In addition, the respondents report being much more focused on generating greater "speed to value" from cloud investments, as well as understanding the business drivers and value proposition.





### Leaders more involved

59 percent of respondents said company leaders were actively involved in technology in 2016, compared to just under half in the past two years.

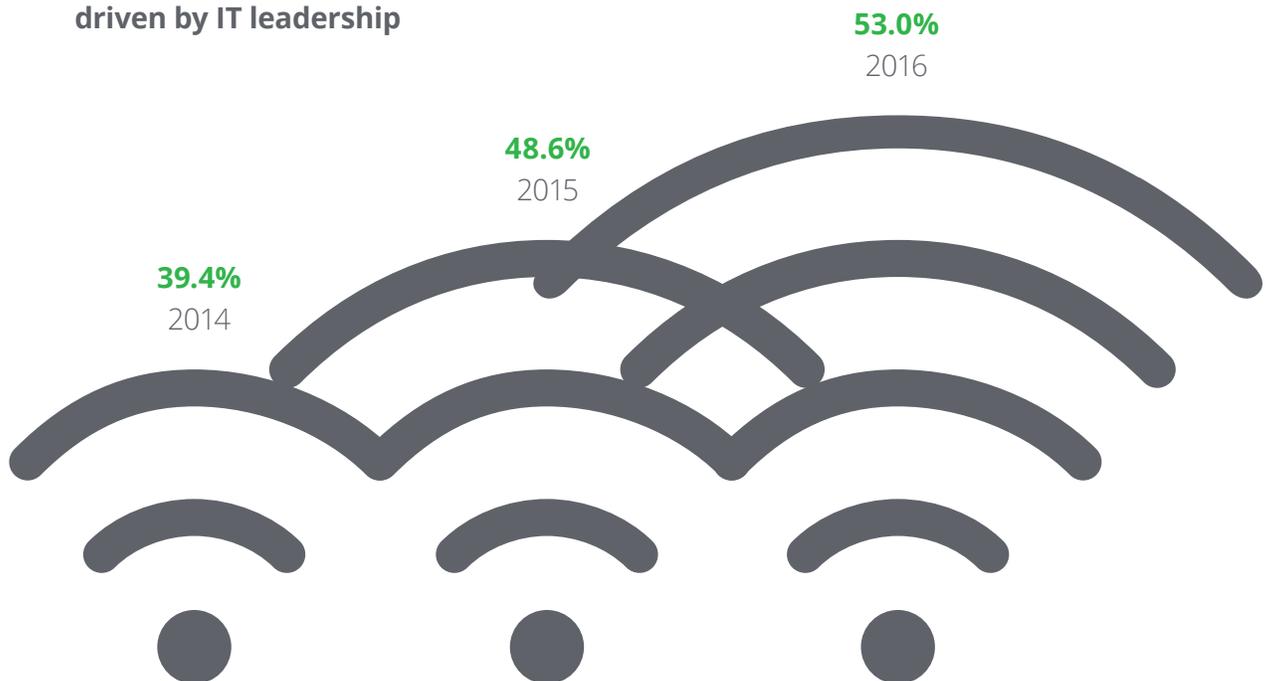
### A shifting focus

More than 25 percent of respondents say the top factor influencing the pace of adoption of cloud-based services is integration with existing applications and infrastructure.

As mid-market companies fortify their technology bench, these successes have given IT leadership greater clout in the C-suite. Compared to just a year ago, IT leaders—including CTOs, CIOs and IT department leaders—now have significantly more influence than their bosses in the executive suite when it comes to the adoption of new and emerging innovations. About half of respondents said IT managers were the main proponents of new and emerging technology within firms, making them nearly twice as likely as CEOs and other executive staff to call the shots around technology.

“In this segment of the market, CEOs are increasingly looking to CFOs not just for financial stewardship but also for guidance on how technologies can help their company grow,” said Steve Keathley, deputy CIO, Deloitte Services LP, and National Technology Leader, Deloitte Growth Enterprises. “As a result, they are creating CIO roles or expanding their sphere of influence because they recognize the importance of managing the complexities involved with IT investments.”<sup>1</sup>

**Percent of survey respondents who say adoption of new technology trends is driven by IT leadership**



- ▶ How can we create a more reflexive relationship where clients provide feedback so together we can deliver a better solution?

Derrick Brooks—Vice President of Digital Solutions, Scottrade

## Scottrade: Investing tools fresh out of the “lab”

For Scottrade, a privately held financial services firm that's home to a large online brokerage operation, generating quick hits from its steady stream of innovation is critical to the company's success. More than 90 percent of its clients' trading activity takes place through digital channels, and they are constantly on the lookout for new trading tools to help them reach their financial goals.

“Digital is at the core of everything we do,” says Derrick Brooks, Scottrade's Vice President of Digital Solutions. “Speed to value is certainly something that is very important to us. It directly impacts how we deliver solutions.”

On a day-to-day basis, the company is constantly soliciting client feedback, through its website, mobile app, social media, or its network of nearly 500 branches. In recent years, their input has reduced the number of clicks necessary to make online trades, opened up more space on the screen, and even changed the words and phrases Scottrade uses on its trading platforms.

Three years ago, in a bid to accelerate innovation and get new tools out more quickly, Scottrade created the “Innovation Lab” to engage clients at the very earliest stages of product development. On a dedicated website, The Launching Pad, linked to the company's client portal, investors can weigh in early and often.

“We may start with just a black and white sketch of some ideas that we are considering,” Brooks says. If clients respond favorably, the development process next goes to an initial prototype, followed by a higher fidelity prototype and a full product launch.

One recent innovation the company introduced through the Innovation Lab is a “stock screener visualization”—an intuitive, coordinates-based tool that enables investors to compare multiple stock symbols and identify trading opportunities more quickly based on selected criteria.

Brooks says his team made a calculated decision to go with an “agile” development process, in which innovation occurs incrementally, rather than a “waterfall” approach, where innovation is sequential and the time to market can be lengthy, because there are more opportunities to connect with clients. The process has significantly shortened development time from a number of months to just nine-week increments of product being in market and evolving, to create new tools which are well received by the company's clients.

“One of the primary objectives with the Innovation Labs is getting clients more engaged at the ground level,” Brooks says. “The question we're trying to answer is: How can we create a more reflexive relationship where clients provide feedback so together we can deliver a better solution?”

The company measures success by metrics such as growth in assets under management and trade executions. As an example, mobile trade executions have increased at a 77 percent compounded annual growth rate over the past five years. “We know that if we aren't doing right by our customers and allowing them to more effectively monitor their trades and investments, they'll just go elsewhere,” Brooks says.

**Percent of survey respondents who say their technology spend is “significantly higher” than prior year**



**Focus on productivity**

The evolution in the ways that mid-market companies employ and think about technology is a natural one, and may help explain why productivity has lagged since the global recession ended. While some economists believe the US economy may have entered a period of “secular stagnation,” or a lower permanent level of growth, others have argued that the pace of technological innovation has extended beyond our ability to measure its impact.<sup>1</sup>

“In the long-run, productivity gains are mostly generated through innovations in technology and in the way that businesses manage people and technology,” said Ira Kalish, chief global economist, Deloitte Touche Tohmatsu Limited. “One problem is that new innovations, while always exciting, don’t necessarily lead to productivity gains immediately. Rather, it can take years before innovations are absorbed into the way businesses operate, only then causing gains in productivity that lead to faster economic growth.”

Productivity was a central theme in our respondents’ answers, illustrating that mid-market companies are moving on from basic maintenance to more strategic IT investments. Increased productivity ranked first of all the reasons the companies have for investing in technology. When asked how technology has generated change within their firms, half of respondents said it has increased productivity and freed up talent to assume new or additional responsibilities. In a separate question, cloud infrastructure, analytics, and big data ranked as the most likely to generate productivity gains; however, eight different technology-related trends all captured at least a quarter of the responses.

The search for increased productivity helps explain the companies’ robust pace of spending on a suite of technology solutions. The proportion of respondents rating technology spending as “significantly higher” was nearly double that of just two years ago. Technology leaders are also reexamining the way they approach technology. Notably, a quarter of respondents said they are adjusting or redesigning IT operating models, compared to 17 percent in 2015.



**Productivity counts**

Half of respondents said technology has increased productivity and freed up talent to assume new or additional responsibilities.

**39.8%**

Cloud infrastructure

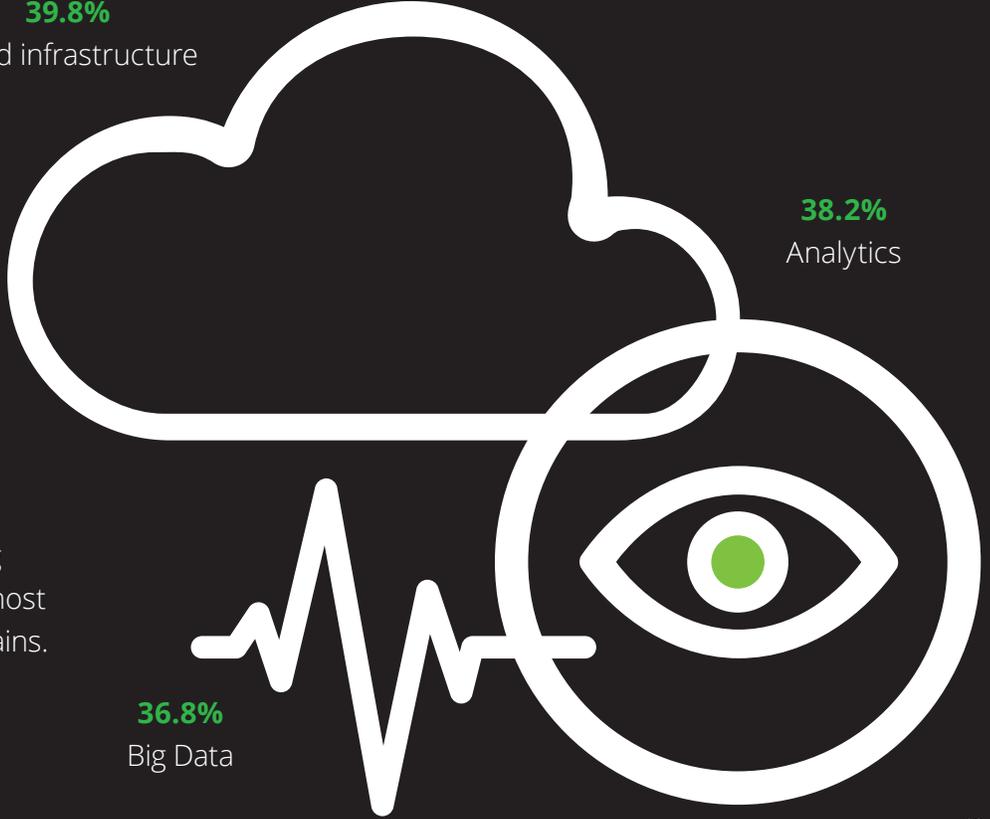
**38.2%**

Analytics

**36.8%**

Big Data

Respondents identified cloud infrastructure, analytics, and big data as the technology trends most likely to generate productivity gains.



What are the data privacy and security risk issues of concern to your company?

**48.6%**  
Phishing



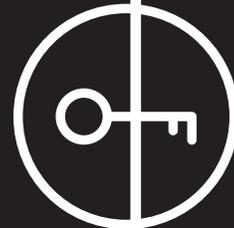
**41.6%**  
Migration to cloud

**40.0%**  
Integration with external systems

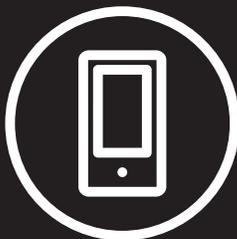


**46.8%**  
Employee-introduced risk

**35.4%**  
Internal access controls



**36.8%**  
Mobility



According to Uri Sarid, CTO at technology firm MuleSoft, the challenge in the multi-application environment, is mining value from a growing number of solutions so that companies can ultimately boost productivity.

Businesses need the ability to experiment with new technologies, have them plug and play with other applications, and swap them in and out depending on the value they provide,” says Sarid, whose company builds application networks that help enterprises connect apps, data, and devices. “The real productivity puzzle in doing this is how you swap these technologies in and out without wasting your IT team’s very limited time and energy.”

### Security investments yield greater comfort

Mid-market companies should be on high alert against security breaches as the threat level reaches new highs. Payments fraud, for example, is now a pervasive problem.<sup>2</sup> Hackers are taking valuable information such as medical records and posting the data on the dark web for the highest bidder.<sup>3</sup> Companies with lax security protocols may have inadequate protection from rogue employees intent on doing harm.

The management of cyber security and information risk continues to be the most pressing assignment among respondent companies over the next 12 months. Information security was cited as the leading challenge for IT departments, ahead of keeping up with new technology and securing enough funding to invest in it.

At the same time, mid-market companies show they’re willing to confront these challenges, and they’re turning to an increasingly sophisticated toolset to help ensure their IT investments are able to generate value while mitigating such risks. Three-fourths of respondents said their company spends at least 1 percent of their dedicated technology budget on information security, and more than two of every 10 report spending more than 5 percent.

Responses to a new survey question this year reveal where that spending is going. The answers show that mid-market companies are equally concerned about the processes, people, and technology involved in their IT infrastructure.

“Innovation is introducing considerable opportunities and risks,” says Adnan Amjad, Cyber Threat Management leader and partner, Deloitte & Touche LLP. “Data and reputation have become as valuable as core systems. This is elevating the importance of moving at the right speed, and focusing on all the right areas.”

Security protections put in place in recent years appear to be giving mid-market companies greater comfort about their IT security preparedness. Companies continue to believe that targeted attacks pose the most likely security threat to their business interests, though those fears and other concerns have subsided compared to last year. Nearly as many respondents—47 percent—said improper behavior by employees had the potential to compromise data or infrastructure.

“Innovation is introducing considerable opportunities and risks.”

**Adnan Amjad**  
Cyber Threat Management leader  
and partner, Deloitte & Touche LLP

More companies surveyed said they have stepped up their efforts to train employees on information security matters. In addition, this year's survey captured a significant increase in the use of encryption to protect sensitive information.

"Security isn't about putting up physical walls, rotating passwords, or restricting access," says MuleSoft's Sarid. "The world has become a distributed place with infinite points of contact. Our biggest challenge, and really the challenge for enterprises at large, is designing security processes and systems to account for this new, distributed world."

O S J Z R E G 7 C  
E I 6 D L O 8 K Q  
J W O 4 H L Q J D  
P E U X W L 9 Y S  
A 3 I G E W S P C

- ▷ Security is not something you think about once. Onboarding is great, but it is better to have an ongoing presence.

John Tannone—Vice President of Business Systems, ESET North America

## ESET North America: Adding layers for stronger security

Layered clothing is the way to go in winter, giving you multiple levels of protection against the elements. In information security, a similar approach applies—external protection and robust preparation on the inside are critical to help fend off data threats, according to global IT security company ESET.

In this year's technology survey of mid-market companies, information security was listed as the single biggest IT challenge identified by respondents. Security proved more perplexing than the race to keep up with new technology, or even the budgets to pay for innovation. John Tannone, Vice President of Business Systems for San Diego-based ESET North America, says companies can confront security hazards by attacking the issue on multiple fronts.

"The smart approach is making sure you have layered protection," Tannone says. That includes a firewall-enhanced perimeter, protection for servers and training for employees so they know how to recognize and respond to potential cyber hazards, he says. Whether they are unwitting victims or perhaps willing participants, workers are a considerable source of worry for companies as they assess IT security threats. Nearly half of the respondents in this year's survey signaled employee-introduced risk compromising data or infrastructure within their organization as a key concern.

In some scenarios, Tannone says, a rogue worker might divulge proprietary information such as customer lists or price sheets. In other cases, an employee might download a file without malicious intent though the information ultimately lands in the wrong hands. Tannone says ESET combats such dangers with endpoint protection, education, and intrusion protection systems. The company also fights data leakage by relying on rights management. In other words, files are encrypted so that only

preauthorized users within specific networks can have access to the information.

Especially for mid-market companies that may lack the resources of larger competitors, leaders have to prioritize security training for their teams, Tannone asserts. "Security is not something you think about once," he says. "Onboarding is great, but it is better to have an ongoing presence."

The potential for data attacks is almost certain to grow as emerging categories of technology put more information into the digital sphere. For instance, more than half of respondents in this year's survey were either building projects with elements of the Internet of Things (IoT), or had mature deployments of the technology, which creates vast networks of Internet-connected devices.

Tannone says advances within the IoT such as smart homes and connected cars reap the benefits of this technology but also create new vulnerabilities. A smart approach means looking at security before usability. Tannone asks, "If it's not secure, where does that data go?"

Signs are emerging, however, that companies are starting to get the upper hand, at least with some technology solutions. For instance, respondents in this year's survey were less likely this year to list data security as a top concern for cloud technology adoption. Tannone believes companies are shifting the burden to cloud vendors that have the bandwidth to secure those environments. This means IT managers may not have to worry as much about security.

Still, Tannone says, it pays to always have one governing mantra in mind when it comes to IT security: "trust but verify."

# Casting further afield for future value

## Immersive experiences

Nearly 90 percent of companies surveyed say they are using some form of virtual technology or augmented reality in their operations



The increasing participation of IT leaders in setting the technology agenda at their companies is translating directly into a wider array of investments.

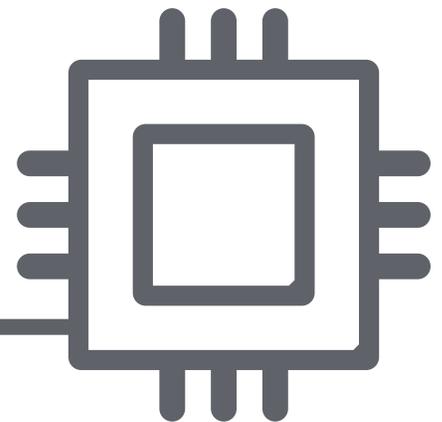
More than half of the companies surveyed now say their IT leadership drives the adoption of new technology trends, and nearly 25 percent say they have processes in place for exploring emerging technologies. What's more, they see a broad spectrum of technology trends having a significant impact on their business, both over the past 12 months and in the coming year.

### Who drives the adoption of new technology?

**49.0%**  
IT leaders

**26.6%**  
Business leaders

**24.4%**  
Business and IT leaders





**Cloud spans breadth of needs**

Financial and accounting functions continue to be the most likely business area for cloud-based technologies. *Shown: percent of respondents with successful cloud deployments in the noted functions*



### Cloud computing

Mid-market companies' approach to cloud computing has a lot in common with consumers' view of the sharing economy. Without the commitment of ownership or membership, you can reserve a ride, hire a butler, or rent a campsite on an exclusive estate through on-demand platforms. In enterprise settings, cloud-based technologies allow companies to enjoy similar speed to value. Firms can store information in a cloud data center. They can orchestrate logistics. Companies can manage personnel data without the upfront expenditures of traditional software applications.

Cloud computing has penetrated a diverse set of business functions. For instance, 64 percent of respondents said they were actively building cloud solutions into customer relationship management or had firmly established the technology within the function. Improving the speed of implementation—shortening the time to extract value from the applications—ranked first, along with reducing concerns about data security, among the top reasons companies select cloud-based applications.

But just as a bad review can sour the experience for consumers on a sharing platform, cloud solutions also can be problematic if the parts don't fit exactly right. This year for the first time we asked companies to disclose their biggest challenges with cloud-based applications, and 40 percent identified integration across packages as the biggest issue. That was about twice the number of respondents who said that balancing the requirements of multiple cloud vendors or managing the upgrade cycles were the most pressing challenges.

"As these companies move further into the cloud, they are introducing tremendous value but also complexities that need to be understood," said Karl Rupilius, principal and NetSuite practice leader, Deloitte Consulting LLP. "Integration is becoming more important to manage, both in the cloud and on premise as well. That's the market's next iteration: tying it all together and managing cloud integration more cohesively."

Security threats in general—and in the cloud in particular—continue to be perplexing issues, even as companies appear to have grown comfortable with some of the risks. In fact, data security has fallen from first to second place as the top factor affecting the adoption of cloud-based services. Further, respondents signaled that cloud-based applications could help their companies address data security gaps, with 54 percent of respondents ranking it as one of their top three reasons for investing in the technology.

Respondents said they prefer on-premise systems and hosted solutions in almost equal measure this year. The share of companies that seek off-premise solutions has fallen steadily since 2014, suggesting that IT managers want some measure of control over the cloud technology within the confines of the company.

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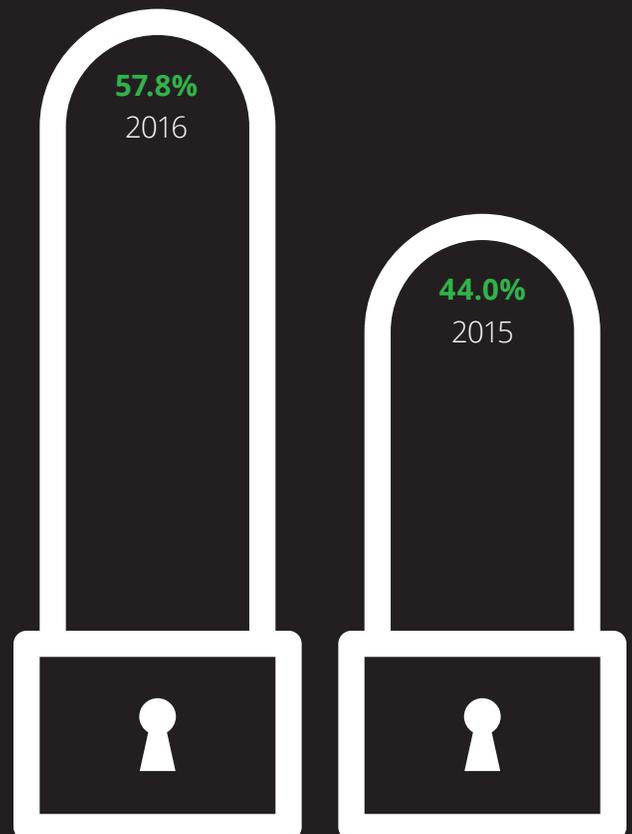


### Future-based insights

61 percent of respondents say they use analytics to increase the accuracy of forecasting, more than any other business area.

### Increasing focus on protecting data

58 percent of companies are encrypting sensitive information compared to 44 percent in 2015, which shows security approaches are maturing as well.



- ▷ By creating an application network, we can implement new technologies more quickly to achieve our business outcomes faster and adapt more quickly when business needs change.

Uri Sarid—Chief Technology Officer, MuleSoft

## MuleSoft: Engineered networks for the integration dilemma

Ten-year-old technology firm MuleSoft is pursuing a mission that continues to elude many companies today: connecting multiple applications so they can work cohesively to serve business needs.

Integration across software packages can be a complex, time-consuming endeavor. Uri Sarid, the chief technology officer at the San Francisco-based company, says his firm is attacking this problem by fundamentally changing the way it builds applications. In the cloud environment, companies tend to habitually adopt new software to solve a problem but end up creating additional work as they try to connect these packages into legacy software. This type of point-to-point integration can ultimately slow down business and cut into productivity, Sarid says.

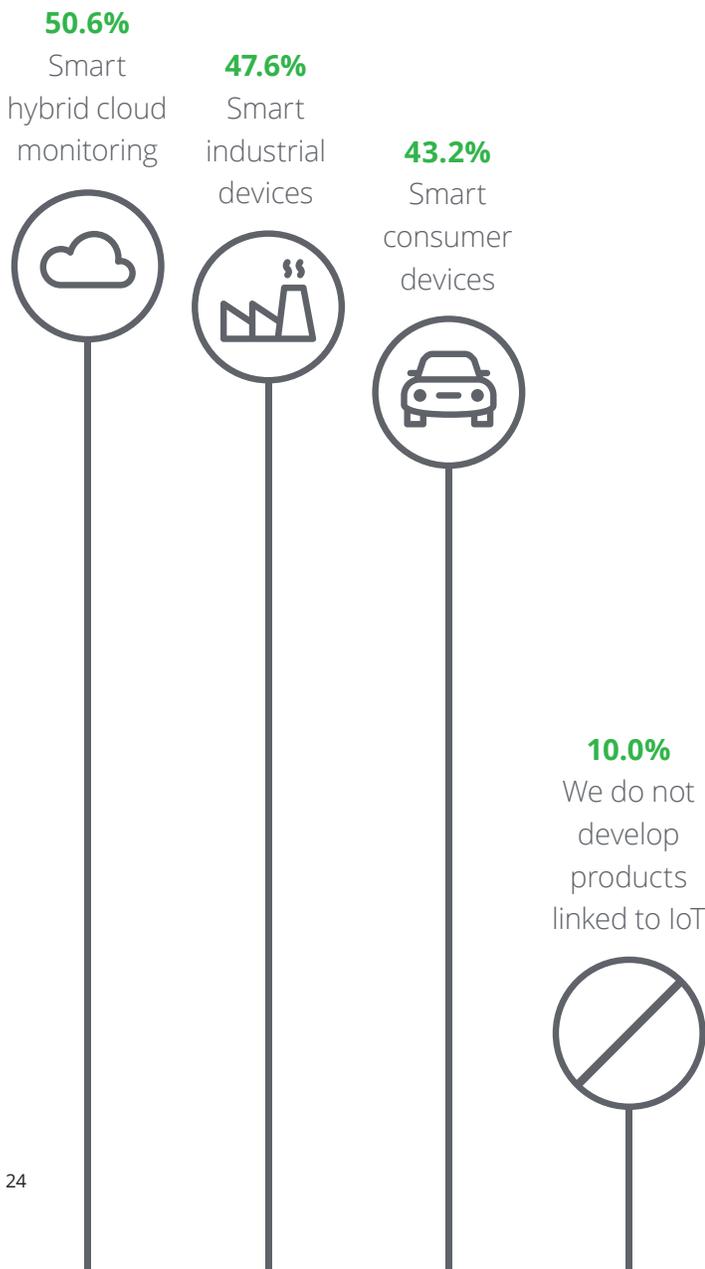
MuleSoft has found success by creating application networks—bringing together applications, data and devices, which are then connected to application programming interfaces (APIs) to make these networks pluggable, portable and usable in other scenarios. Think of the networks as a power strip that connects all devices in one place, instead of having to hunt for individual outlets to power each machine.

“By creating an application network, we can implement new technologies more quickly to achieve our business outcomes faster and adapt more quickly when business needs change,” Sarid says.

MuleSoft has used this approach and bolstered it through communication across departments within the firm to determine which data and devices need additional attention, Sarid says. “We are always designing for agility at scale. Our entire organization is able to get more value from IT assets and services on the network,” Sarid says.

With the flexibility of application networks to plug in both on-premises and cloud applications, MuleSoft could easily choose to build these networks entirely in the cloud. Sarid says this off-premises approach has been part of the company’s DNA and has allowed it to achieve flexibility and agility in a fast-changing market. “We wanted to force ourselves to design explicitly for a cloud-first approach, design explicitly for an agile, plug and play model, and build the necessary controls on top of that structure, all while we were still a small company,” Sarid says.

**If your company develops products linked to the “Internet of Things,” how would you categorize these products?**



**Internet of Things (IoT)**

Not long ago, the idea that devices would track not only your actions but also your emotions would have been hard to picture. But the Internet of Things (IoT) has made it possible for machines to monitor both our movements and thought processes, providing companies with new insights. Mid-market companies maintain they are embracing these innovations head-on.

Virtually all respondents in our survey indicated they were at the very least investigating how they could implement IoT technology—the vast universality of Internet-connected devices and systems. A total of 56 percent of respondents said they either had mature IoT deployments or were in the building phases of IoT technology. The most common product category for IoT applications was smart hybrid cloud monitoring, technology that provides cognitive, contextual monitoring and data capturing. Half of the companies currently developing IoT projects said they are using this technology. Meanwhile, a similar share of companies report using smart industrial devices—environmental sensors, smart metering, and supply chain tracking—so that devices can communicate with one another.

Looking ahead, surveyed companies see the greatest opportunity in IoT-powered technology that tracks business processes. The ability to track customer behavior and the possibility of tracking employee productivity were also high on the list of capabilities companies said they were pursuing in this area.

- ▷ Privacy, security, and all aspects of regulatory concerns have to be top of mind; it's an issue of trust and compliance that companies have to address.

David Rosner—Principal, Deloitte Consulting LLP

## Life sciences firms lead the field

Among the major industries covered in this year's survey, life sciences and health care companies are leading the pack when it comes to exploring new technologies and solving the issues that arise in their adoption. For years now, industry participants have investigated the cloud and data analytics to help share information and improve patient outcomes.

Now, they are pushing the frontier of technology adoption with Internet of Things (IoT) applications. Life science and health care firms are the clear early adopters with the technology, with 50 percent of such respondents calling IoT deployments "mature" at their organizations. That compares to only 14 percent of tech and telecom firms—34 percent of such firms are in the earlier "building" phase—and 22 percent of consumer packaged goods companies.

"If you look at what's happening in the IoT product development lifecycle, life sciences firms in particular are showing how to put technology into practice, from preventive care to chronic conditions and acute treatment," says David Rosner, Life Sciences Digital leader and principal, Deloitte Consulting LLP. "If you're able to incorporate IoT into products and therapies, you can effectively link devices and data to health outcomes."

Companies from the life sciences or health care industries also were generally more focused than their counterparts in other sectors when it comes to the maturity of the underlying processes and protections that govern their use of technology. Respondents from the industry (36 percent) were more likely than any other category to report they were going to adjust IT models to meet new realities as a key priority in the next 12 months. Health companies also were more likely to report both improvements in business practices (46 percent) and managing cyber security (41 percent) as one of their top three priorities in the coming year.

On this last score, companies from the health and life sciences sector appear to have the most robust safeguards in place to combat security threats, reporting that they have plans against external threats, governance, encryption and training at higher rates than other industries.

"Given the nature of this type of data, privacy, security, and all aspects of regulatory concerns have to be top of mind," Rosner says. "It's an issue of trust and compliance that companies have to address."

26 percent of respondents said they employ “social listening” to monitor and understand customer sentiment



### Analytics and social platforms

Companies today should act in real time when so they know how to respond when a customer is browsing, placing an order, or sharing their feelings about either a product or service. Firms that miss these signals and fail to see patterns can end up missing opportunities.

In this year's survey, the greatest share of respondents said analytics allowed them to boost their operational effectiveness. Increasingly, however, companies see customer intimacy as the most important information they can yield from analytics. Twenty-one percent of respondents said mining information from their customers—achieving closeness—was the most critical contributor to value within analytics. That was a significant increase from the two previous years, in which less than 10 percent of respondents thought so. The results suggest that companies realize that customer-driven operations that generate usable insights can help distinguish their brands from the competition.

“Companies have historically talked about the importance of the customer, but now technologies are converging and allowing a level of customer intimacy they have never been able to achieve before,” said John Peto, principal, Deloitte Consulting LLP, and Deloitte Digital customer practice leader. “The insights coming out of those closer relationships are informing companies' pricing, product design, and internal investment decisions coming out of the C-suite.”

Respondents' social media practices coincide with this trend: 26 percent of respondents said they employ “social listening” to monitor and understand customer sentiment, the biggest increase of any element within social media within the past two years.

What would your organization see as the greatest value of data analytics?

32.9%  
Increased operational effectiveness



26.7%  
Greater competitive edge in understanding customer trends



21.0%  
Increased customer intimacy



19.3%  
Ability to predictively manage aspects of the business





### The promise of technology

25 percent of companies called their adoption of predictive analytics "mature," while 19 percent said they were "investigating" the technologies

Percent of respondents who said predictive analytics could help them manage large amounts of data



**61%**  
Consumer products companies



**68%**  
Life sciences and health care companies

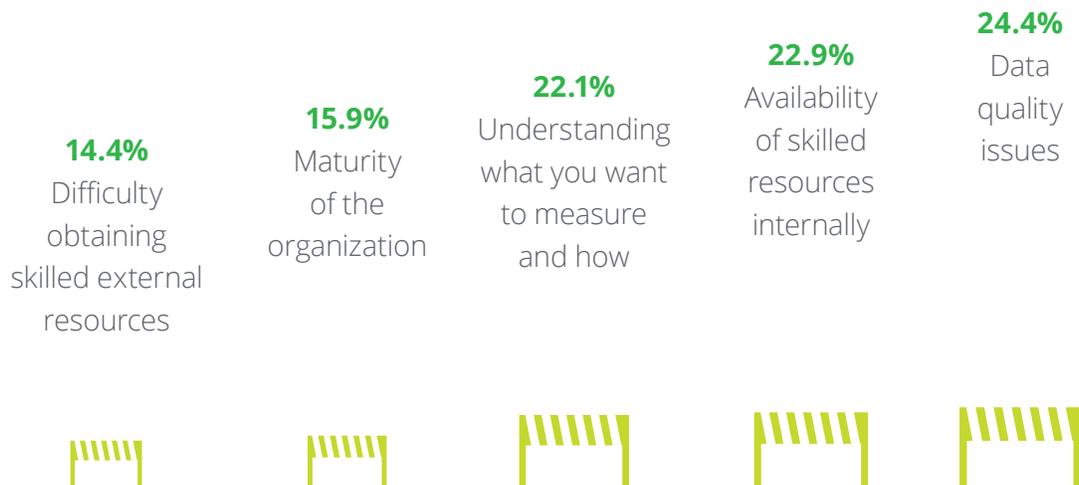
The only business function that saw a big jump in the use of analytics this year was manufacturing. Forty-one percent of respondents said they were using analytics to power their manufacturing operations this year, compared to a third during the previous two cycles. Within the human resources suite, 63 percent of respondents said they used analytics for workforce planning, while slightly smaller majorities reported using the technology for compensation and benefits, talent management and employee retention.

The promise of technology that not only interprets what customers are doing in real time but also speaks to future needs forms the basis of predictive, or cognitive analytics. This year, 25 percent of companies called their adoption of predictive analytics “mature,” while 19 percent said they were “investigating” the technologies, which represented increases in both categories compared to last year.

There appears to be confidence that these technologies can more accurately predict business events and help companies find the best teams—respondents said they saw substantially more promise in both of these areas compared to last year. That was particularly true for consumer products companies, and firms in life sciences and health care—both industries said predictive analytics could help them manage large amounts of data, at 61 percent and 68 percent, respectively.

Respondents also cautioned that the information is not always correct, especially when they are trying to chart their company’s next move. One quarter of respondents said the biggest hurdle in predictive analytics is data quality, while a similar proportion indicated that they don’t have the right skills within their companies to interpret the data correctly.

### What is your biggest hurdle in adopting predictive analytics?



### Augmented/virtual reality

Imagine giving clients the ability to tour a manufacturing site with a smart phone. Or giving customers the opportunity to see how a new cabinets will look in their own kitchen. Or for medical patients, giving them a chance to explore what procedures might look like through the convenience of their smart phone.

One of the more surprising findings from this year's survey was the extent to which mid-market companies are employing augmented or virtual reality (AR/VR). Virtual reality technologies provide immersive experience - often with headsets providing the sights, sounds, and simulated motion of "being there." Augmented reality adds visuals and sounds to the current environment to create illusions that heighten the user experience.

In our survey, 88 percent of all respondents indicated that their companies are using some form of virtual technology or augmented reality in their business operations. Forty-two percent of companies are using virtual demos or interactive tools to help improve employee and customer interactions with their products and services. Forty percent use the technologies to train their customers in the use of products such as medical devices, or in scenarios such as hazardous materials. And 38 percent have found ways to use virtual reality to bring immersive experiences such as gaming scenarios to enable customers to engage with their brands.

Among the sectors represented, technology companies were more likely than their counterparts elsewhere to use AR/VR to enhance the customer experience. Energy, and to a certain extent health and life sciences, firms were more likely to use AR/VR for employees.

88 percent of all respondents indicated that their companies are using some form of virtual technology or augmented reality in their business operations



- ▶ Systems are changing on a daily basis. You have to have a great IT team, and make sure that all of the appropriate areas are involved upfront.

Tim Propp—Chief Operating Officer, CIEE

## CIEE: Lessons in technology implementation

One of the most venerable names in international education is sharing lessons on technology implementation as the organization keeps pace with digital realities.

The Council on International Educational Exchange (CIEE), founded after World War II to help promote global understanding, is upgrading its enterprise resource planning systems, which serve core functions such as billing and sales. As CIEE adopts a greater range of automated, cloud-based solutions, the organization is relying on its experience of collaborating across teams and remaining aware of how software capabilities affect distinct parts of the organization.

“You can’t overemphasize just how critical each one of those areas is to successful implementation,” says Tim Propp, CIEE’s Chief Operating Officer. “Systems are changing on a daily basis. You have to have a great IT team, and make sure that all of the appropriate areas are involved upfront.”

CIEE’s concerns reflect what many organizations involved in this year’s survey say they are encountering: a growing share of the IT budget allocated to implementation rather than maintenance. CIEE has observed this trend in application programming interfaces (APIs), the tools and protocols that make up software applications and give them portability so they can be shared or used in new scenarios.

Brent Bruggeman, CIEE’s Chief Information Officer, says companies that are adopting new applications should not assume that the solutions are ready out of the box. A sales application, for instance, might have capabilities needed to link to marketing software, but the APIs might not permit the technology to meet the needs of other areas of the organization. At some point those capabilities will need to be extended, Bruggeman says. In other words, making sure the car is full of gas is a good start, but at some point you’ll need to fuel up to continue the trip.

“You have the vendor-provided APIs, but be prepared to extend them,” Bruggeman says.

In this year’s survey, nearly 90 percent of respondents signaled they were using some form of virtual or augmented reality technology in the business. Propp says virtual interviews have allowed CIEE to connect companies and inbound work and travel students to secure over 8,000 jobs for these students over the past year.

“This is a way to use technology to make sure there’s a better matching process, so the student has a good experience and the employer has a good experience,” Propp says.

This year, nearly half of survey respondents said they considered technology as a strategic investment as opposed to a critical differentiator, a sizable increase over the past two years.

Bruggeman says through its IT investments CIEE is looking toward the future. “We’re moving away from urgent needs and more toward strategic needs,” he says “That’s where we want to be. We’re at the edge of the woods.”

# Conclusion

**Technology investment  
may be a virtuous cycle,  
but it's not a self-fulfilling one.**



Success and maturation require someone at the helm with perspective across industries, an appetite for rapid innovation, and proficiency to address an organization's biggest challenges. The increasing influence of the CIO and other IT leaders within the middle market shows that companies in this critical segment of the US economy are coming to grips with this evolving reality. While other C-suite leaders might not be handing over the keys entirely, we are starting to witness a shift in ownership of the technology agenda. As far as evolutions go, it's an important one, because it suggests that mid-market companies are starting to look beyond immediate needs toward a future where technology plays a much greater role in just about every aspect of their business.

Now that they have laid a sound foundation, it's encouraging to see so many mid-market companies pushing the boundaries of technology adoption. Life sciences and financial services companies are already establishing the breadth of the opportunity before the middle market, closely followed by companies in manufacturing, technology, and other industries. How quickly they evolve will almost certainly depend on their ability to make sense not just of the emerging technologies, but how they fit into the bigger picture at their companies.

In the near term, we believe mid-sized companies will and should be keenly focused on issues of integration and security. While it's true that the cloud has enabled the next wave of innovation, it's also true that all of that hard work could be undone if these issues aren't adequately addressed. The survey answers around information security, in particular, appear somewhat contradictory. It is evident that mid-market businesses have made significant progress in identifying external threats and establishing safeguards against such breaches, yet at the same time internal environments within many firms remain porous.

We hope that the results of this annual survey may help your company identify potential areas for improvement, as well as trends in technology investments that may be worth emulating. The US middle market has shown an incredible capacity to use technology to better compete and be more productive. Though the way forward is shaping up to be increasingly complex, we have little doubt middle market company leaders can take the necessary steps to own up to the task.

Mid-market companies are starting to look beyond immediate needs toward a future where technology plays a much greater role in just about every aspect of their business.

### Notes

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### Perspectives

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