



# Digital to the core

Tech maturity leaps forward  
as enterprises navigate  
uncertainty

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2022 KPMG U.S. Technology Survey Report

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# Executive summary

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**As a concept, there's little new about digital transformation. Using technology as a tool of growth continues to be fundamental to nearly every enterprise business strategy. However, the roadmap for executing digital transformation is changing as fast as the technologies that underpin it and the world they influence.**

Multiple technological trends are converging to redefine the ways customers interact, the needs of the market, where and how people work, and how businesses define success. Fast, connected, secure, personal, customer-centric experiences are winning the day, inspiring enterprise in every sector to accelerate their appetite for digital innovations. Platforms such as cloud, artificial intelligence and automation are rising to prominence and becoming mainstream. Meanwhile, potentially game-changing emerging technologies such as the metaverse and Web3 are promising new possibilities for companies to deliver value.

In this rapidly changing landscape, standards for digital readiness, modernization, and leadership are being reset. Organizations have come a long way, with a substantial portion successfully leveraging digital acceleration to achieve real value in terms of profitability and customer value. This leap in progress couldn't arrive at a more critical time. Organizations today are operating in tense conditions, grappling with rising costs, economic uncertainty, geopolitical turmoil, and a global talent crisis. Proficiency in new and emerging technologies will be paramount to defending market share by enhancing customer experience and business resilience.

Successful businesses of 2022 and beyond will be digital to the core. As transformation momentum continues to rise, truly standing out presents both challenges and opportunities. What will it take for enterprises to adapt their visions and strategies to take advantage of the latest digital trends? To identify which emerging technologies will stick and make smart investments? To avoid common pitfalls as they embrace and integrate digital tools and supporting capabilities? To navigate sweeping changes and shifting threats to come, including talent scarcity, rising costs, economic uncertainty, geopolitical tensions, and disrupted supply chains?

The 2022 KPMG LLP (KPMG) U.S. Technology Survey Report sheds light on the future of digital transformation in the new business reality. It reflects data from more than 1,000 cross-industry enterprise technology leaders about their organizations' current level of digital maturity, technology investment plans, major transformation challenges, and more. We believe the insights from our new research will help guide companies to success as they orient operations, business models, and workforces around technology and take digital transformation to the next level.

# Research methodology

Recent global events have pushed digital disruption, adoption, and transformation to new speeds and heights. New research is crucial at this juncture, as it can help business and technology leaders understand what this turning point will mean for their industries, including immediate and future opportunity areas and blocks to progress.

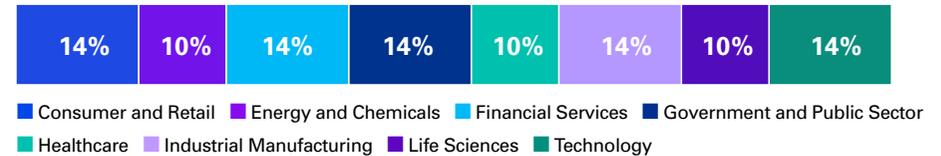
In May to June 2022, KPMG U.S. conducted a quantitative survey of global technology leaders about the current stage of digital transformation journeys, where the challenges lie now and in the future, and the technology investment outlook to come. Survey questions spanned the following categories: technology investments, digital transformation, emerging technologies, cloud transformation, enterprise systems and applications, and cyber transformation.

This report shares key findings and insights from 1,052 U.S.-based survey respondents. All respondents held executive-level technology roles in public, private, and government/nonprofit organizations spanning eight industry sectors. Fifty-two percent led technology teams at organizations with over 10,000 employees, and 97 percent had an annual revenue of over \$1 billion.

The new research builds on the firm's 18-year history of KPMG collecting data on worldwide technology perspectives and adoption rates, including our flagship annual Global Technology Survey.

## Demographic data

### Sector



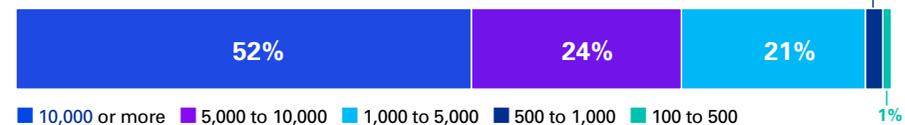
### Job Role



### Annual Revenue



### Number of Employees



## HIGHLIGHTS:

# The headline numbers

## Emerging technologies

# 1/2

of respondents have seen a ROI from AI Technology Investments

## Cloud adoption

# 80%

of organizations say their cloud-enabled transitions have been successful, yet

# 67%

say they have yet to realize substantial ROI from cloud investments

## Talent shortages

# #1

The number one challenge complicating the adoption of digital technologies.

## Digital transformation

# 66%

of organizations have been very or extremely effective in using digital to advance business strategy

## Cyber security

# 42%

of respondents indicate they are behind schedule when it comes to cyber security implementations

## KEY TAKEAWAY:

# Tech enthusiasm high for customer engagement

## Businesses are already making plans to embrace the technologies of the future

Organizations are poised to invest heavily in emerging technology, despite tense operating conditions.

A revolution of emerging technology is set to unfold over the next several years. Survey respondents expressed a bold and exciting vision for what they could do across a broad expanse of new technologies: crypto, the metaverse, Web3, NFTs, quantum computing, VR/AR, 5G, and edge computing. Approximately seven in 10 companies expect to have a significant presence in these major technologies within the next two years, with high levels of investment planned.

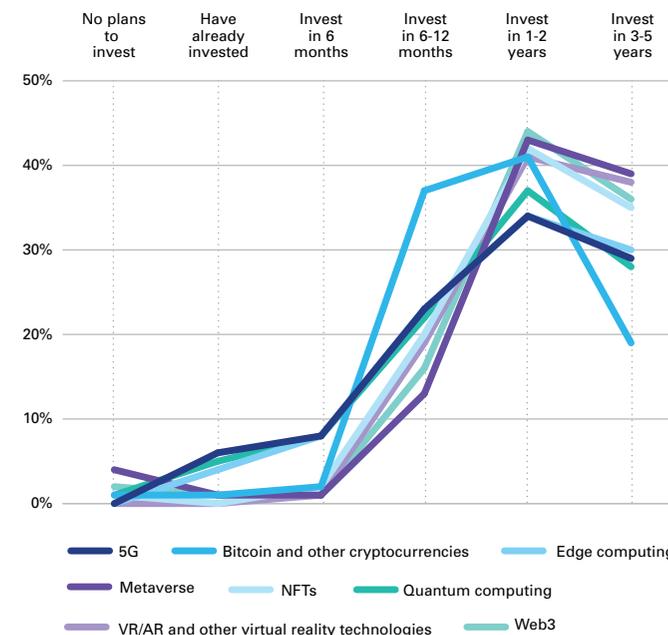
Indeed, 2024 looks poised to be an inflection point for new technology acceptance: After five years, it will be the rare company that has not invested in every one of these tools that—while are still in the early days—look poised to reshape the business world.

Plans to dabble across such a range of technology categories suggest companies are preparing for an uncertain future, but one in which digital will be absolutely core to almost everything businesses touch. Given the unprecedented pace of technological change, it is virtually impossible to know which new platforms will prove to be radically disruptive versus which will have high impact for a short time before fading out quickly. By pursuing

multiple new technology avenues, enterprises appear to be hedging their bets.

Companies' highly aspirational view of the promise of new technology is also supported by data showing the big jump in emerging technology investment as we look farther out. Respondents indicate it will take years for companies to move beyond excitement and make potentially disruptive technologies viable. Platforms such as the metaverse and Web3 have generated tremendous hype and attracted vast sums of capital, yet the technology and infrastructure are still in the early stages. In the next two years, 58 percent of respondents plan to invest in the metaverse and 62 percent plan to invest in Web3, while 37 percent plan to invest in both technologies. Practically, enterprise leaders appear to be awaiting further development and greater consumer acceptance before making virtual worlds and blockchain-based internets key pieces of their digital strategies.

## To what extent do you think you will invest in the following technologies?



*“Enterprise leaders are bullish on how emerging digital technologies will fundamentally change how businesses function across every part of the value chain.”*

— Barry Brunsman, Principal, CIO Advisory, KPMG in the U.S.

## TECH ENTHUSIASM HIGH FOR CUSTOMER ENGAGEMENT *continued*

Driving positive momentum around new technology adoption is an overall view that technical debt—historically considered one of the greatest hindrances to digital transformation—is not an obstacle to companies’ digital visions. Seventy-seven percent of today’s enterprises say technical debt is not inhibiting future IT investments, and only 15 percent of respondents include it as a top three challenge of technology adoption.

Advancements in technology and computing have undoubtedly had a significant hand in reducing technical debt. The relatively low impact of technical debt in this research could also be seen as a sign of innovation success through the pandemic era, when companies were forced to digitize fast. Rather than implementing quick-and-dirty solutions, many enterprises seized the opportunity to start fresh. Massive disruption to the business environment was the push companies needed to overcome organizational inertia to technology change, propelling them to replace familiar legacy technologies with more agile and modern systems and tools.

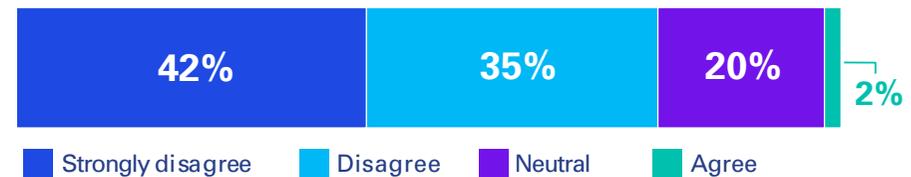
The positive perspective on tech debt may also be driven by the lessening influence of legacy, on-premise technologies as drivers of the key business outcomes that matter to businesses today.

“Old technology was built around business rules that frequently don’t describe businesses anymore,” says Barry Brunzman, principal, CIO Advisory, for KPMG in the U.S. “As such, technical debt is not a prime motivator for most cloud journeys, which are driven by business rather than IT mandates. Spending money to tinker with on-premise solutions is not strategic when what is needed to satisfy customers now depends on modern, cloud infrastructure.”

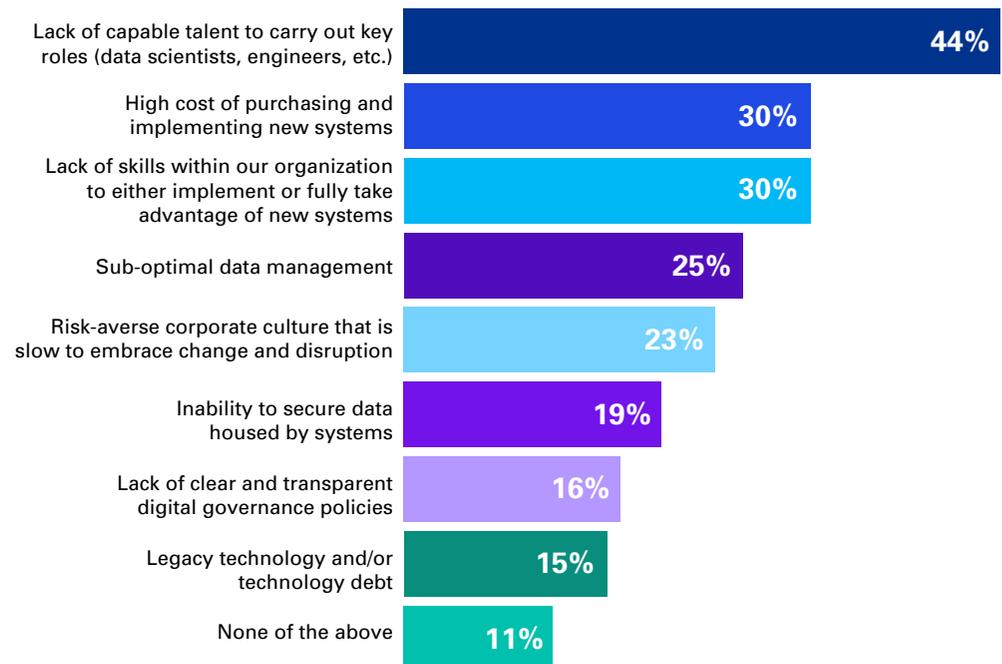
Still, businesses will need to hurdle several more obstacles before they can fully achieve their emerging technology ambitions.

Risk aversion is one barrier. While businesses see the potential in emerging technologies, many are often waiting to act. For 48 percent, plans to invest and implement emerging technologies are being laid out, but on average little to no immediate movement is being made.

**To what extent do you agree with the following statement: “Technology debt inhibits my organization’s future IT investments.”**



**What are the biggest challenges you face in your adoption of new digital technologies?**



## TECH ENTHUSIASM HIGH FOR CUSTOMER ENGAGEMENT *continued*

Regarding the metaverse, most brands (65 percent) admit they are waiting for competitors to invest in and/or adopt the technologies before investing themselves. Customer demand also stands as a key trigger for metaverse investments for 31 percent of companies.

There are also signs that in-house capabilities are in short supply. For example, 68 percent of businesses are looking to outsource and/or partner with tech companies to tap into the metaverse and Web3 rather than build capabilities in house.

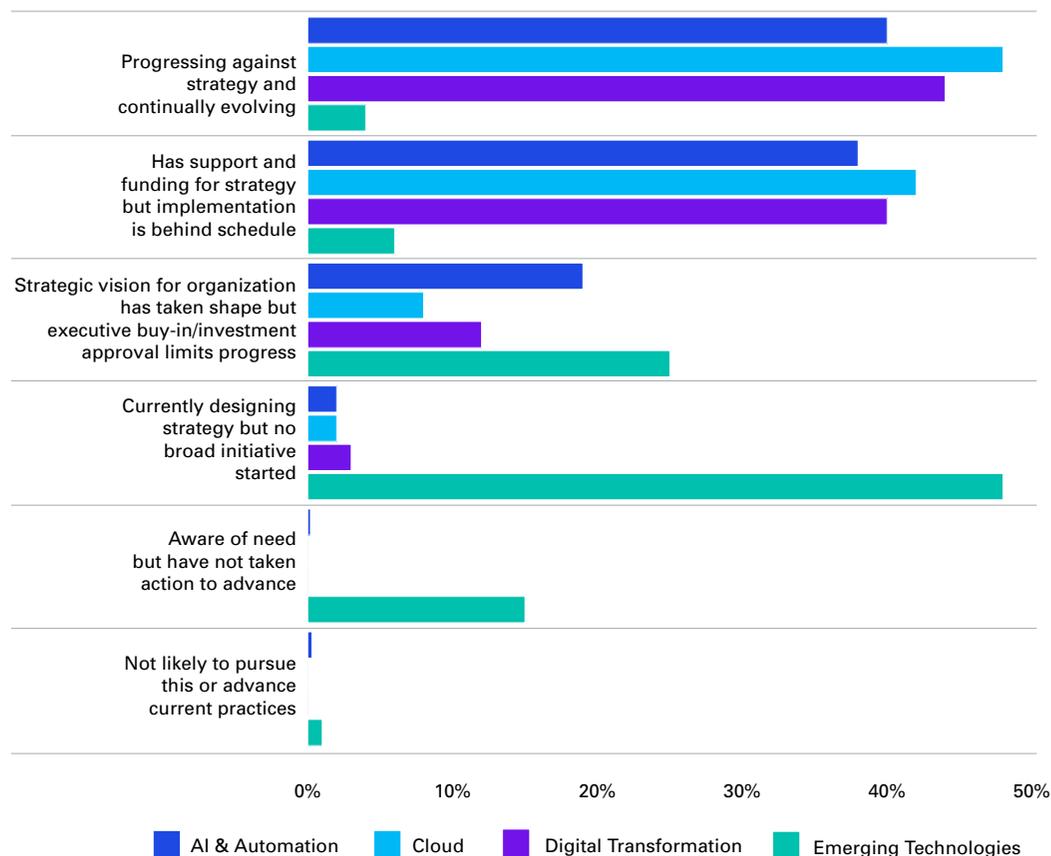
How today's economic uncertainty unfolds—and whether the U.S. enters an official recession—is likely to impact emerging technology investment plans, potentially widening the gap between winning digital leaders and the rest. One quarter of tech leaders said investment approval or executive buy-in is limiting progress with emerging tech, an issue that will likely intensify as executives plan how to navigate an increasingly uncertain economic landscape.

“In our conversations with clients, we see a trend toward caution—a sense of battening down the hatches in preparation for recession,” says Cliff Justice, leader of Enterprise Innovation for KPMG in the U.S. “In a period of budgetary constraint, bolder companies with money and vision will have a prime opportunity to grab market share by accelerating investment in the digital products and business models of the future. They can also leverage automation as a cost lever to offset their spending and grow profitability through a downturn.”

The investment outlook in the crypto space is another area of uncertainty, given the crypto market's recent fall.

“The latest crypto crash is seen as proof to some that it has always been a sham, while others say a correction was always coming,” says Justice. “The truth is that like any emerging technology, crypto is a long play. Some platforms will survive while others will die. And importantly, the space is about much more than cryptocurrencies, which get the most headlines. For example, there are numerous blockchain and Web3 investments that might have coins attached that will be foundational to the evolution of the internet and are probably actually undervalued right now.”

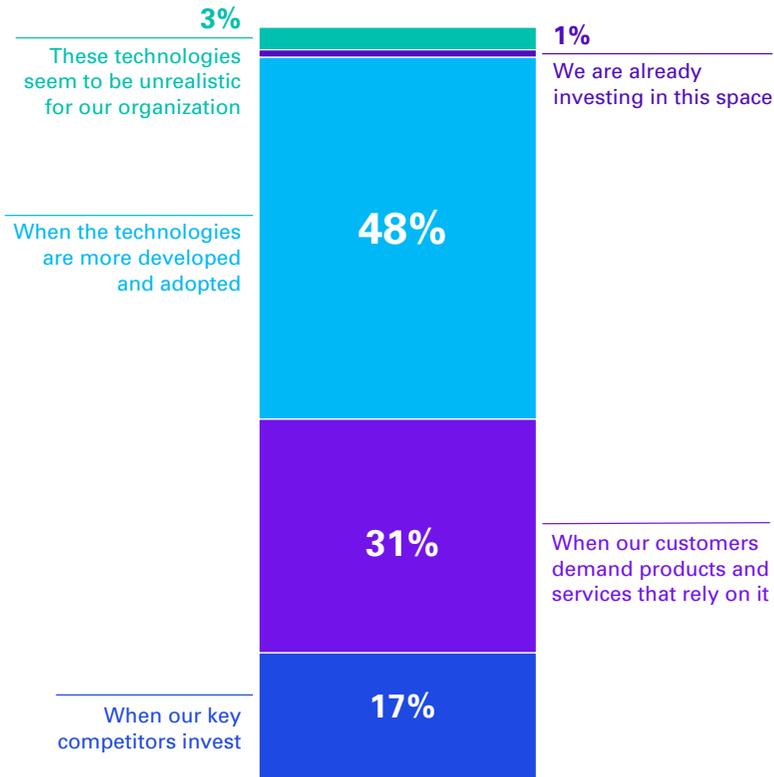
### How would you describe your organization's position today in each of the following areas?



## TECH ENTHUSIASM HIGH FOR CUSTOMER ENGAGEMENT

*continued*

**Which of the following would be (or was) the primary trigger for your organization to invest in the metaverse?**



**“We will see stronger and more powerful content in [the metaverse] space... because that is why [customers] will go to the trouble to buy [metaverse hardware].”**

— Ioana Matei, Chief Metaverse Officer at P&G



## Customer centricity is a key driver of technology activity

Meanwhile, environmental, social, and governance (ESG) is rising on the IT agenda.

The digital age and the customer age: Two names for the same world. As businesses manage the complexities of new customer channels, touchpoints, and interactions, customer experience (CX) has become a strategic focus.

Our survey findings show customer centricity as an important motivator of enterprise IT activities. Fifty-two percent of all respondents name it as a top three driver of their organizations' digital transformation investments. The only higher response rate is for driving growth, efficiency, and resiliency (56 percent). We see this as a clear indication of the overlap between engaging customers and seizing growth opportunities in a business environment where the boundaries between offline and online are blurring and heightened experiences rule the day.

More evidence that amplifying CX is a leading trigger for enterprise technology investments is the finding that returns are frequently going back to marketing, sales, and service—the function that owns the customer relationship. Forty-four percent of respondents say that the marketing, sales, and service area is the one benefiting most from digital transformation, more than all other back-office functions.

### ***What is the primary goal for your organization's investment in enterprise technology?***



*“Enterprises have strong growth ambitions and view providing superior customer experience as the best way to achieve it. They are using technology in myriad ways to turn CX into a competitive differentiator.”*

— Rick Rose, Principal, Advisory, KPMG in the U.S.

“Customers are at the heart of the digital transformation journey,” says Matteo Colombo, principal, national leader for KPMG Lighthouse, the U.S. firm’s center of excellence for data, analytics, and artificial intelligence. “Omnichannel is a major CX goal, with enterprises building modern technology capabilities to ensure continuous experiences regardless of channel and drive customer success.”

The survey shows the primary goal for investing in enterprise technology is also to amplify customer centricity, selected by 46 percent of respondents.

## TECH ENTHUSIASM HIGH FOR CUSTOMER ENGAGEMENT *continued*

“A powerful way to drive growth in the digital world is to reengineer front-, middle- and back-office systems around customer experience,” says Patrick Fenton, global executive sponsor for KPMG Powered Enterprise, KPMG International. “Harnessing a broad set of centralized enterprise applications, such as CRMs and ERPs, enables businesses to build a connected enterprise in which every process and function is aligned and focused on meeting customer expectations.”

Finally, how businesses interact with environments and communities is increasingly core to how consumers perceive and select brands. As the importance of reputation skyrockets, consumer demand for sustainable business practices is having growing influence on the corporate agenda—including organizations’ digital strategies.

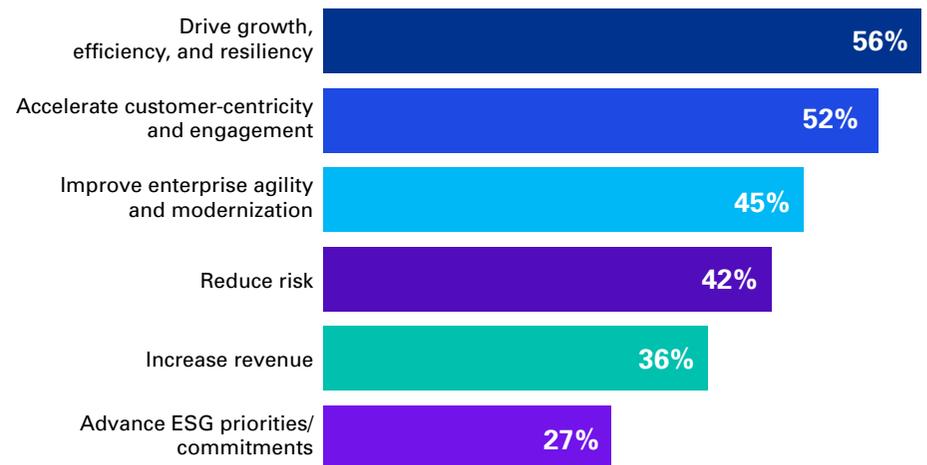
From resource consumption and climate action to fair pay and working conditions, to advancing diversity, equity, and inclusion (DE&I), environmental, social, and governance (ESG) matters are more important to customers now than pre-pandemic. The COVID-19 crisis and related social and economic challenges of the past two years exposed the key role of the business sector in healthy, functioning societies. More than one in four respondents (27 percent) include advancing ESG commitments and priorities as a top three trigger for technology investments, last on the list yet still a significant response rate.

“Nearly every large company now has a net neutrality target,” says Colombo. “We are seeing companies use digital transformation to drive ESG activity in creative ways. Examples include smart buildings that automatically tweak systems to optimize carbon emissions by time of day, weather, office population, and other inputs, and AI-based software that tracks the sustainability index of bank loans.”

While still in their infancy, the capabilities provided by next-generation cloud solutions could also support future enterprise ESG efforts. Twenty-one percent of respondents say reducing carbon footprint and improving sustainability is a top three benefit of their cloud program.

“Industry-specific clouds that don’t just offload technology but actually solve business problems have the potential to enhance visibility on ESG metrics and ultimately make a real difference on ESG goals,” says Kevin Martelli, principal, national Cloud Engineering leader, for KPMG in the U.S.

### ***What are the key drivers of your organization’s digital transformation and corresponding investments?***



KEY TAKEAWAY:

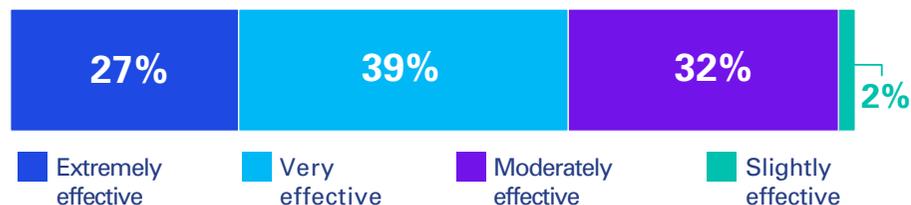
# Digital transformation momentum is accelerating, but further opportunities abound

## Companies report high digital confidence and returns

Respondents are upbeat about what their business has and will achieve through transformation.

According to our survey, digital technology is supporting the business strategy in a significantly high proportion of enterprises. Two thirds (66 percent) of respondents say their organizations are very or extremely effective in using digital to advance the enterprise.

### Overall, how effective has your organization been in using digital technology to advance its business strategy?



Enterprises can no longer afford to rest on their technological laurels. Today, almost every business is not only making digital transformation progress but seeing real bottom-line impact. Such widespread forward momentum has changed what it takes to be a digital leader. General digital competence is no longer enough to stand out from the competition. Now and in the future, it takes more to achieve true digital excellence.

Although self-assessments lack objectivity and may overplay strengths, the findings on digital maturity in the survey population do not appear to present a false, rosy, or tainted outlook. As a whole, the high levels of confidence expressed in their businesses' digital prowess are anchored in tangible financial results. Return on investment (ROI) from digital transformation efforts is strikingly strong across our respondent pool. Nearly every

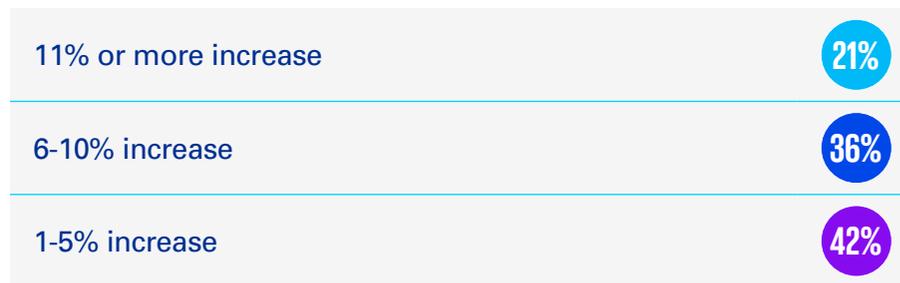


*“What we used to think of as digital leadership is now commonplace. The future will be won by businesses that find new ways to push the envelope with digital.”*

— Barry Brunsman, Principal, CIO Advisory, KPMG in the U.S.

respondent reports a positive impact on profitability or performance over the past 24 months and a notable number are making serious gains. More than one in five respondents (21 percent) say their efforts have achieved profitability or performance increases of 11 percent or higher.

### What positive impact has digital transformation had on profitability or performance over the last 24 months?

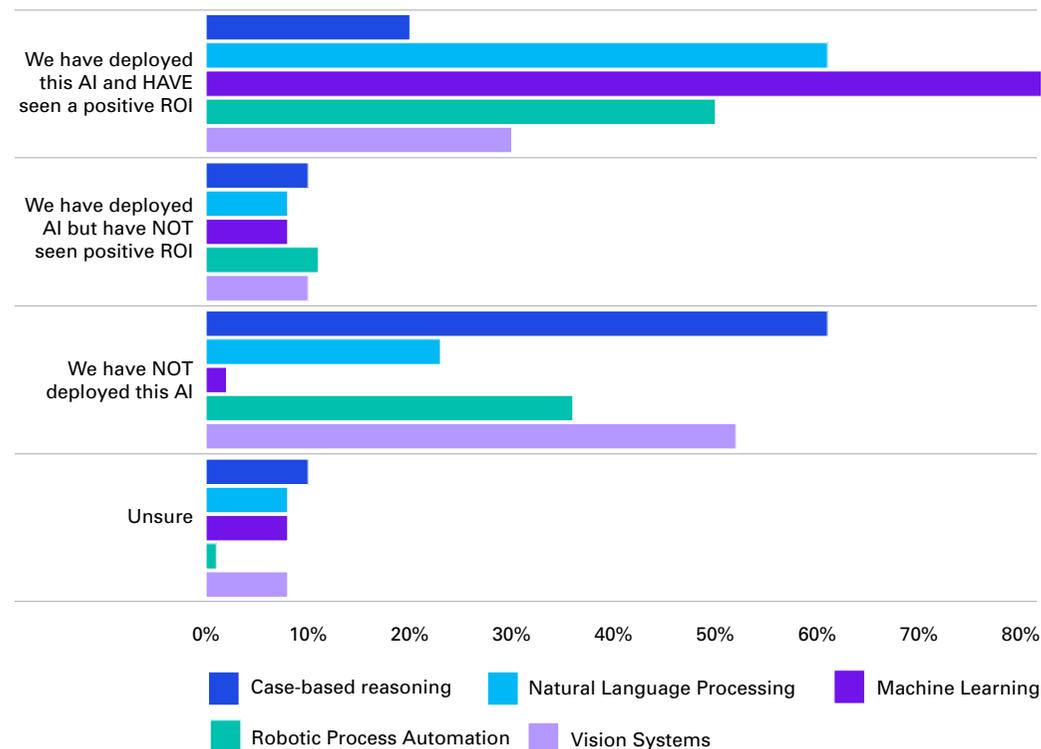


## DIGITAL TRANSFORMATION MOMENTUM IS ACCELERATING *continued*

Signs of digital maturity span multiple core technology categories. While applications and regulations are still evolving and have a long way to go, artificial intelligence and automation stand out as particularly well established in terms of both adoption and results. Half of respondent organizations have deployed and seen positive ROI from machine learning (82 percent), natural language processing (61 percent), and robotic process automation (50 percent)—all technologies that are getting embedded as features into countless applications and solutions businesses and consumers use daily.

Enterprise technology is also reaching an advanced state. Eighty-eight percent of respondents say their enterprise applications have either been streamlined for each function (50 percent) or streamlined and integrated enterprise-wide (38 percent). Streamlined integration will help remove friction from customer journeys when they interact with a brand.

### *Which of these AI-enabled technologies has your organization deployed, and have you seen a return on investment to date?*



**“The only drivers of digital transformation should be ROI measured through reputational impact, customer experience, or money. If you don’t showcase value and impact, why are you doing what you’re doing?”**

— Konrad Dobschuetz,  
Head of Digital Innovation at Novartis

## Enterprises are all-in on cloud but few are fully capturing value

Significant ROI is infrequent even in advanced stages of cloud maturity.

“Out with the old, in with the new.” This mantra guides today’s enterprise leaders as they consider their legacy IT infrastructures. And for the majority of businesses, it drives toward a single shared vision: widespread cloud adoption.

In the evolving digital age, the case for transitioning to modern cloud solutions—including software-as-a-service (SaaS), public and private clouds platforms, and data centers—has never been clearer. Facing a future characterized by rapidly changing market demands, expanding technology footprints, and continual technology advancement, businesses of every size and sector are accelerating their move to the cloud to enhance the speed, agility, security, and value of their IT investments.

### How would you describe your organization’s position today in data and analytics implementation?

We are proactive in progressing against our strategy and are continually evolving

51%

Leadership supports and has provided funding for the strategy, but implementation is slow or behind schedule

39%

A strategic vision for the organization has taken shape but executive buy-in and/or investment approval is limiting progress

8%

We are currently designing our strategy, but a broad initiative has not yet started or it is being evaluated prior to further roll-out

2%



*“Cloud is becoming almost synonymous with digital transformation—a key enabler of not only bottom-line improvements, such as efficiency and cost reduction, but more engaging and seamless customer experiences. But even as companies make cloud an integral piece of the digital strategy, many struggle to realize promised value.”*

— Bobby Soni, Principal, Advisory & Global Technology Consulting Leader, KPMG in the U.S.

At the same time, the cloud migration, optimization, and modernization journey is becoming increasingly smooth, affordable and practical as the cloud ecosystem expands and matures. With a plethora of new services and capabilities to choose from, today’s organizations are getting to the cloud faster and with greater scope.

Our research shows that cloud maturity is no longer the mark of a digital leader, but rather the logical evolution of IT in the 2020s. Every company surveyed has taken action to advance cloud maturity, and only 1 in 10 organizations (10 percent) is still at the earliest stages of migration. Three in four respondents (75 percent) say their organizations are currently migrating

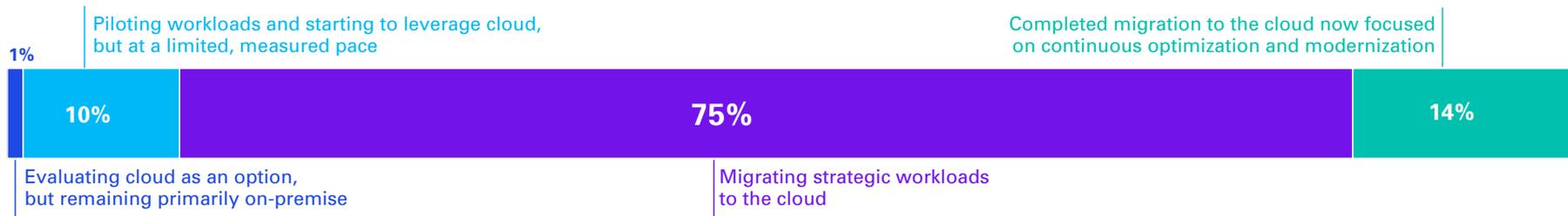
## DIGITAL TRANSFORMATION MOMENTUM IS ACCELERATING *continued*

strategic workloads to the cloud, and another 14 percent have completed migration and are now looking to optimize. Nearly one third (30 percent) of organizations have migrated more than 60 percent of their enterprise workloads to the cloud.

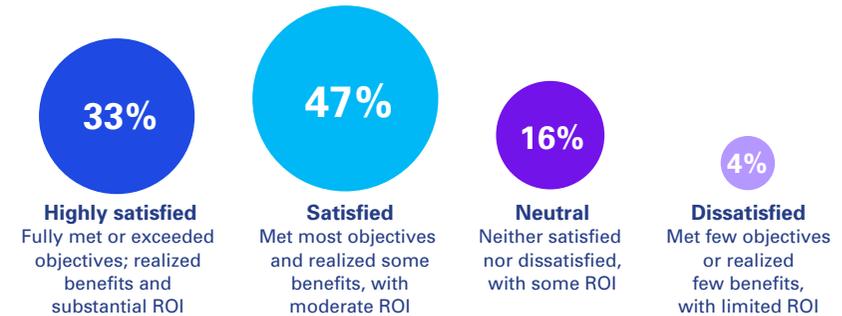
“Today, cloud adoption is like turning on the lights: Everyone knows they need to do it,” says Swami Chandrasekaran, principal, global Cloud Center of Excellence leader, Lighthouse, for KPMG in the U.S. “Success will not come from moving workloads just for the sake of it. Companies will differentiate themselves by optimizing the cloud migration itself and then thinking more strategically about use of cloud to take advantage of all the things it can do for you.”

With moving to the cloud no longer the focus, today’s enterprises are pursuing a higher objective: getting tangible value from cloud investments. Our survey shows the majority still have a long way to go. Despite positive cloud momentum, 67 percent of companies in our survey have yet to realize substantial ROI from cloud investments and are now focused on optimization and modernization.

### Where would you place your organization in its cloud journey?



### How satisfied are you with the success of your cloud transformation programs?



**“Technology suppliers need systems that are open and can connect with other applications. That’s a strategic shift we have as we make systems more open and we are co-creating products with our customers.”**

— Andrew Whytock, Head of Digitalization, Pharmaceutical division at Siemens

## DIGITAL TRANSFORMATION MOMENTUM IS ACCELERATING *continued*

As businesses reach a base level of cloud maturity and move further down the cloud continuum, they face ongoing challenges as they scale up their cloud deployments. Realizing full benefits of cloud will require companies to tackle intricate problems that typically emerge at later stages of transformation.

For one, deploying cloud across the enterprise is a lengthy, complex undertaking, leaving 42 percent of respondents behind schedule in their cloud implementations.

Talent is also a significant barrier, according to our survey.

“There is a real shortage of cloud computing talent in the market,” says Chandrasekaran. “Many companies hire external advisers and implementors because they do not have the skills internally, which raises questions about what to do with the existing team of traditional data center and IT professionals.”

Complexity of on-premise enterprise applications underpinning some functional areas is also holding companies back from moving toward a fully cloud-based infrastructure. More than two thirds of respondents say their organization’s ERP/application portfolio still contains an on-premise element, to a greater or lesser degree.

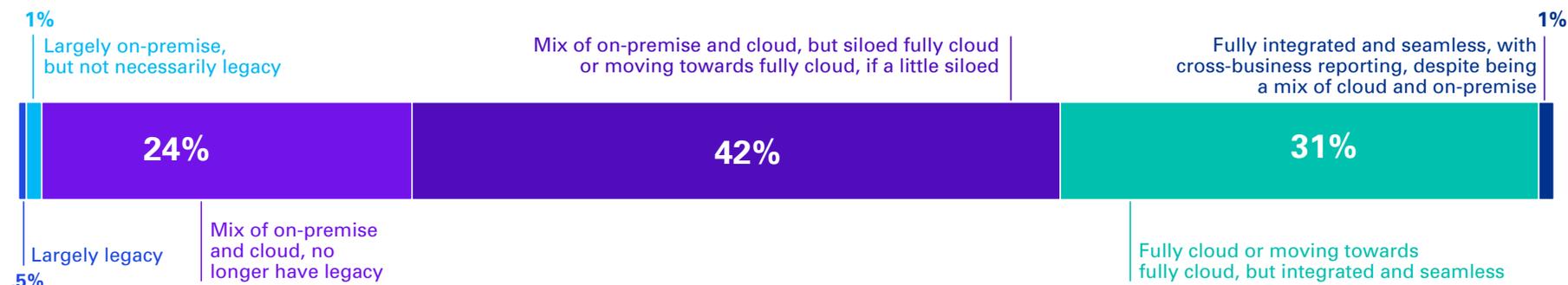
“While most large companies have moved back-office software for things like finance, HR, and procurement to the cloud, certain functional workloads, such as physical supply chain, have proven harder to shift off-premises,” says Fenton. “Companies often leverage highly customized supply chain platforms, complicating the migration process.”

For more complex enterprise solutions, cloud market maturity is also a factor. Thirty two percent of respondents say better management of multiple cloud environments is required to fully adopt enterprise systems and applications.

“In many companies, the strategic intention is there to move the entire enterprise application portfolio to cloud, but for some applications, there are limited or no cloud offerings available from vendors,” says Fenton. “As SaaS products mature and on-premise platforms reach their end of life, it could be a driving force for companies to think about full cloud transformation.”

The key, KPMG cloud leaders say, is approaching cloud strategies, decisions, and activities as not only a technology play, but also as an operating model play.

### Which of the following best describes your organization’s ERP/application portfolio?



## DIGITAL TRANSFORMATION MOMENTUM IS ACCELERATING *continued*

“Businesses are mostly content with their cloud journeys, but they are often going slower than they would like,” says Brunsman. “That status quo will continue unless companies look beyond the technology itself and actually change ways of working in the operating model, particularly when they get to at-scale deployment.”

Robust governance models and mechanisms to bring the right stakeholders to the table will help enterprises move quicker and take full advantage of what cloud offers. However, 31 percent of organizations do not have corporate-wide alignment on outcomes pertaining to their cloud transformation journey.



*“Misalignment on the vision for cloud is often significant, causing disjointed implementations. IT’s approach for enabling capabilities does not always support what the business thinks it should be getting by moving to cloud. Better strategic oversight helps companies drive the organizational vision for cloud into actual implementation decisions.”*

— Kevin Martelli, Principal, national cloud engineering leader, KPMG in the U.S.

### ***What are the top challenges your organization is facing or has faced in your cloud journey?***



KEY TAKEAWAY:

# Levers of change on the path to true digital leadership

## Talent and culture are top sticking points across all areas of transformation

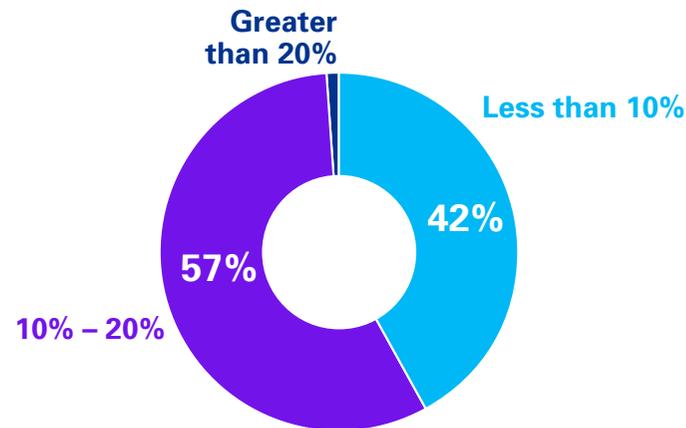
Skills shortages and cultural resistance could sabotage digital innovation.

As companies pursue their digital transformation agendas, talent gaps and related culture issues frequently slow their progress. Throughout the research, respondents admit their organizations' workforce lacks the talent and skills to reach its digital aspirations.

Skills shortages are a severe challenge in today's commercial landscape, according to our survey findings. Enterprises have ambitious plans to invest across a wide array of specialized technology, but many lack the people resources to make investment plans real.

When respondents were asked about the challenges their organizations face in adopting new digital technologies, the top three responses all related to talent disparities. The number one response—lack of capable talent to carry out key roles (44 percent)—speaks to the extreme competition across industries for people with rare but in-demand skill sets, such as cyber security developers, data scientists, and full-stack engineers.<sup>1</sup>

### What percentage of your company's/ organization's annual budget is dedicated to technology?



*“The talent gap stands out as an acute issue across sectors, particularly when it comes to attracting and retaining specialized talent needed to derive value from complex technologies.”*

— Kimberly Sorensen, Principal, Advisory, KPMG in the U.S.

Risk averse cultures that are slow to embrace change are also holding back digital transformation initiatives for 23 percent of respondents (please refer to refer to chart on page 5). As the bar for digital leadership raises ever higher, a supportive culture will be vital for future digital transformation to succeed.

Today's hot job market coupled with a record-setting inflationary environment is making the cost of talent a major challenge, too. With the U.S. adding 372,000 jobs in June 2022 and the unemployment rate steady at 3.6 percent,<sup>2</sup> highly valued talent is empowered to ask for larger salaries, plus other job perks such as flexibility.

Enterprises will need to overcome budget constraints to attract in-demand talent, meet additional candidate demands, and fill key roles. Nearly one in three respondents (30 percent) say the high cost of adding necessary talent is a top challenge of technology adoption.

<sup>1</sup> The 10 hottest tech jobs for 2022 (TechRepublic, June 22, 2022)

<sup>2</sup> Payrolls increased 372,000 in June, more than expected, as jobs market defies recession fears (CNBC.com, July 8, 2022)



## LEVERS OF CHANGE ON THE PATH TO TRUE DIGITAL LEADERSHIP

*continued*

Most companies have yet to master the balancing act of budgeting for technology versus other enterprise needs, particularly in the inflationary labor market. In our survey, annual technology budgets are often falling short of what is required to bring skilled employees into the fold to implement and take advantage of new tools, systems, and platforms. Most annual technology budgets sit between 10 to 20 percent of annual company budgets (57 percent). Nearly half (42 percent) account for even less.

The findings raise the question of whether companies may be biting off more than they can chew when it comes to digital transformation and how—facing cost pressures—they can they find work-arounds to talent issues that cross all dimensions of their digital transformation agendas.

**“It’s great having this big tech strategy, but employers are struggling to find the people to execute their plan. Siemens is paying a lot of attention to making ourselves an attractive employer, to retain people and to attract new staff. Even at Siemens, it has become hard to find new recruits with the appropriate skillsets. It must be very hard for small and medium-sized companies to attract young talent.”**

— Andrew Whytock, Head of Digitalization, Pharmaceutical division at Siemens

## Cyber teams are under pressure to keep up

As stakes rise for trusted digital experiences, so are demands on the cyber security function.

Adoption of remote and hybrid work practices, digitization of customer channels, and multiple other business impacts of the COVID-19 pandemic have redrawn the cyber threat landscape and the role of cyber security in core business outcomes. In a rush to engage with employees and customers without physical interactions, many organizations invested large sums in digital adoption and acceleration at a fairly high speed, often without the same level of rigor as in the past.

Major strategic and operational changes made during the pandemic continue to impact cyber security investment priorities and are shifting the focus from risk reduction to growth enablement. Namely, improving customer experience is the top driver for increased cyber security spending—a clear link to the legacy of COVID-19 and the expansion of digital business models, the second most selected driver.

Enterprise cyber teams are trying to resolve a new equation in play: poor cyber security = poor customer trust = lost revenue. Traditional cyber investments were significantly driven by regulatory compliance needs and were seen by businesses as necessary overhead. But as businesses become more digital, leaders see that if they don't invest in cyber, they can actually lose customer trust. According to the KPMG International 2022 cyber report, *Mission: Trust. How to unlock the true value of the CISO*, concerns over how data is protected is the leading factor undermining stakeholder trust in businesses and their data management.<sup>3</sup>

"The market has recognized the need to embed cyber security in digital transformation and customer experience," says Akhilesh Tuteja, global cyber security leader for KPMG International. "Customer loyalty and stickiness are linked to how companies use and protect data and systems and drive trust in their technologies. As a result, cyber security is increasingly impacting growth and revenue, not just compliance."

"Cyber security is at the heart of driving holistic trust in the context of digital interaction and experience," says Prasad Jayaraman, principal, Cyber Security Services, for KPMG in the U.S. "Cyber capabilities, mechanisms, systems, and infrastructure support enterprise trust building by authenticating and validating users, governing access, keeping private data confidential, and preventing breaches to consumers."



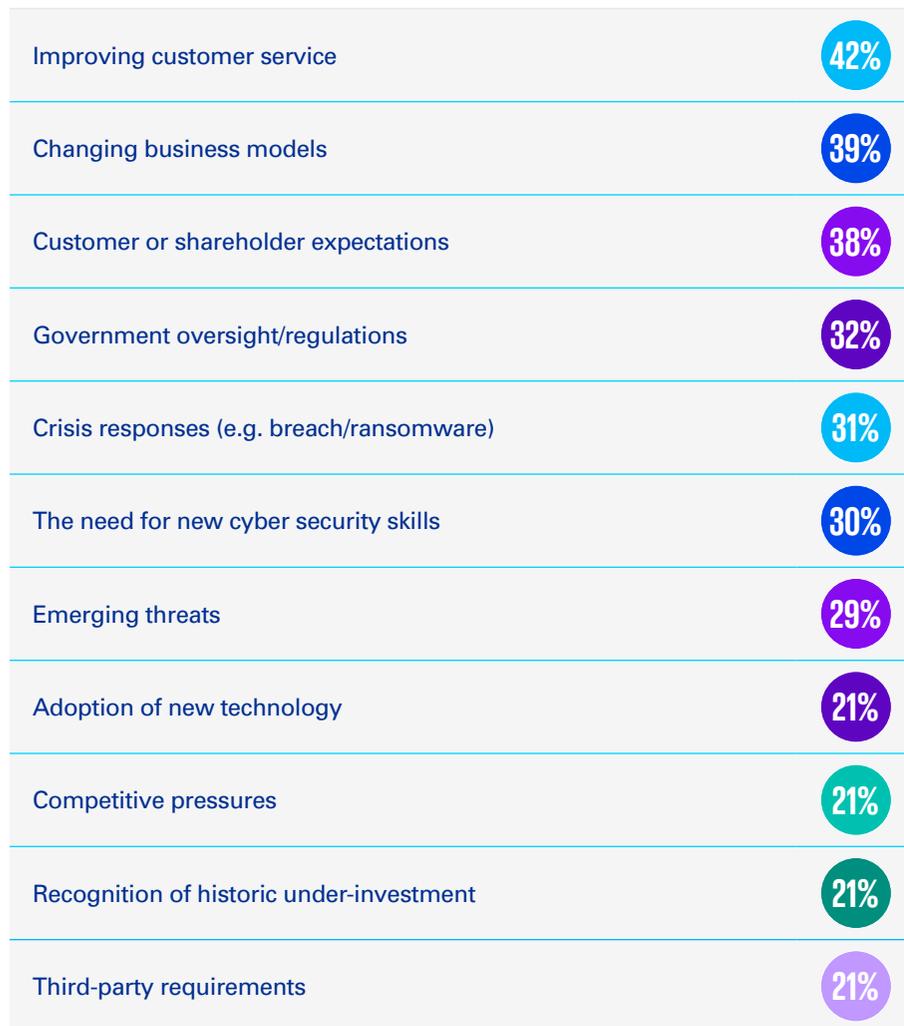
*"The research identifies opportunities for businesses to align cyber security investments with the escalating nature of cyber risk. While technology leaders are highly confident in their cyber defenses, there are signs they are not acting proactively or strategically enough to protect the business from evolving cyber threats and create vital trust in consumer channels and interactions."*

— Akhilesh Tuteja, Global Cyber Security Leader, KPMG International

<sup>3</sup> Mission: Trust. How to unlock the true value of the CISO (KPMG International, 2022)

## LEVERS OF CHANGE ON THE PATH TO TRUE DIGITAL LEADERSHIP *continued*

### What are the most influential drivers for increased cyber security spending within your organization?

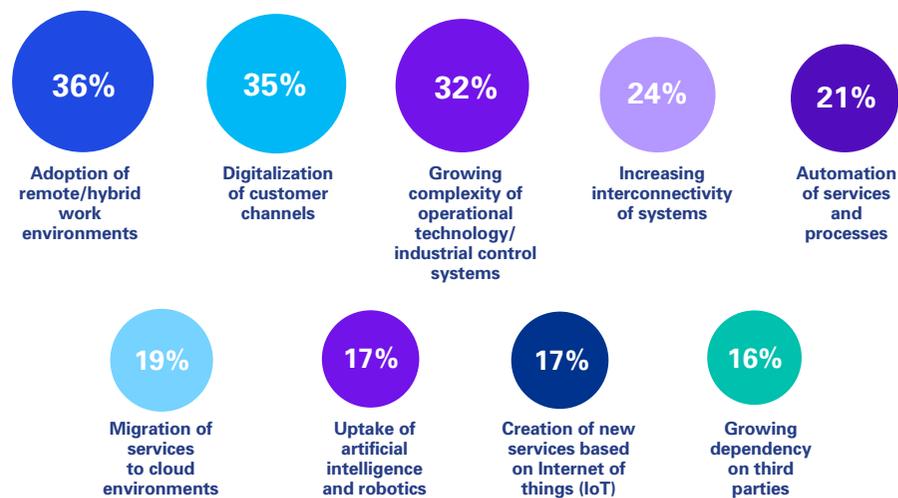


Although staying ahead of evolving cyber threats is a massive challenge, enterprise leaders are remarkably confident in the security they have in place across all aspects of cyber risk. An average of 64 percent of respondents say they are very or extremely confident.

However, multiple disconnects in the survey findings indicate respondents' belief in their organizations' cyber defense strength may be misplaced. Businesses may be more vulnerable to cyberattack than they think, and they may not be doing enough to ensure resilience in the face of evolving threats. If they don't act fast, their vulnerability will grow.

First, CX has become such a major focal point that other important security priorities appear to be falling off the radar. For example, despite high-profile attacks on businesses via supply chain partners, third-party risk is not a key factor in most enterprises' cyber strategies. Dependency on third parties is least among cyber security challenges (16 percent); third-party requirements are the smallest driver of cyber security investments (21 percent); and third-party/vendor security management is the last cyber area where organizations plan to increase investments in the next 18 to 24 months (12 percent).

### Which of the following developments pose the greatest cyber security challenges to your organization?



## LEVERS OF CHANGE ON THE PATH TO TRUE DIGITAL LEADERSHIP *continued*

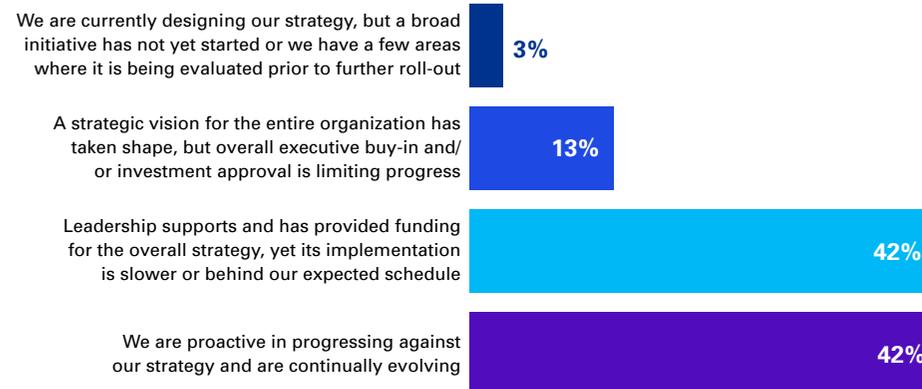
Second, the vision for and execution of cyber security strategies are underwhelming in a significant portion of companies. Forty-two percent of respondents acknowledge their organizations are slow to implement or behind schedule. These are both worrisome findings given today's fast evolving threat landscape.

"From the Russian invasion of Ukraine to general COVID-19 disruption to widespread economic uncertainty, volatility—and therefore cyber risk and insecurity—has increased at the global level," says Jayaraman. "Organizations have seen an increase in threats from bad actors in rogue states at a scale and complexity that can only happen through state sponsorship."

"Given the agility and dynamism of cyberattacks, the fact that organizations say they are struggling to get things done on their cyber agenda leaves a big vulnerability," adds Tuteja.

KPMG cyber leaders say elevating the CISO's role in enterprise-wide issues is crucial to broadening the vision and influence of cyber security.

### ***How would you describe your organization's position today in cyber security implementation?***



**“Employees should be kept on their toes and reminded of the risks through practical nudging in simulations of real-life situations. Keep employees aware through different tactics because cyber security training sessions won’t work for everyone.”**

— Konrad Dobschuetz,  
Head of Digital Innovation at Novartis

## LEVERS OF CHANGE ON THE PATH TO TRUE DIGITAL LEADERSHIP *continued*

“While business growth is increasingly tied to the ability of enterprises to create a culture of managing risk and security, CISOs typically don’t have much influence on customer- or employee-facing problems,” says Tuteja. “Moving forward, CISOs must be engaged early on, included as integral parts of digital transformation programs, and given more accountability around trust-related issues.”

Third, enterprises may be underspending on cyber education, awareness, and culture, which are lower future spending priorities than application security and data protection. Enterprises appear committed to beefing up their technical responses, despite the extreme shortage of cyber talent in the market and the undeniable fact that people are the biggest area of weakness. According to our survey, adoption of the remote/hybrid work environment poses the greatest cyber security challenge among respondents (36 percent), while lack of skills and cultural barriers are the two greatest challenges to achieving cyber security goals.

“Despite substantial investment in cyber security technologies, the threat has not been reduced in part because so few investments aim to mitigate the human variable,” says Jayaraman. “Recognizing that the vast majority of cyber breaches happen due to human error, enterprises need to invest in a completely new talent strategy that focuses on creating a culture of security across the enterprise. Rather than viewing security as the function of a small group of people, it should be deeply embedded into the enterprise.”

### ***What are the major internal challenges to achieving your organization’s cyber security goals?***



# Recommendations for reaping full benefits of digital

As digital technologies continue to reshape markets at an accelerated pace, businesses cannot wait to transform. This research analysis shows how seizing opportunities of the digital world will demand dramatic shifts in how enterprises achieve resilience, interact with customers, and operate internally—often involving changes to time-tested processes, systems, strategies, and talent models.

No matter your stage of digital maturity, transformation is a never-ending process. KPMG thought leaders offer numerous ideas for bringing a modern digital vision to life, translating digital strategies to value, and getting ready for what's next.

## Emerging technology: From pie-in-the-sky to real value

**Combine new and old technology to advance profitable growth through a downturn.** A slowing economy could force tough choices about emerging technology investments and serve to separate out true digital leaders. Should a recessionary environment emerge, it is likely to cause the majority of companies to cut back on experimental programs. Meanwhile, digital leaders are likely to accelerate emerging technology adoption to empower the product and business model innovation required to accelerate today's key growth engine—customer centricity. But it's not all about future innovation: Digital leaders will also have the opportunity to leverage core technology—namely, automation—as a critical cost lever. Together, that spells not just growth but profitable growth.

**Direct investments to capabilities that help propel strong customer experiences.** To retain customers and market share, companies must continuously improve digital capabilities and think differently about how to use technologies to better deliver to target audience expectations. Additionally, companies must carry out future scoping to ensure technology selection and workflow design to align with customer needs and expectations. This will help integrate the kind of excellent digital experiences that encourage customer loyalty through good and bad times.

*"It would be wonderful to have a perfect predictive model showing where to direct investments, but unfortunately that's not realistic. A productive approach is to focus on customer desires and behaviors and consider what technologies could support these areas. Assess technologies and concepts against four key customer needs driving demand: security, speed of execution, choice and flexibility."*

— Rowena Everson, MD of Digital Transformation at Standard Chartered Bank

## Customers: From outcome to starting point

**Become a connected enterprise to meet and exceed customer expectations.** Customer centricity starts from within. After all, customer interactions often require contributions from a number of departments. A lack of alignment between functions and systems can hinder the ability to deliver smooth customer experiences. To be the organization customers want, modernize your core. By harnessing technology and supporting organizational changes, organizations can focus every process and function through the front-, middle- and back-offices on meeting customer expectations. Connected enterprises gain the insights, agility, and alignment you need to generate new levels of customer value in a digital-first world.

*“We’re using tech to address pain points we know our visitors have to make their experience far more customer-centric and seamless.”*

— Sedef Gavaz, Head of Product,  
Natural History Museum

## Digital transformation: From dollars to action

**Develop, scale, and evolve your transformation program.** When it comes to digital, a significant portion of companies are confident about their progress and ready for what’s next. The digital winners of the future will transform at the speed of businesses, getting value faster than traditional transformation projects allow. How? Through business-led, technology-driven transformation. A transformation approach that embraces market-tested strategies, tools, and practices holds the key to future-ready processes, successful uptake of new ways of working, and the controls required for risk and regulation.

**Keep a flexible mindset through all stages of digital maturity.** Digital transformation is less of a differentiator than it was. Every respondent to the survey has achieved some form of return from digital transformation in the last two years. Make sure that the success achieved so far doesn’t breed perfectionism that stifles innovation. Digital investment and transformation strategies must always continue to adapt to new conditions and opportunities, or digital leadership won’t last long.

*“If you do try to get a hundred percent certainty over everything, it’s a false level of precision, and all you’re going to end up doing is paralyzing experimentation in the business, which will ultimately paralyze growth.”*

— Rowena Everson, MD of Digital Transformation at Standard Chartered Bank

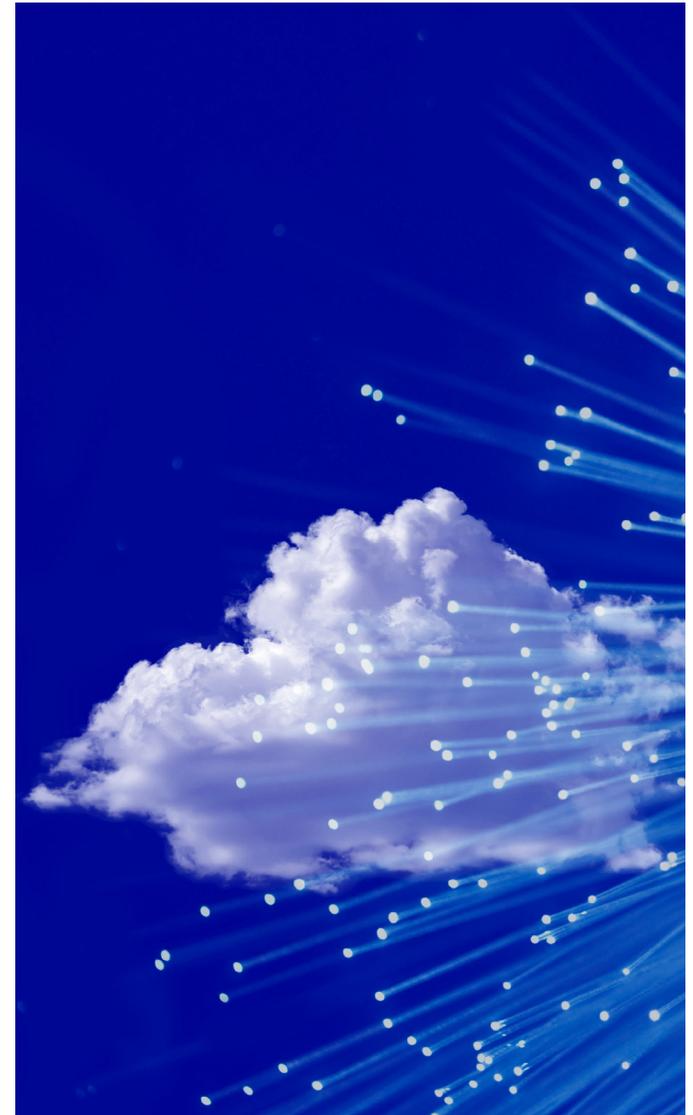
## Cloud: From transition to transformation

**Strategically select workloads to move to cloud platforms.** The data is clear: Tomorrow's businesses will operate primarily on cloud infrastructure. As more companies transform with cloud at their core, the next competitive challenge will be accelerating migration, scaling up platforms, and maximizing value of cloud. A framework for assigning economic value to processes and activities currently operating on legacy platforms will be crucial to optimizing cloud migrations, especially for smaller companies with fewer resources. Decisions about what workloads to migrate first will depend on multiple dimensions, such as business criticality, the number of end users impacted, cost-financial perspective, and availability and resiliency metrics.

**Use cloud as a tool to reach ESG ambitions.** As ESG climbs the corporate agenda, we can expect it to play a more influential role in digital strategy. A future next step for businesses that have already embraced cloud as a foundation is to use the technology to improve visibility into ESG metrics and goals. Today, almost three in 10 (27 percent) of respondents say that advancing their ESG commitments/priorities is a key driver of their digital transformation investments. Look to cloud technologies to help quantify and track progress around ESG responsibilities such as reducing carbon footprint and improving sustainability. More than one in five respondents already consider ESG-related improvements a top three benefit of cloud in their enterprise.

*“Cloud is an enabler, but it needs to be via more of a software-as-a-service (SaaS) model. So instead of being permanently tied in, cloud customers should achieve flexibility through monthly or annual reviews.”*

— Andrew Whytock, Head of Digitalization, Pharmaceutical division at Siemens



## Talent: From constraint to enabler

**Instill a culture of education, training, and personal development in IT.** New skills are needed as companies mature their digital capabilities. But talent shortages will not resolve on their own, especially for in-demand skills focused on new and emerging technology. In fact, the talent crisis may become more acute as businesses review hiring plans in advance of a potential recession. Creative approaches are needed for companies to access the skills they need to deliver on digital transformation goals. Clearly, companies can't expect external talent to simply walk through the door. With that in mind, businesses should recalibrate their approach to hiring, training, and "buying" specialist talent from the ecosystem. We think reskilling traditional IT professionals is due to play a more prominent role in companies' talent strategies. For example, a KPMG client recently paired up its internal cloud service professionals with KPMG cloud implementors to gain practical, hands-on experience they could not get from training and certification alone. This enabled the internal team to execute the company's cloud initiatives.

**Give the workforce a boost with intelligent automation.** The next rising star in the technology function could be a bot. By using automation to shoulder the burden of repetitive tasks, existing staff can be upskilled to deliver other knowledge-based skills that are in high demand but short supply. Nearly one in four businesses have yet to tap into the benefits of automation systems, and 38 percent have hit delays with automation implementation programs. Thirty-six percent have yet to deploy robotic process automation (RPA) and 52 percent have not yet deployed vision systems. Tapping into this high-potential space is a prime opportunity for businesses to overcome the talent gap and ease the workloads of the human team.

*"Do not be complacent with the talent you currently have. I would encourage businesses to look at what is happening with the market, and really understand where the benchmarks are. Don't wait to give people pay increases once they've resigned. Address problems, talk to employees, understand their pain points."*

— Sedef Gavaz, Head of Product,  
Natural History Museum

*"One of the biggest issues right now is under-employment, shortage of people to service businesses. Touch points with customers can be critical; leveraging automation can really help where there is particularly staff shortages in play."*

— Phil Fersht, CEO at HFS Research

## Cyber security: From silo to golden thread

**Embrace “secure by design” principles.** In the digital age, security, trust, and resilience are inseparable. Businesses cannot achieve one without the others. That’s why “secure by design” is a critical element of many successful digital transformations. At its heart, “secure by design” is about embedding security through every aspect of technology development, from architecture to design to implementation. This approach helps enhance the overall security of systems, products, and services while also reducing overall costs, as companies do not need to layer on new technology later that was not contemplated up-front. It also ensures security is not approached as a one-and-done capability. Only by making security part of the core organizational DNA can enterprises stay ahead of ever-evolving cyberattackers.

**Address the human factor in cyber security.** Although advances in artificial intelligence, quantum computing, and other emerging technology areas are enabling the next generation of cyber security products, no technology offers complete cyber protection. In our globally connected world, people are the starting point of the vast majority of breaches. Massive digitization of customer channels and working models has created even more potential vulnerabilities through employees, partners, and customers. The good news is that enterprises can take simple steps to enhance cyber defenses without massive investments in broader suites of technology-based security solutions. This includes ramping up identification, access, and authentication capabilities and training of employees on their key role in creating a safe, secure digital environment.

**Increase CISO’s ownership of customer trust.** Cyber security is a big driver of customer loyalty and trust. Yet the influence of enterprise cyber security leaders is limited compared to expectations. For example, it’s essential the CISO assesses the vulnerabilities within emerging technology, such as metaverse, before it is rolled out, yet CISOs frequently lack a place at the table or a mandate to act. The problem exists, and persists, for multiple reasons. The CEO and board may not trust the CISO to own customer-facing responsibilities. The CISO may be more comfortable with the risk reduction role they have been filling for years. Whatever the underlying problem, the first step toward solving it is elevating the CISOs role in the C-suite as true owners of trust-related factors, like secure and private customer data.

**Invest in public-private security partnerships.** Traditional cyber defenses may capably defend against lone hacker attacks. However, a different profile of cyberattacker is growing in influence. Today, sophisticated organizations funded by rogue states with deep pockets pose an increasing risk to businesses of all kinds. Public-private collaboration will be crucial to defending against state-sponsored threats, given enterprises’ access to intelligence coming from governments, research from academia, and innovation from tech start-ups. According to the KPMG International 2022 cyber report, *Mission: Trust. How to unlock the true value of the CISO*, almost half of respondents (44 percent) maintain that cyber security collaborations between technology providers, employees, customers, suppliers, and partners help anticipate attacks.

# Conclusion

Digital-transformation triumphs are empowering today's businesses to face the uncertainty ahead with a somewhat confident spirit. The returns and performance improvements earned to date have branded customer-centric technology strategies as lifesaving tools in any business's survival kit.

The widespread surge in digital-transformation abilities redefines what it means to be a digital leader in today's economy. Deeper examination of the behaviors we observed in many digitally advanced companies will be a key consideration for future editions of the KPMG technology trend research series.

As you progress through the challenging business landscape, you can help maximize your company's resilience and performance by embodying traits of today's digitally-mature organizations:

- 1 Combine new and old technology to advance profitable growth through a downturn.
- 2 Direct investments to capabilities that help propel strong customer experiences.
- 3 Become a connected enterprise to meet and exceed customer expectations.
- 4 Develop, scale, and evolve your transformation program.
- 5 Keep a flexible mindset through all stages of digital maturity.
- 6 Strategically select workloads to move to cloud platforms.
- 7 Use cloud as a tool to reach ESG ambitions.
- 8 Instill a culture of education, training, and personal development in IT.
- 9 Give the workforce a boost with intelligent automation.
- 10 Embrace "secure by design" principles.
- 11 Address the human factor in cyber security.
- 12 Increase CISO's ownership of customer trust.
- 13 Invest in public private security partnerships.

# How KPMG can help

At KPMG, we know business technology. Over the last dozen years, we've built a leading technology organization designed specifically to help technology leaders succeed at the accelerated pace business now demands.

Unlike business-only consultancies, our more than 15,000 technology professionals have the resources, the engineering skills and experience, the battle-tested tools and solutions, and the strategic alliances with leading technology companies to help achieve your vision quickly, efficiently, and reliably. And unlike technology-only firms, we have the business credentials and sector experience to help you deliver measurable business results, not just blinking lights.

We're recognized by industry analysts as a leader in advanced technologies: AI and automation, data and analytics, cyber, low-code, and more.

Our experience deploying Microsoft, Oracle, Salesforce, Workday, and other leading cloud solutions, combined with our preconfigured cloud solutions, means we're already 80 percent done before you even pick up the phone.

Whether we're helping you deploy a new technology, migrate to a new cloud platform, or outsource challenges with our managed services, you can count on us to deliver—fast.

That's speed to modern technology.

# Authors



**Danielle Beringer**  
*Managing Director, Advisory, Lighthouse, KPMG in the U.S.*

Danielle leads the KPMG U.S. Modern Data Platform and Data Engineering community within the KPMG Lighthouse practice, positioning data and analytics services with clients and expanding data-related technology alliances. She is an enterprise technology executive and data integration strategist, driving high-performance agile teams to deliver business value. Danielle's background over the last 20 years in software engineering, data engineering and technical leadership has focused on holistic data management, next-generation analytics, data literacy, AI/ML, and cloud modernization. Her passion for advancing data accessibility and collaboration at scale is based on unifying business and IS to work in union on strategic data initiatives. Danielle is an advocate for privacy enhancing technologies and the adoption of privacy by design.



**Barry Brunsman**  
*Principal, CIO Advisory, KPMG in the U.S.*

Barry Brunsman is leader of the global CIO Advisory Center of Excellence (CoE) and a principal in the KPMG CIO Advisory practice. In his nearly 30 years of global consulting experience, he has worked across most industry sectors in the Americas, Europe, and Asia. In addition to his CoE responsibilities, Barry leads the U.S. CIO Advisory healthcare team. Previously he led the U.S. Consulting IT Strategy practice for seven years. He has primarily focused his personal practice on technology strategy and IT operating model design and implementation for the last 20 years. He has also held industry leadership positions including serving as the interim CIO for a U.S. financial services institution.



**Todd Lohr**  
*Principal, Advisory, Technology Enablement, KPMG in the U.S.*

Todd is a principal within the KPMG Technology-Enabled Transformation practice, specializing in enterprise transformation, process excellence and process automation. He is a thought leader in transformation and process automation and has led numerous initiatives at Fortune 100 companies and government agencies. Todd leads the U.S. practice for process automation and specializes in the enterprise selection, design, and implementation of automation technologies including workflow (BPM), robotics (RPA) and cognitive technologies. In addition to his practice responsibilities, Todd is responsible for the firm's global transformation solutions, including the development of methods, accelerators, and delivery platforms. Todd is a regular presenter at conferences, and guest lecturer at universities.



**Matthew Miller**  
*Principal, Advisory, KPMG in the U.S.*

Matt is a principal in the New York office of KPMG LLP's Advisory Services practice and is the U.S. Cyber Security Services Banking industry lead. With more than 20 years of experience, Matt's focus areas include insider threat and internal fraud, third party risk, quantitative and qualitative risk assessment, and incident management. In addition to managing programs or advising clients, Matt has published and presented on many subjects, including leveraging capability maturity models to improve risk management, addressing vulnerability in technologies and critical business applications, and establishing governance and metrics to enable effective risk management programs.



**Marcus Murph**  
*Principal, Advisory, Digital Enablement, KPMG in the U.S.*

Marcus has over 20 years of experience helping Fortune 100 organizations leverage technology to drive enterprise transformation. He has direct hands-on experience helping clients define, analyze, and respond to critical business problems to drive operational improvement, boost cost efficiency, and enable quantifiable results. Navigating the world of disruptive technology is complex. The number of technology providers in the marketplace and the number of technology buyers within your organization grows every single day. He helps clients understand the ever-increasing complexity of the technology landscape and determine how they can exploit technology to both grow the top line and optimize the bottom line. He can help bridge the gap between traditional technology-centric organizations like IT and the broader back- and front-office organizations to drive unified outcomes across the enterprise. The answer is rarely about implementing a specific tool. Whatever the context, digital, cloud, intelligent automation, data and analytics, etc., he can help your organization cut through the hype, and define a realistic strategy that is appropriate to your business.

# KPMG contributors

**Swami Chandrasekaran**, Principal, Global Cloud Center of Excellence Leader, Lighthouse, KPMG in the U.S.

**Matteo Colombo**, Principal, KPMG Lighthouse National Leader, KPMG in the U.S.

**Patrick Fenton**, Global Executive Sponsor for KPMG Powered Enterprise, KPMG International

**Prasad Jayaraman**, Principal, Cyber Security Services, KPMG in the U.S.

**Cliff Justice**, Leader of Enterprise Innovation, KPMG in the U.S.

**Kevin Martelli**, Principal, National Cloud Engineering Leader, KPMG in the U.S.

**Rick Rose**, Principal, Advisory, KPMG in the U.S.

**Bobby Soni**, Principal, Advisory & Global Technology Consulting Leader, KPMG in the U.S.

**Kim Sorensen**, Principal, Advisory, KPMG in the U.S.

**Akhilesh Tuteja**, Global Cyber Security Leader, KPMG International

# Industry contributors

**Konrad Dobschuetz**, Head of Digital Innovation at Novartis

**Rowena Everson**, MD of Digital Transformation at Standard Chartered Bank

**Phil Fersht**, CEO at HFS Research

**Sedef Gavaz**, Head of Product at Natural History Museum

**Ioana Matei**, Chief Metaverse Officer at P&G

**Andrew Whytock**, Head of Digitalization, Pharmaceutical division at Siemens

# Contact us

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**Danielle Beringer**

Managing Director, Advisory,  
Lighthouse, KPMG in the U.S.  
+1 615 248 5642  
dberinger@kpmg.com



**Barry Brunzman**

Principal, CIO Advisory,  
KPMG in the U.S.  
+1 612 305 5155  
bbrunzman@kpmg.com



**Kyle Kappel**

Principal, Advisory,  
KPMG in the U.S.  
+ 1 949-431-7359  
kylekappel@kpmg.com



**Todd Lohr**

Principal, Advisory,  
Technology Enablement,  
KPMG in the U.S.  
+1 215 300 4600  
tlohr@kpmg.com



**Marcus Murph**

Principal, Advisory,  
Digital Enablement,  
KPMG in the U.S.  
+1 214 840 2671  
marcusmurph@kpmg.com

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