

Table of contents

Executive note Engineers keeping the business on course • Catching up on cloud Checklist The transformation journey Common ground • Gearing up for growth • CIO and CEOs: a crucial partnership • AI, ML, and cloud come out on top • Empowering employees to empower customers The view from the pilot's seat • Plugging the talent gap • The well-equipped CIO Transforming functions with technology • Driving the data culture Putting people first The next leg Checklist • About the research Co-pilots: sharing the journey • Responsibilities and response to the pandemic Checklist

Executive note



Sanjay Srivastava Chief Digital Officer, Genpact



Tom DavenportDistinguished Professor,
Babson College

Visiting Professor, Oxford's Saïd Business School

Research Fellow, MIT Initiative on the Digital Economy



Vikram Mahidhar Digital Transformation Expert

Between us, we've worked with chief information officers (CIOs) for well over 50 years. Since the 1980s, the role of CIO has become one of the most recognized jobs in the business world, but its evolution has not been turbulence-free. In the past, too many CIOs made 'keeping the lights on' their focus - in other words, simply operating their companies' IT infrastructures. Perhaps as a result, many organizations proliferated new roles in the technology space, including C-suite-level roles for data, digital, analytics, technology, and security. The role of the CIO seemed to be in retreat.

It's clear from the survey examined in this report, however, that CIOs are thriving again – or at least most are. More than 80% either drive business transformation or partner for it. Given the amazing power of technology to enable new ways of working and competing, it is not surprising that CIOs have taken this position. That said, a relatively small percentage still focus primarily on infrastructure.

The role continues to evolve. Almost all CIOs expect their roles to expand. Almost all report to or interact with the CEO regularly. And many are exploiting the cloud, advanced analytics, and automation. The big future bet that unites all CIOs is artificial intelligence (AI). And to access new talent and skill sets, many are exploiting their external ecosystem partners. All of which bodes well for the CIO's future transformational activities. In addition to flexing their technology muscles, many CIOs are still building their transformation muscles, which must include strength in change management and business knowledge.

The study's findings do raise some concerns, though. More than half of the CIOs surveyed do not feel their organizations are completely prepared to support company growth. Despite a time of unprecedented investment in digital infrastructure and transformation, more than two-thirds of CIOs say they aren't fully prepared to handle another major disruption.

With these findings in mind, how should CIOs prepare for the next evolution of their role? And how can more move into the pilot's seat to chart the course for business growth? This report collates and shares the lessons we've learned with you, so your CIO organization can take the lead in business transformation.



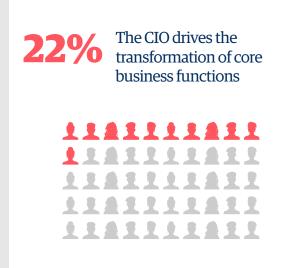
The transformation journey

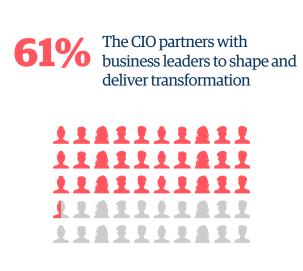
CIOs and other technology leaders have led heroic work to help their companies stay in business during the pandemic. CIOs who had invested in automation, cloud processing and storage, digital commerce, and advanced analytics have been able to adapt most successfully. The question now is where will the focus of CIOs and their organizations be in the future?

To assess the state of CIO priorities and leadership, Genpact worked with the MIT Sloan CIO Symposium to survey 500 CIOs and technology leaders and interview leading CIOs from a range of industries. We found a surprising level of commonality in terms of the technologies on which they are focused, the infrastructure they are attempting to build, and their view of expanding responsibilities. High proportions of CIOs, for example, are focused on artificial intelligence (AI) and advanced analytics, moving to the cloud, and architecture modernization.

There is, however, a lack of consensus on a critical issue: the role of the CIO in business transformation (figure 1).

Figure 1: Describe the CIO's role in transforming core business functions at your company







It's well known that digital transformation is a long and sometimes arduous journey. On this journey, only 22% are pilots leading the way and driving transformation strategically across core business functions. The largest cohort (61%), are co-pilots who partner with

business leaders to shape and deliver transformation. And 17% are engineers, following directions but not working passively. They enable the plane to reach its destination but don't have a hand in the direction it takes (table 1).

Table 1: Differences between pilots, co-pilots, and engineers

Pilot	Co-pilot	Engineer
Transformation: Drives it	Transformation: Partners on it	Transformation: Receives direction
Innovation: Leader	Innovation: Partner	Innovation: Follower
Business acumen: High	Business acumen: Medium to low	Business acumen: Low
Engineering acumen: High	Engineering acumen: High	Engineering acumen: High
Architecture preference: Cloud first and some legacy	Architecture preference: Working toward cloud first but mostly legacy	Architecture preference: Mostly legacy with cloud aspirations
Data literacy: Leading it	Data literacy: Developing it	Data literacy: Lagging
Ecosystem: Mature partnerships	Ecosystem: Developing partnerships	Ecosystem: Limited partnerships
Company alignment: Influences and drives parts of business strategy for the company	Company alignment: Contributes to business strategy and drives it with functional leaders	Company alignment: Supporting business strategy with technology



Our global study validates what we're seeing across our clients. As the power of the cloud, data, and AI redefine the future of work, the CIO role is evolving exponentially, but not equally.

Transformation pilot CIOs drive alignment across the C-suite and put the organizational focus on building resilience and innovation. They will be the co-creators of new business models and future ready companies.



Sanjay Srivastava

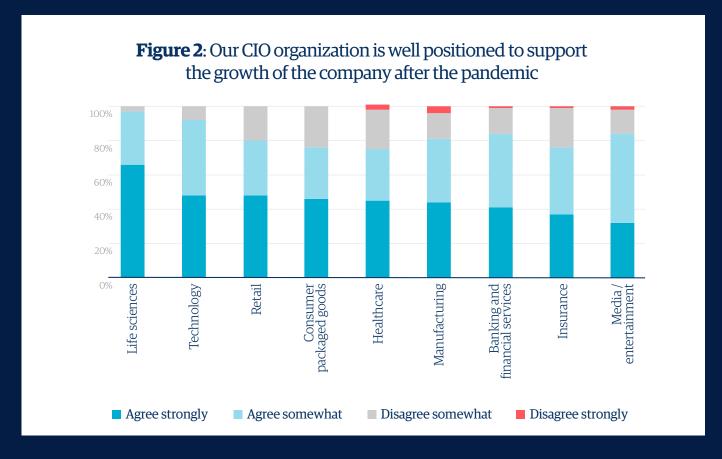
Chief Digital Officer, Genpact

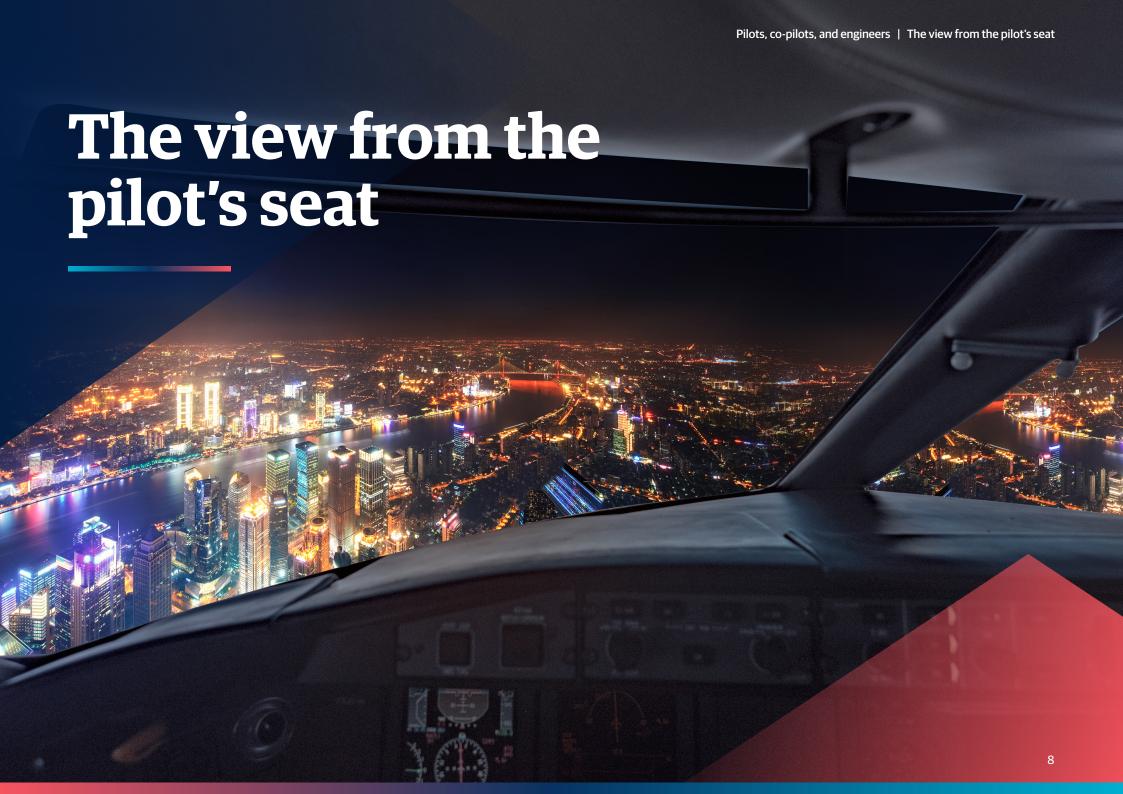
Gearing up for growth

Not all CIOs look to the future with complete confidence (figure 2). Only 44% agree strongly that their CIO organization is well positioned to support the company's growth after the pandemic.

Looking at this perspective across countries, 54% of CIOs in Australia and 52% of CIOs in North America agree strongly that their organizations are ready to support growth. This drops to 39% in the UK and just 28% in Germany.

The sentiment is similarly concerning for business resilience in the face of future upheaval. In fact, 68% of CIOs believe their CIO organization is not completely prepared to help their companies withstand another major business disruption.





The view from the pilot's seat

The CIO's role has always had multiple components, but in forward-thinking firms, it's increasingly oriented toward leading business transformation through technology. At one time, most CIOs came up through the IT function, but now many come into the job with business backgrounds and appreciate the potential of technology to transform strategies, processes, and business models. This business knowledge – combined with regular CEO meetings – is helping transformation pilots succeed.

As Aarti Shah, chief information and digital officer at pharmaceutical firm Eli Lilly puts it, "I entered the CIO role from the business, not technology, side. These internal experiences have been invaluable in helping me shape impactful digital transformation initiatives for core business functions"

From our research results, we find that transformation pilots are most confident about their ability to support business growth, face future disruption, and lead a culture of data-driven decision-making.

The well-equipped CIO

The need for a CIO to drive business transformation is often established when the CIO is hired. Nicholas Parrotta, chief digital and information officer at electronics company Harman International, says, "When I joined Harman, there was an expectation from the CEO, the board, the business stakeholders – and

even the IT department - that my role would be a driver of strategic and transformative change."

These transformation pilots are equipped - and expected - to take control of strategy and lead impactful change from the outset. Negotiating this level of responsibility while already working at a company can be more difficult.

Transformation pilots are consistently out front on key issues. For example, 52% agree strongly that the CIO organization is well positioned to support the growth of the company after the pandemic. Only 43% of co-pilots and 36% of engineers feel this way.

Accountability for the customer experience (CX) is something 40% of transformation pilots believe their CIO organization is responsible for, compared to just 22% of engineers. In fact, CIOs are uniquely positioned to connect CX and employee experience (EX) technologies. Only when employees are digitally enabled can they deliver the experiences customers expect. "We don't sell a physical product; we sell a promise," says John Heveran, CIO of Global Risk Solutions at insurer Liberty Mutual. "We promise that if something goes wrong, we'll make it right. And my role is making sure we use technology most effectively so we can deliver on that promise."

Transformation pilots are also demonstrating that they can play defense as well as offense. While they rank cybersecurity as a top external threat, they have also been systematically investing in cybersecurity and reporting on progress to their boards.

We don't sell a physical product; we sell a promise. We promise that if something goes wrong, we'll make it right. And my role is making sure we use technology most effectively so we can deliver on that promise.

"

John Heveran

CIO of Global Risk Solutions, Liberty Mutual

Driving the data culture

Transformation pilots understand the need for a data-driven culture. Although they're least likely to say that creating a data-driven culture is key to success, this may be because their company already has one. Indeed, 85% of transformation pilots – many more than other CIOs – say that their organizations make data-driven decisions most of or all of the time. They are also most likely to upskill employees to increase data literacy.

To help deliver this data-driven culture, transformation pilots are the most aggressive adopters of analytics, AI, and automation technologies. In terms of AI, 45% have adopted it recently compared to 36% of co-pilots and 33% of engineers. Over the next two years, AI will continue to be a high investment priority (figure 3).



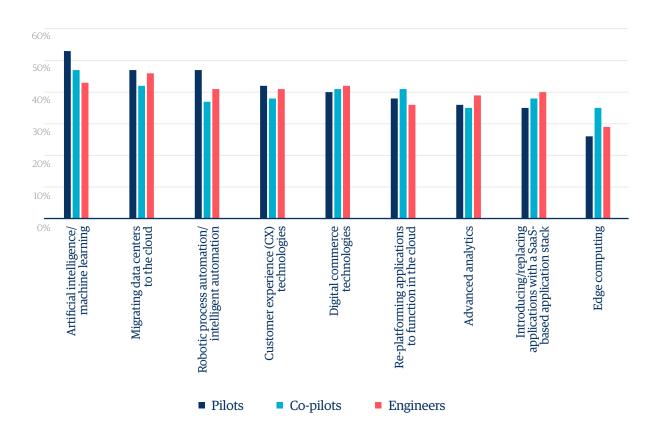
No CIO needs to operate technology anymore - that's why you forge strategic partnerships with technology providers.



Rogan Moore

Chief Digital and Information Officer, Livekindly

Figure 3: Over the next two years, which technologies will you prioritize in your investment to achieve your company's goals?



In the IT function, transformation pilots don't neglect their IT operations role but rely heavily on automation and ecosystem partnerships to manage it. As Rogan Moore, chief digital and information officer at Livekindly, a leading plant-based digital lifestyle brand, says, "No CIO needs to operate technology anymore – that's why you forge strategic partnerships with technology providers. Instead of managing technical operations, you can focus on how you can help your employees do a better job enabled by leveraging technology and data."

Transformation pilots have mastered the basics of running the IT function or found partners to do it for them, allowing them to focus their energy elsewhere.



While co-pilots are still busy with cloud migration, pilots have already made these investments and are ready to enhance their existing cloud footprints.



Putting people first

CIOs recognize their ability to make an impact beyond the bottom line. For example, transformation pilots are the group most likely to call out their ability to track employee wellbeing as one way they make a business impact not directly tied to revenue.

"Even when we go through periods of drastic change, my team and I are focused on how it affects our people," says Shamim Mohammad, chief information and technology officer at CarMax, the US used-car retailer. "We've been one of the best companies to work for because we create a culture where everyone comes along for the ride." Transformation pilots are more aware of the need to ensure that employees - their passengers - are supported and satisfied as their organization transforms.

In an increasingly virtual world of work, Genpact tracks employee wellbeing using Amber - an AI chatbot. It's hard to know what employees are thinking, feeling, and what problems are brewing that could cause difficulties down the road. Amber asks relevant questions to assess employee sentiment at crucial milestones, beginning with their onboarding. When the pandemic hit and employees were dispersed, Amber became a crucial tool to ensure employee health and safety, provide critical support, and help build and retain a sense of culture and belonging.

Checklist

How transformation pilots can soar to new heights

- ✓ **Talent:** Enhance change management skills and continue to build core business and advanced technology capabilities, like those needed for multi-cloud, AI, and machine-learning (ML) initiatives
- **Business platforms:** Create unique business platforms that will differentiate your organization and support new business models
- ✓ **Architecture modernization:** Evolve your architecture to a slim core of apps at the center, centrally manage your data foundation, create global software as a service (SaaS) applications, and build a microservices layer that enables localization
- **Data:** Focus on building data-centric strategies and cultures that strive for clean, integrated data across critical value chains
- ✓ AI and ML: Double down on investments in AI to build a series of interlocking AI widgets that unlock business value
- ✓ **Legacy:** Determine which legacy systems are a necessary evil and try to modernize them



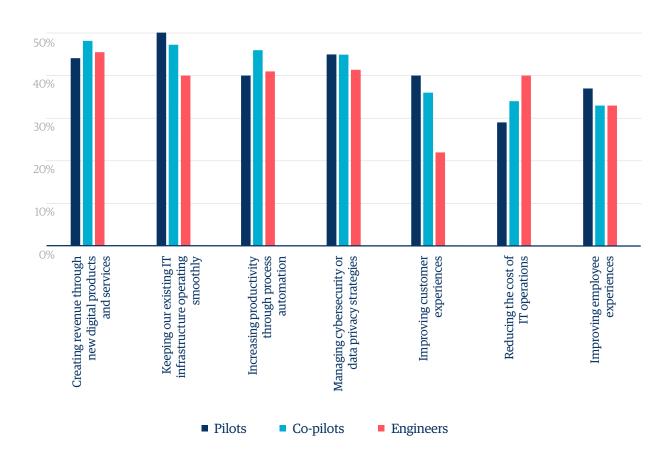
Co-pilots: sharing the journey

The largest group of CIOs by far are those who partner with business leaders to shape and deliver transformation. The co-pilot role is impactful but less visibly influential. Compared to transformation pilots, co-pilots struggle to unite business and technology strategy. It seems they don't have the resources required to explore emerging technologies and partnerships - but they are making strides on cloud.

Co-pilots are well suited to the collaboration that digital transformation calls for – a skill CIOs at all levels must develop to drive change. Co-pilots should learn from Parrotta's approach. As he says, "I collaborate with our CTO, CMO, CFO, and many other business leaders – who I see as strategic partners – to drive digital transformation. To do this, you must build trust and demonstrate the value you can bring to their teams both in the short and long term. And it's a partnership that has to be earned; it isn't a given."

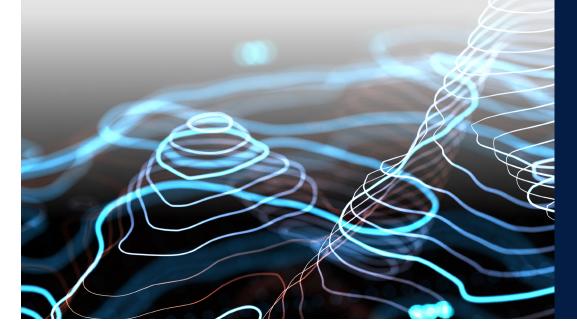
No doubt many co-pilots are perfectly happy to partner with the business on change, but some may find it difficult to balance accountabilities for business transformation and IT infrastructure (figure 4). In other words, co-pilots find it difficult to oversee organizational change and demonstrate technology leadership simultaneously. Co-pilots could free up resources and energy for transformation in the future by turning to new service delivery models – such as automation, managed services, and partnerships with technology providers – in which they express a relatively high level of interest.

Figure 4: Which business objectives is your CIO organization most accountable for?



On other technologies, co-pilots are in the middle of the adoption of AI and advanced analytics, but out front in migrating data centers to the cloud and planning investments in re-platforming applications for the cloud. While co-pilots are still busy with cloud migration, pilots have already made these investments and are ready to enhance their existing cloud footprints.

Within this group, 35% of co-pilots also plan to invest in edge computing over the next two years, which is more than either of the other two CIO groups. They are more focused on technology infrastructure issues than transformation pilots but less so than engineers. If co-pilots had additional resources, they would be the most likely group to focus them on data center cloud migration and digital commerce technologies. This shows co-pilots shifting their investment focus from running IT to growing their company, while modernizing parts of the business to reduce cost. Business leaders now look up to the co-pilots to co-own growth, rather than just as a technology implementation partner.



Responsibilities and response to the pandemic

Compared to transformation pilots and engineers, co-pilots are the most likely group to claim accountability for creating revenue through new digital products and services, and for increasing productivity with process automation. They are also the most likely group to have invested in process automation over the past year.

Looking back at their ability to respond to the pandemic, CIOs in North America and Australia say automating processes has helped them adapt most successfully to changing business conditions. CIOs in Germany and Singapore credit upskilling employees, and CIOs in Japan call out adopting advanced analytics. In the UK, CIOs acknowledge introducing or replacing applications with a SaaSbased application stack and re-platforming applications to function in the cloud.

Checklist

How co-pilots can own the flight path

- **√ Talent:** Improve business and change management skills, continue building advanced architecture and cloud-first skills
- ✓ Transformation: Unite business and technology strategy, invest in change management capabilities, and free up time to explore emerging technologies
- **Business platforms:** Pick one or two unique business platforms that will differentiate your organization and focus on creating and enabling them
- ✓ **Architecture modernization:** Adopt a cloud-first approach with a clear roadmap to slim-core architecture
- ✓ **Data:** Champion data literacy and focus on building a certified data foundation across critical value chains
- **✓ AI and ML:** Continue to build capabilities and use cases for AI and ML adoption and develop a center of excellence if you don't already have one
- Legacy: Educate your C-suite and business leaders on why legacy technology is a necessary evil but minimize technical debt where you can



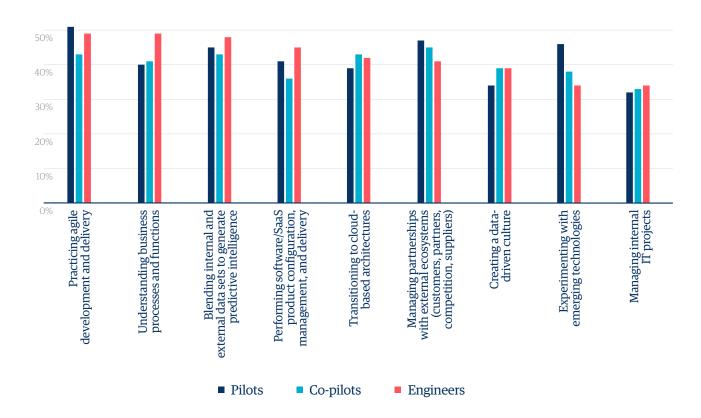
Engineers keeping the business on course

The smallest group (17%) of CIOs surveyed say they receive direction from business leaders on the transformation initiatives to execute. We refer to them as engineers - they keep businesses running and exercise leadership on technology-related initiatives but are not driving transformation. Indeed, this has been the primary role for CIOs since their role was defined in 1981. The engineer role, however, appears to be on the decline as CIOs expect more responsibilities for driving business transformation in the next couple of years.

So, what's preventing engineers from taking the pilot's seat? While transformation pilots and co-pilots make progress on a cloud-first strategy, engineers are knee deep in legacy systems. They just aren't at the same level of digital maturity as their peers and are seeking new talent and skill sets to help them catch up. In fact, engineers are the most likely group of the three to say that a lack of skilled talent is an external barrier to transformation.

Engineers are struggling with the everyday challenges of the IT organization and are unable to focus on modernization opportunities. However, the pandemic made the need for virtual, accessible, and flexible operations painfully clear: when asked about the top investments that helped engineers adapt to the changing business environment, 45% of engineers indicate that upskilling talent and a near majority indicate modernizing to cloud-based SaaS applications were most useful.

Figure 5: Over the next two years, which combination of skills and competencies will be most important to the success of your CIO organization?

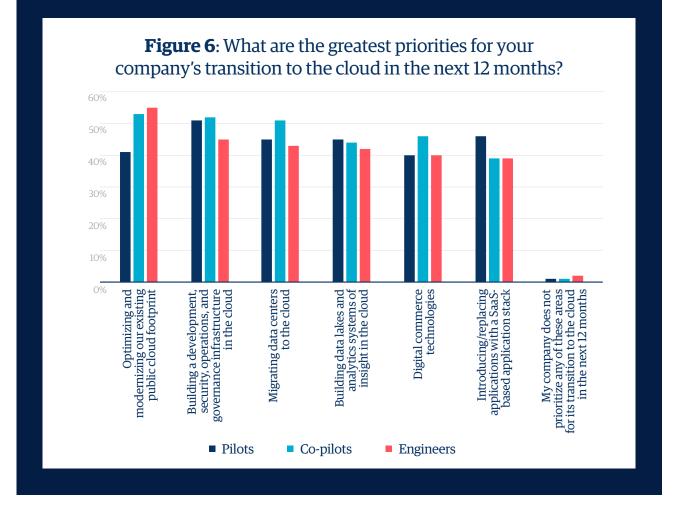


Engineers do, however, have technical enthusiasm. When asked about the skills and competencies that will be most important to the success of their CIO organization, practicing agile development and delivery, understanding business processes and functions, and blending internal and external data to generate predictive intelligence came out on top (figure 5).

To access skilled employees, engineers primarily rely on external technology providers and renting resources from service partners. As they bring on board college graduates, it's experience in AI and cloud systems that they're most focused on. However, compared to pilots and co-pilots, they're more likely to look for entrepreneurial skills too. Engineers need people who can modernize technology but are also able to solve end-to-end business problems. The combination of new business and technical skills will help engineers catch up on the examples set by their transformation pilot and co-pilot peers.

Catching up on cloud

Cloud is a priority for all CIOs. In fact, in the next 12 months, all respondents plan to continue or start their transition to the cloud. Unfortunately, engineers have a long cloud journey ahead of them (figure 6). They are the least focused on migrating data centers to the cloud, building a development, security, operations, and governance infrastructure in the cloud, and building data lakes and analytics systems of insight in the cloud.



Checklist

How engineers can enter the cockpit

- **√ Talent:** Add cloud and business skills to the team and upskill talent on an ongoing basis
- **Transformation:** Create a handful of transformation driver roles and remove roadblocks so they can drive change within the organization
- **Business platforms:** Challenge existing business platforms and propose new ones while creating a practical path to establish them
- ✓ Architecture modernization: Adopt a cloud-first approach with a clear roadmap to slim-core architecture
- ✓ **Data:** Build a certified data foundation and deliver results through analytics
- 🗸 Analytics: Own strategic and operational analytics platforms, don't just be the suppliers of certified data usage can always be democratized
- Legacy: Make some hard decisions about legacy architecture and adopt cloud as a priority



Common ground

Despite differences across groups, industries, and countries, there are areas of alignment. All CIOs expect their roles to evolve, they agree AI, ML, and cloud will be key to their success, and they understand the connection between EX and CX. CIOs also recognize that the talent pool needs to be expanded to drive true digital transformation - CIOs rarely achieve great things alone.

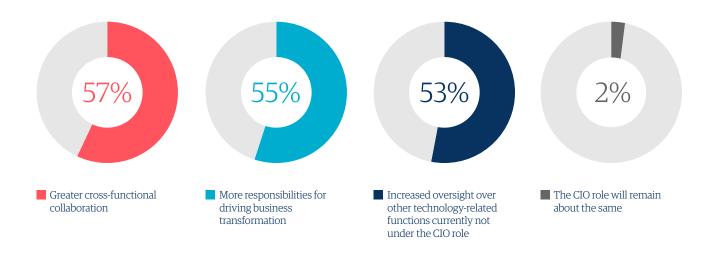
Beginning with the expectation for change, 98% of CIOs agree that their responsibilities will evolve over the next two years and become more strategic (figure 7). To realize their vision of the future, CIOs must unite their company's business and technology strategies.

66

All CIOs expect their roles to evolve, they agree AI, ML, and cloud will be key to their success, and they understand the connection between EX and CX.

"

Figure 7: Describe how the CIO's responsibilities at your company will evolve over the next two years?



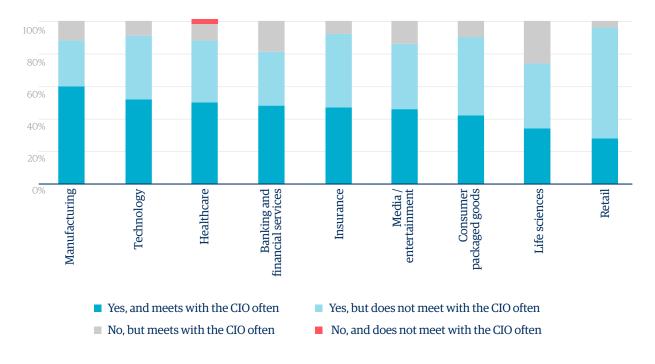
CIOs also generally agree on the accountabilities of their IT organizations. In addition to the traditional role of ensuring smooth IT operations and managing cybersecurity threats, CIOs are increasingly asked to help deliver business growth through new

digital products, create efficiency through process automation, and improve CX or EX. However, fewer than half highlight each of these as current responsibilities. But as the role evolves, we expect them to become core focus areas for any CIO.

CIO and CEOs: a crucial partnership

To drive strategic change, a CIO needs to report at a high organizational level. For the most successful CIOs – the pilots and co-pilots – regular CEO meetings, not just reporting lines, make all the difference. CIOs in the manufacturing industry are the most likely to have this relationship, while CIOs in retail are least likely (figure 8). As the CIO of a Canadian retailer says, "A CIO should report into the CEO or at least be a member of their management team. They must be as deeply invested in solving company problems as everyone else around that table."





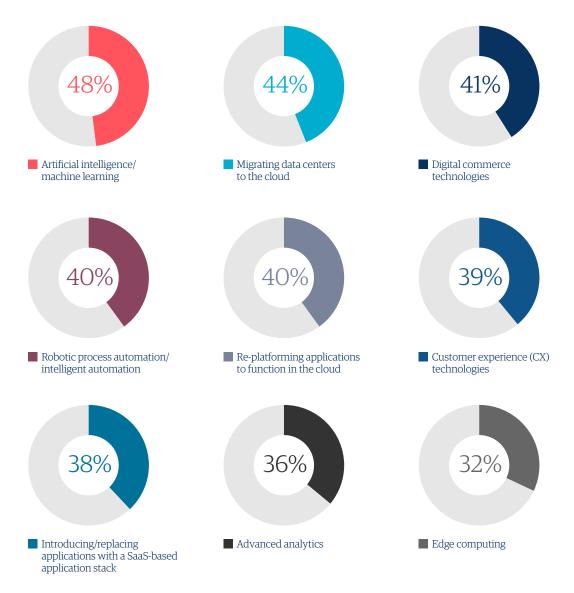
CIOs are also united by the challenges they face in achieving business transformation. Their top internal challenges include maintaining comprehensive business controls, a lack of collaboration between IT and business functions, and difficulty attracting and retaining top talent. Externally, CIOs see an insufficient supply of new talent and changing customer demands as the greatest obstacles to successful transformation. Cybersecurity threats and the pace of technological change also appear high on the list.

AI, ML, and cloud come out on top

CIOs are aligned on the need to be data driven. Almost all (98%) agree that their companies make data-driven decisions to realize business value. "Being a data-led organization is absolutely imperative to our success," says Moore. "We can't be an intelligent, data-driven business if our data is fragmented and inaccessible." In addition, 82% of CIOs agree their CIO organization is building the company culture of data-driven decision-making.

When looking at the technology that will help CIOs achieve their goals, AI and ML come out on top (figure 9). It's also the top choice for where CIOs would invest if they had additional financial resources. These technologies allow CIOs to make the most of the data at their disposal, generating predictive insights for more informed decision-making.

Figure 9: Over the next two years, which technologies will you prioritize in your investment to achieve your company's goals?



AI, ML, and advanced analytics are often considered complementary technologies. When the three are combined, they represent one of the largest technology categories that CIOs are prioritizing. These technologies are also the ones respondents say helped them adapt to changing business conditions. Cloud, digital commerce, automation, and CX technologies follow - essential in an increasingly virtual world of work and customer interaction.

Empowering employees to empower customers

Many CIOs are aware of how technology can impact EX and maintain a healthy workforce. For example, 41% say their CIO organization helps track employee wellbeing, an area of huge focus since the pandemic brought heightened levels of stress and anxiety to people around the world. That said, human resources is at the bottom of the list of functional areas CIOs say they will prioritize for full-stack technology investment over the next two years. This could lead to a disconnect as businesses continue to work remotely or implement a blend of remote and office-based practices.

In this increasingly virtual world, it's the connection between EX and CX that CIOs must consider. "To provide the best possible service externally, companies need the best possible operations internally," says Sigal Zarmi, international CIO at Morgan Stanley, a global financial services firm. "Automation is crucial here - the advancement of the tools at our disposal including process mapping and mining, robotic process automation, orchestration, and the rise of citizen developer have been phenomenal."

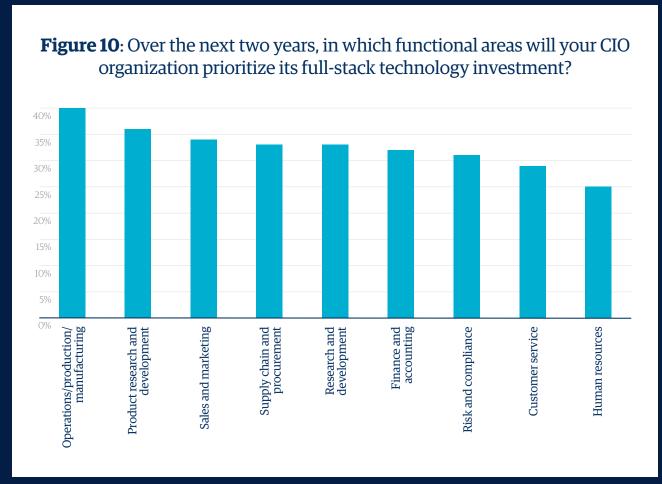
Plugging the talent gap

Talent-related issues appear in the top three of both external and internal challenges. When asked which skills and competencies will be most important to the success of the CIO organization, practicing agile development and delivery, managing partnerships with external ecosystems, and blending internal and external datasets to generate predictive intelligence came out on top. Capabilities that have been in high demand through the pandemic.



Transforming functions with technology

Over the next two years, CIOs are planning to prioritize technology investments in operations/production/manufacturing, followed closely by product research and development (figure 10). About one-third plan to spend on sales and marketing, supply chain and procurement, finance and accounting, and risk and compliance.



Operations are particularly important for CIOs in Japan - 52% say they will prioritize this area for technology investments compared to just 37% of CIOs in North America and 35% in the UK.



The next leg

This survey presents a varied story about business transformation. Some CIOs are leading business transformation using technology as a lever. The largest group - the co-pilots - partners with business leaders to bring it about, while engineers are following directions. And though engineers are more focused on keeping the lights on than changing the business, they show great interest in transformation in the future.

All CIOs are still conscious of their core technology role, however. They see the three As - AI, advanced analytics, and automation - as powerful arrows in their quivers and will deliver them, and other applications, over the cloud. CIOs plan to expand their use of technology partners and new service delivery models to do this. Indeed, many may feel this approach is the only way to free up time and energy for business transformation

These executives shepherded their companies through the pandemic. Some are worried that the CIO organization isn't fully capable of supporting post-pandemic growth or, even worse, that they could have difficulties dealing with another period of business disruption. Using insights from this report, more CIOs will take the next step in joining the ranks of transformation pilots and be equipped to navigate any turbulence that their companies encounter.

About the research

In March 2021, Genpact worked with the MIT Sloan CIO Symposium and Wakefield Research to survey chief information officers (80%) and comparable C-level positions, such as chief technology officers, chief digital officers, and chief transformation officers.

Respondents are from banking and financial services, insurance, healthcare and life sciences, high tech, consumer goods and retail, media and entertainment, and industrial manufacturing. They work for companies with at least \$2 billion in annual revenue (\$50 billion in in assets under management for financial institutions). They currently live in the US, Canada, UK, Germany, Singapore, Japan, or Australia.

The study used online surveys with participation secured through email invitations. We also conducted in-depth interviews with more than 25 CIOs - including winners of the MIT Sloan CIO Leadership Award - to add insights to the survey findings.



About Genpact

Genpact (NYSE: G) is a global professional services firm that makes business transformation real. Led by our purpose - the relentless pursuit of a world that works better for people - we drive digital-led innovation and digitally enabled intelligent operations for our clients. Guided by our experience reinventing and running thousands of processes for hundreds of clients, many of them Global Fortune 500 companies, we drive real-world transformation at scale. We think with design, dream in digital, and solve problems with data and analytics. Combining our expertise in end-to-end operations and our AI-based platform, Genpact Cora, we focus on the details - all 90,000+ of us. From New York to New Delhi, and more than 30 countries in between, we connect every dot, reimagine every process, and reinvent the ways companies work. We know that reimagining each step from start to finish creates better business outcomes. Whatever it is, we'll be there with you - accelerating digital transformation to create bold, lasting results - because transformation happens here. Get to know us at Genpact.com and on LinkedIn, Twitter, YouTube, and Facebook.

