



Digital frontier: A technology deficit in the boardroom

The Deloitte Global Boardroom Program's new research of directors and corporate leaders reveals underinvestment in technology and uncovers gaps in board engagement on digital transformation

About the Deloitte Global Boardroom Program

The Deloitte Global Boardroom Program brings together the knowledge and experience of Deloitte member firms around the world to address critical topics of universal interest to company boards and the C-suite. Supplementing geography programs, its mission is to promote dialogue among Deloitte practitioners, corporations and their boards and management, investors, the accounting profession, academia, and government. In addition to the publication of thought pieces on critical topics, the Deloitte Global Boardroom Program hosts a series of must-see webinar discussions with eminent panelists enable boards and management of global companies to challenge perceived wisdom. Contact the authors for more information or visit our Deloitte Global Boardroom program on [Deloitte.com](https://www.deloitte.com).

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OVER THE PAST few years, technology investment and deployment have expanded dramatically.¹ What is less known is how, or to what extent, boards are engaged in tech matters: Some are, but many are not as engaged as they believe they should be. As part of its Boardroom Frontier series, in early 2022 the Deloitte Global Boardroom Program surveyed more than 500 directors and C-suite executives and spoke to leaders, directors, and subject matter specialists to find out what's being done in boardrooms around the world when it comes to technology. Are boards stepping up to meet the

new demands of expanded technology use? What are they doing to ensure that technology investments are linked to strategic objectives?

The research revealed that surveyed boards are engaging in technology matters much as they did for many years; many board members lack the knowledge they need to ask informed questions and ensure technology is being driven by strategy, not the other way around. More broadly, this is creating a gap between the level of engagement organizations need and what's commonly taking place in the boardroom.

More technology = more need for board engagement

TECHNOLOGY IS BEING adopted widely by businesses and consumers alike. Digital transformation that was underway in many organizations has moved forward at a rate few could have predicted in 2019:² Furthermore, 85% of CEOs accelerated digital initiatives during the COVID-19 pandemic.³

Meanwhile, digital and advanced technologies, such as cloud and artificial intelligence (AI), are “rapidly and fundamentally changing what is possible for companies and how they compete,” a recent Deloitte Global article explains.⁴ “Innovations—often being advanced by the large cloud platforms—are building on each other to create business opportunities that, a few years ago, did not exist.”⁵

In 2022, worldwide IT spending is projected to total US\$4.4 trillion, an increase of 4% from 2021,⁶ but end-user spending on public cloud services is forecast to grow 20.4% in 2022 to total US\$494.7 billion,⁷ according to Gartner, Inc.

Meanwhile, cyberattacks over the past two years have proliferated around the world. In the United States, for example, the Identity Theft Resource Center’s latest annual report revealed

that 2021 was a record-breaking year for the number of compromises.⁸

These developments beg two questions: 1) Have boards stepped up their engagement on technology concerns including cyber and investments? 2) Are boards being effective stewards, helping ensure that technology is supporting strategy, not the other way around? Rich Nanda, principal at Deloitte Consulting LLP, explains how boards should be operating in this environment: “The board’s role with respect to technology needs to be centered on the long-term future-proofing of competitiveness in an increasingly digital world. The board must help management strike the appropriate balance between near-term results and long-term growth and competitive advantage.”

In early 2022, the Deloitte Global Boardroom Program surveyed hundreds of directors and C-suite executives (CxOs) from companies based in 55 countries to understand the degree of board engagement in technology today (see the appendix for information about the survey and its respondents). Overall, the survey revealed a gap between the growing demand for more tech understanding and engagement and what’s currently being provided by boards.

Scratching the surface: Perceptions may be deceptively optimistic

MOST DIRECTORS IN the Deloitte Global Boardroom Program’s survey feel good about the level of their engagement with tech issues: Over 80% of directors were at least somewhat confident in their ability to understand, review, and challenge the technology strategy and agenda at their organizations. Among those, nearly half say their boards rely on support from the executive/management team or an external specialist to steer the technology agenda; one in four say either a committee or a specialist board member steers the agenda, with just one in 10 saying the board handles it capably on its own. As for the one-fifth of directors who see room for improvement, most say their board “is wholly dependent” upon the executive team and some feel the board needs to develop a plan to improve its ability to provide effective engagement.

When asked how they feel about their company’s progress in embracing technology to achieve competitive advantage, most—two-thirds of respondents overall—were optimistic (figure 1).

It’s possible, however, that this optimism could be an example of a cognitive bias known as the Dunning-Kruger effect—where not knowing what you don’t know yields a false sense of security and overestimating your own ability.⁹ Boards need to be vigilant and self-critical in fast-changing areas. Read on ...

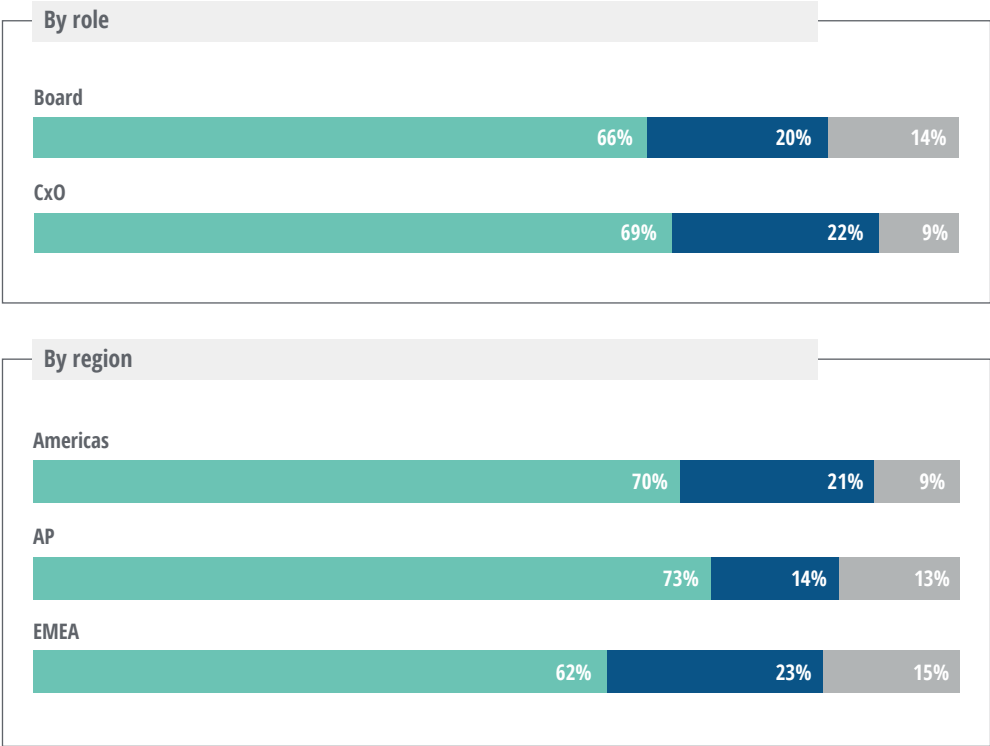


FIGURE 1

Technology: the great enabler

My organization's progress embracing tech leads to competitive advantage

■ Yes ■ No ■ Not sure



Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

The survey asked respondents their tech plans and projects: Top future investment intentions involve enhancing data assets, using digital to improve

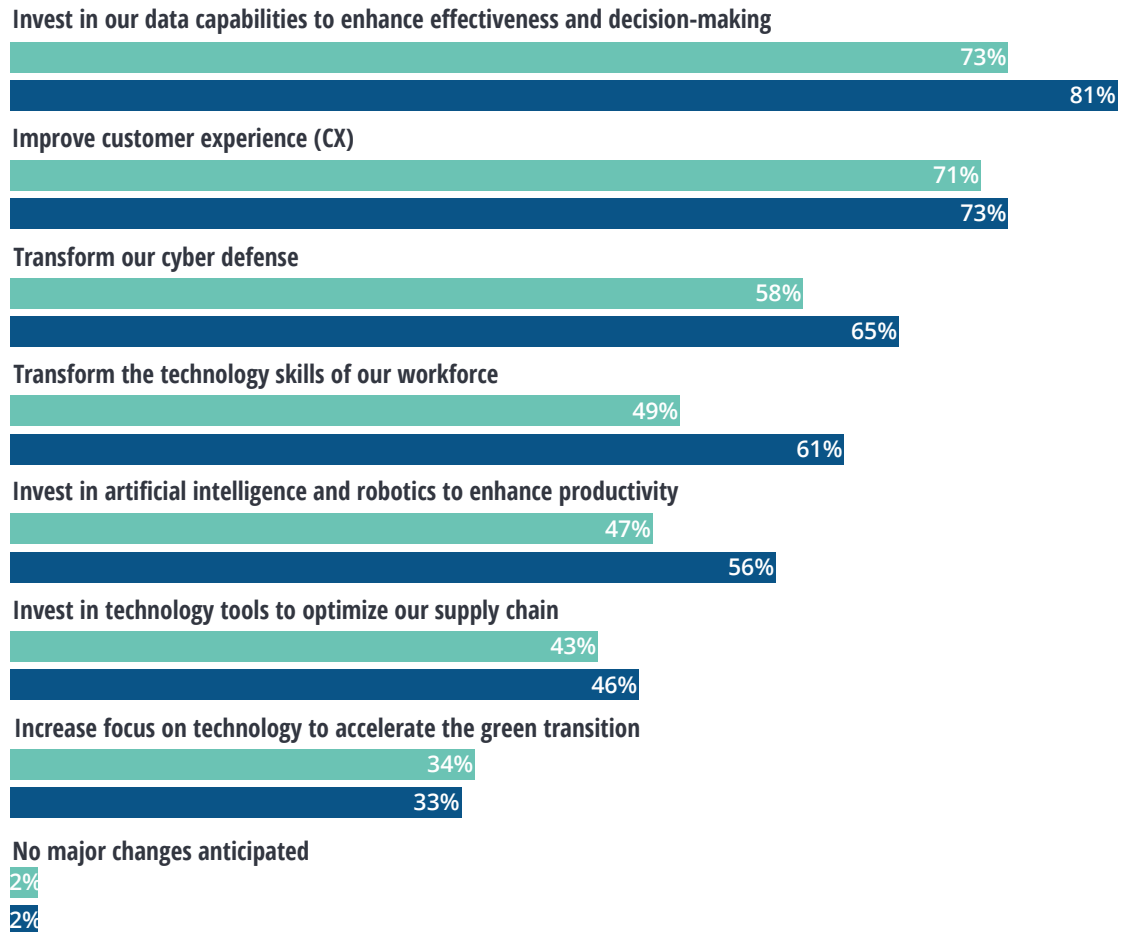
customer experience, and transforming cyber defense systems (figure 2).

FIGURE 2

Data, digital (CX), and cyber are top tech priorities

Over the next three years, my organization plans to:

■ Board ■ CxO



Note: Multiple-choice question.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Why the gap? Top challenges to technology engagement

DELVING DEEPER, HOWEVER, cracks in the foundation begin to appear—prominently in two areas: first, whether boards are providing enough oversight on tech matters, and second, a lack of tech fluency among board members. Fewer than half of executives and board members believe their board is providing enough oversight of technology matters (figure 3). Perhaps we are falling for the optimism bias trap?

Both directors and C-suite respondents cited the following as the top five challenges to effective board oversight (figure 4):

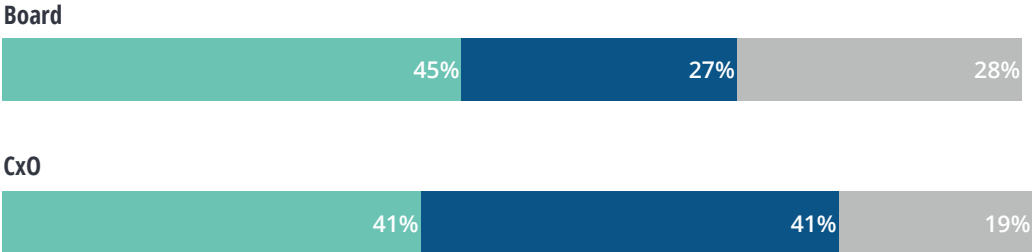
1. Overreliance on management for decision-making
2. Deficits in tech fluency on the board
3. Unclear governance structure around technology concerns
4. Management information on tech matters is not well-defined
5. The links between technology and strategy are unclear

FIGURE 3

Mind the gap: Fewer than half say their boards provide enough tech stewardship

Is your board’s oversight of technology matters sufficient in both scope and depth?

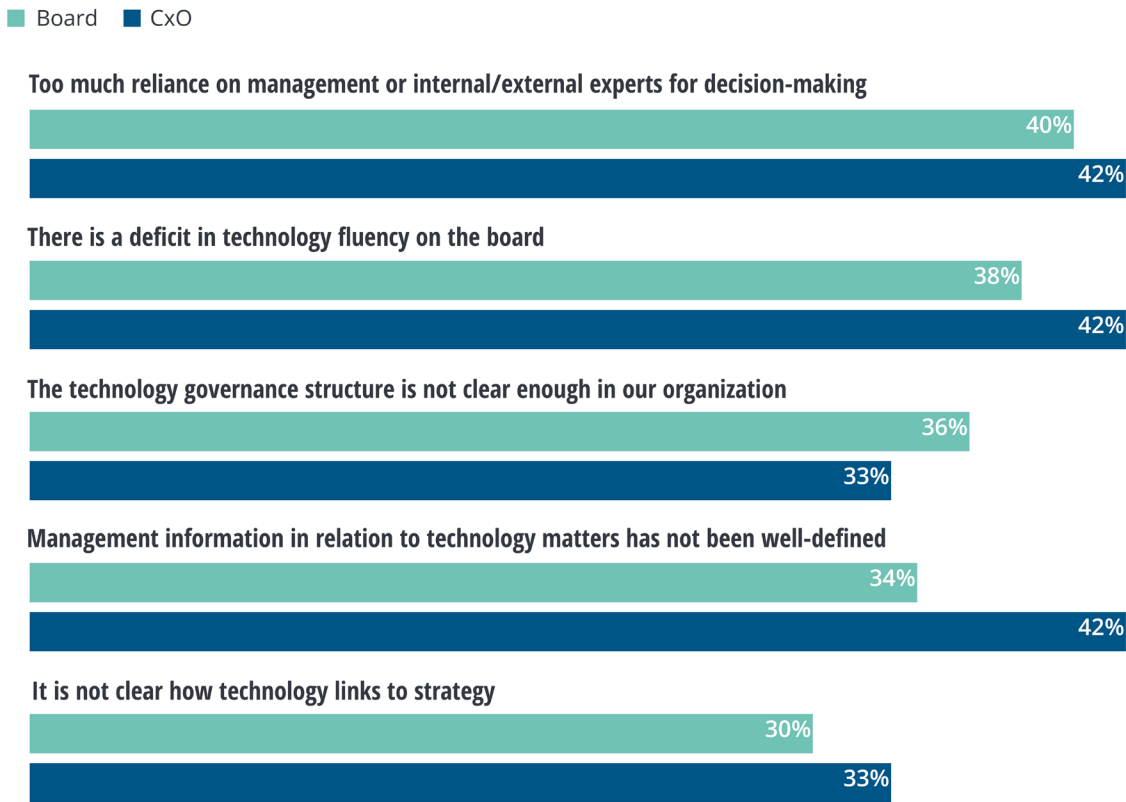
■ Yes ■ No ■ Not sure



Note: Percentages may not add up to 100% due to rounding. Source: The Deloitte Global Boardroom Program’s Digital frontier: A technology deficit in the boardroom.

FIGURE 4

Top five challenges to board oversight of digital, cyber, and new technologies



Note: Multiple-choice question.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Among nontechnology companies, boards that do have a tech expert on the board often have only one—and these boards can rely too much on that one director to serve as the de facto “tech translator,” letting the rest of the board off the hook.

Mark Lillie, leader of the Deloitte Global CIO Program, believes that achieving tech fluency is a must for company directors. “The board collectively needs to be comfortable with the content around technology; while they should support, they should also challenge management. If directors aren’t confident with and fluent in

technology, the board may rely on management’s own opinions too much, and management can then run rings around the board.”

Sheila Talton, board member, Deere, SYSCO, and OGE Energy; president and CEO, Gray Matter Analytics, thinks having technology knowledge among board members is critical to any organization’s success. “Companies that lack a technologist on their board are being short-sighted. Conversely, forward-looking companies do tend to have technology people on their boards. They understand it’s not just about managing risks, it’s a competitive advantage.”

Digging deeper to uncover other key challenges

THE DELOITTE GLOBAL Boardroom Program’s survey uncovered a number of other pain points that can negatively impact board stewardship of technology matters.

Concerns about the tech leadership team. The level of confidence in technology leaders was mixed. Only 36% of directors and C-suite executives expressed confidence in their tech leaders; 49% of board directors and 43% of CxOs said they were just “somewhat” confident, but there are areas for improvement. And roughly one in ten directors and one in eight executives say they do not have confidence in their tech leaders

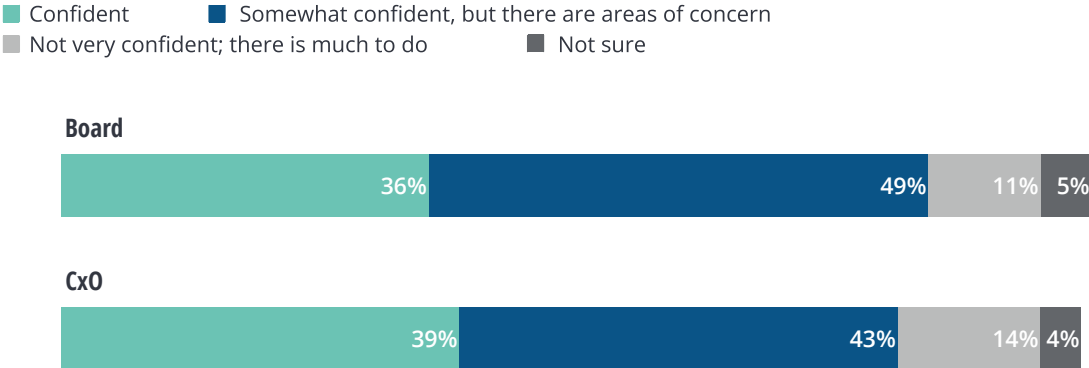
(figure 5). Board members need to be asking among themselves, “So, what are we doing to improve confidence levels, individually and collectively?”

Nanda thinks confidence could be improved if tech leaders collaborated more with their colleagues. “The discussions are beneficial where the CIO is paired with the leaders of the businesses, including heads of strategy and with business unit heads. Because technology leaders do not run the company, it is generally better to collaborate with the leaders tasked with growth of the business.”

FIGURE 5

Fewer than half of respondents feel good about their organization's tech leadership

Level of confidence in your organization’s technology leadership team



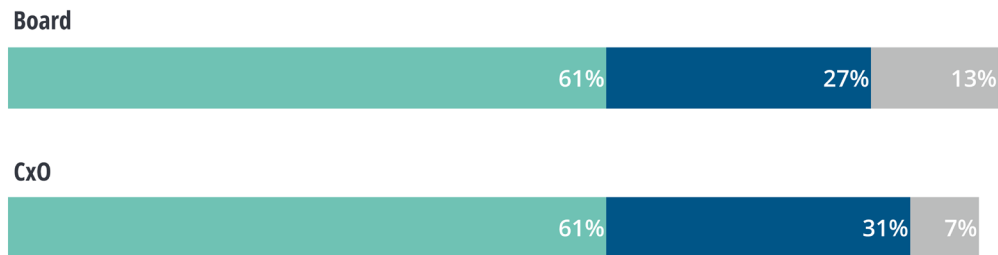
Note: Percentages may not add up to 100% due to rounding. Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

FIGURE 6

Nearly half of respondents didn't think—or didn't know if—technology aligned with strategy

Is tech integrated enough into your organization's strategy?

■ Yes ■ No ■ Not sure



Note: Percentages may not add up to 100% due to rounding.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Lack of integration with strategy

Three in 10 say they don't think that technology is sufficiently integrated into their organizations' strategy. While six in 10 directors believe that it is (figure 6), one-tenth could not answer the question. Clearly, if tech is fundamental to strategy execution, this linkage needs to be well-understood and is where board stewardship could be especially valuable.

In a recent Deloitte Global article, "[Why technology is the strategic issue of our time](#)," the authors capture why top management should focus on this linking of strategy to technology: "The influence and impact of disruptive technologies is the strategic issue of our time. Regardless of what industry you are in—or what parts of the company you manage—technology can enhance and amplify what you do. Waiting to see how things shake out—or delegating all technology issues to the chief information officer (CIO)—is no longer a viable option for today's chief executive officers (CEOs) and their teams."¹⁰

Difficulty assessing the value derived from tech investments

But what about measuring success? Our survey

shows that boards and C-suite executives find effective measurement of tech investments very difficult (figure 7). Deloitte & Touche LLP Audit & Assurance partner Jon Raphael explains the challenge: "The hardest thing in technology programs is developing ROI. It's hard to measure because much of it can be qualitative as well as quantitative. Ultimately, you can get to a bottom-line number, and you can measure year-over-year increases. But pinpointing this directly to technology investments is challenging, particularly when it's an enterprisewide program."

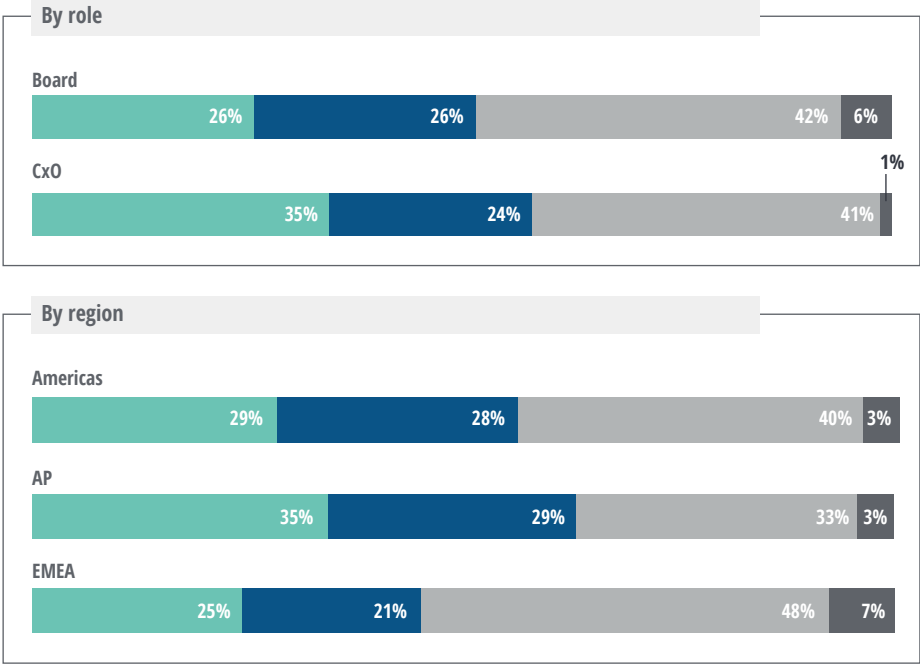
In fact, four in 10 respondents say their biggest challenge is being able to demonstrate cause and effect between technology investments and growth. Further, one in three said that focusing too much on return on investment (ROI) and short-term gains dominates thinking, instead of focusing on long-term value measures. One in four say the biggest barrier to figuring out the ROI of these investments is their organization's fragmented reporting and use of separate key performance indicators (KPIs) and metrics to assess outcomes. It seems that there is some work to do here in the surveyed organizations.

FIGURE 7

The technology/ROI conundrum

Challenges to assessing the value of investments

- Short-term performance and capex/opex dominate conversations
- Fragmented reporting: separate KPIs and metrics
- Inability to show how tech enables growth
- Other



Note: Percentages may not add up to 100% due to rounding.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Without having a measured view of these investments, it can be difficult for boards to assess the value technology can create, or whether investments are serving strategic goals. Lillie explains: “There are two ways of looking at tech investments: One is thinking of it as a necessary expense, for example, replacing an outdated data center by a more modern cloud infrastructure, or investing sufficient budget for cyber and security. These are *important* investments. On the other hand, you could frame a tech investment as a business investment, with the aim of capturing more market share. In that context, you’re demonstrating a causal relationship between tech investments and growth, but you need to establish good measurement criteria.”

Rahul Samant, CIO, Delta Air Lines, says he has had more success communicating the ROI of tech investments when he has taken a team approach and linked it to broader business metrics. “When meeting with the CEO or the board on tech investments, one or more of my business partners, such as the chief customer experience officer, the chief operations officer, or the chief commercial officer are always with me. They are the best validators when I need to explain what value tech investments have brought. I say, ‘Hey, remember three years ago, we invested in building this data platform. Guess what? That foundation has been powerful and we’ve now started to equip our operations teammates with insights, allowing them to take even better care of our customers. And that’s

contributing to our net promoter score.’ That validation coming from a business partner is way more credible than my saying, ‘Remember that business case from three years ago? I’m here to tell you I met my ROI goals’ since that is hard to prove stand-alone, anyway.”

An ESG analyst from State Street Global Advisors commented that board tech proficiency may become increasingly important: “As companies begin to acquire capabilities and deploy alternative technologies, incorporating these technologies into core business segments, the board skill set needs to evolve as well.

Companies need to make sure that their boards truly understand what these new technologies mean for the business.”

Not investing enough in technology

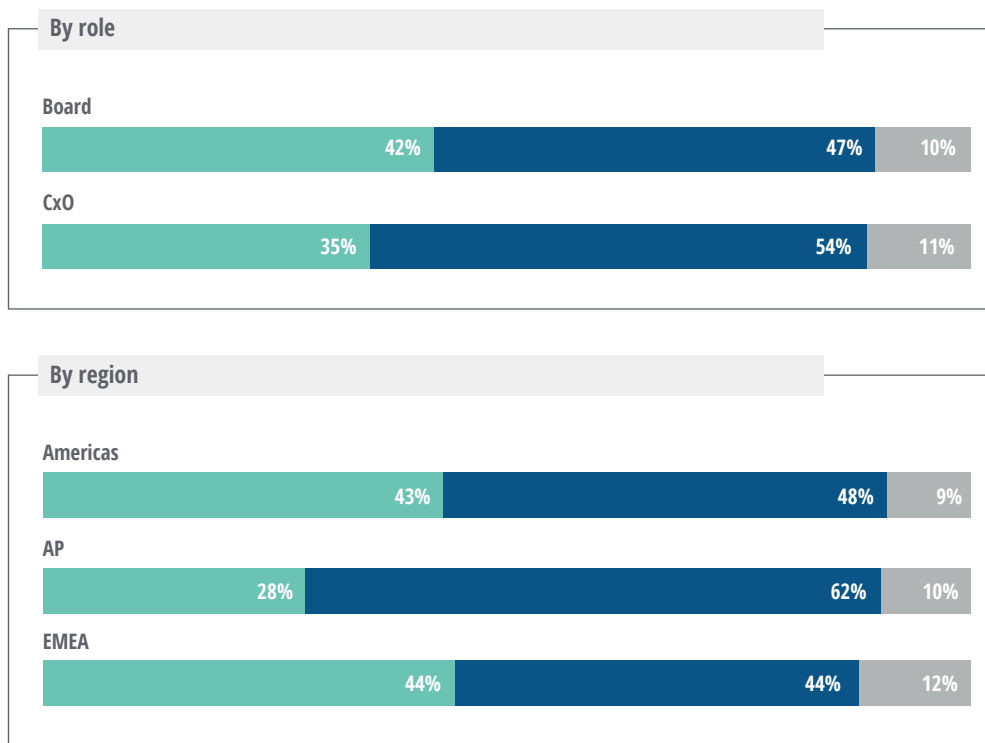
However, nearly half of survey respondents say their organization isn’t investing enough in technology to meet the key strategic objectives of outpacing the competition and addressing opportunities and risks (figure 8). C-suite respondents, on the other hand, were more likely to say their organization needs to step up investment than the directors.

FIGURE 8

Most aren't investing enough to reap key benefits

Is your organization investing enough in tech to outpace the competition and address risks/opportunities?

■ Yes ■ No ■ Not sure



Note: Percentages may not add up to 100% due to rounding.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Cybersecurity, data protection, and assurance surfaced as near-term challenges

ON THE RISK side, some specific deficits were uncovered by our survey. In cyber, data protection, and assurance, many are looking into improving capabilities.

Process deficiencies around protecting data assets

Among the C-suite executives and board directors surveyed, there was a significant lack of confidence in their organizations' ability to protect its critical data (figure 9). Only half of respondents say they feel their data is well-protected and understood. The rest either aren't sure if they were well-protected (around one-third), or feel they need to do more to understand and protect their data assets (15%). This varied a bit by region: in Europe/Middle East/Africa (EMEA) more respondents feel more secure about this than in other regions, and respondents from Asia/Pacific (AP) feel the most skeptical about their data protection capabilities. However, given the ever-evolving sophistication of threat actors, no one should be complacent in this area.

Matthew Holt, Deloitte Italy partner in Risk Advisory, Cyber and Strategic Risk, says, "When

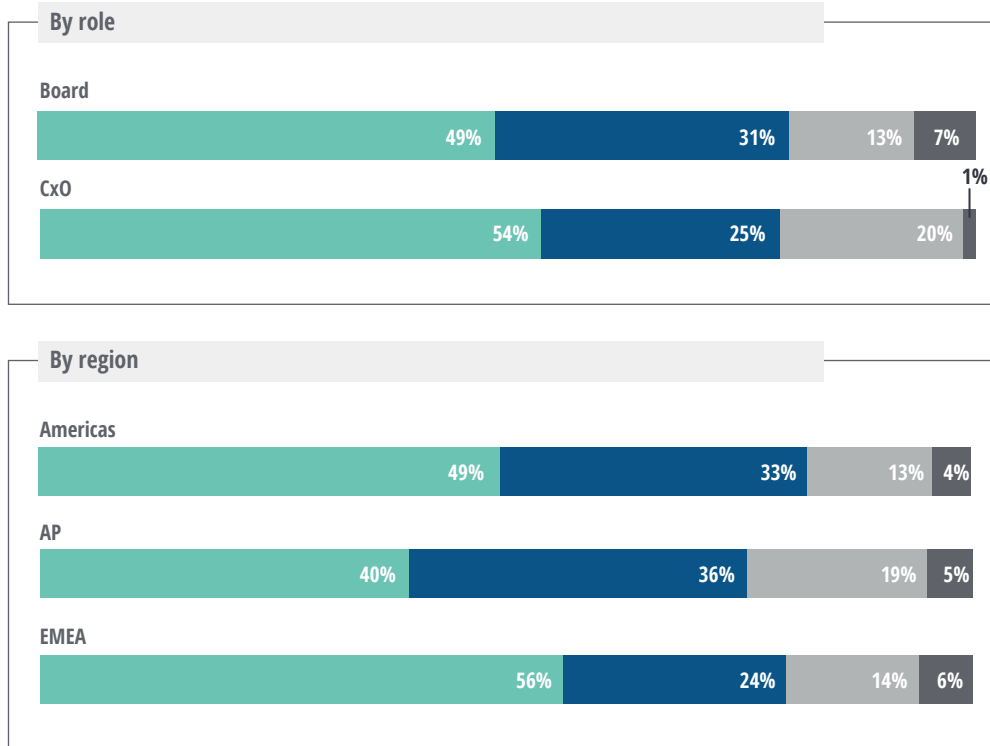
having a conversation with the board about cybersecurity, board members typically say, 'Yes, we understand the cyber risks our company faces and the potential impact of our business.' But if we ask them to name the top three cyber risks their company *actually* faces and how the company plans to mitigate these risks, we are often met with silence."

An ESG analyst from State Street Global Advisors commented when it comes to cyber and data security, audit and risk committee members "are often quite conversant" on the topics, but the board overall tends to "defer to management to answer these questions." While in-depth discussions are fine to delegate to committee work, they observed that this reveals a lack of discussion in the boardroom and that all board members should be able to answer basic questions such as what types of cyber threats are posed to the company ... "I'd rather see a board member be able to identify key infrastructure that they're monitoring closely and the type of data they think is particularly sensitive at the company. That will take it to the next level and reassure investors that the board understands the issue."

FIGURE 9

Does your organization have defined protocols to protect its critical data assets?

- Yes, we understand our data assets and they are well-protected
- We understand our data assets, but I am not sure if they are well-protected
- No, we need to do more to understand and protect our data assets
- Not sure



Note: Percentages may not add up to 100% due to rounding.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Not having enough assurance processes around technology

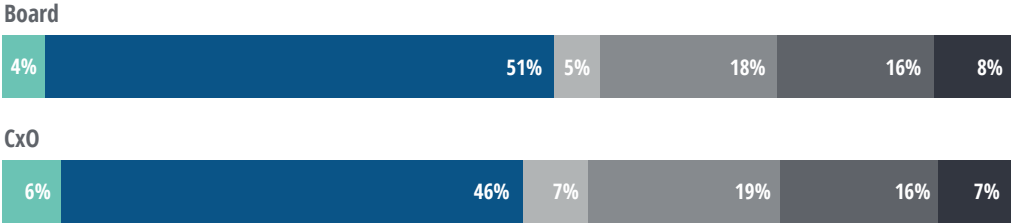
There is a push for greater transparency on technology matters coming from regulators, investors, and other external stakeholders. When it came to how well their organizations were addressing assurance needs over technology, responses were also mixed (figure 10).

Overall, either through internal resources or using a combination of internal and external resources, more than half of respondents feel that their organizations have sufficient assurance processes in place over the technology domain. But a large number—around four in 10—say their organization needs to do more work here.

FIGURE 10

Assurance processes and technology: Is your organization doing enough?

- Yes, we have invested in in-house resources and do not rely on external resources
- Yes, we have invested in in-house resources, and get external support when needed
- No, we need to explore this issue
- No, we rely too much on external support but are building in-house resources
- No, we are not where we would like to be and are examining this issue
- Not sure



Note: Percentages may not add up to 100% due to rounding.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Scaling new heights in technology engagement—the board’s opportunity

WHAT CAN BOARDS do differently to improve board tech engagement and governance? Directors and executives had plenty of ideas (figure 11). Their recommendations include:

1. Educating board members on the latest technology trends (66% director/61% C-suite).
2. Developing a more holistic plan to address technology and its link to strategy at the board table (60% director/61% C-suite).
3. Making technology a standing agenda item at meetings. Collaborating more with the CIO/CTO/CISO and inviting them to meetings more frequently. C-suite respondents (at 54%) were more likely to see this as an important to-do than board respondents were (45%).
4. Getting more experience on the board by recruiting one or more tech-fluent board members. Here, those in the C-suite were much more likely to say this than board members were, perhaps so they can have good dialogue with a board member. Interestingly, at 43%, respondents from the Americas were more likely to want this, with AP (38%) or EMEA (35%) not wanting it.

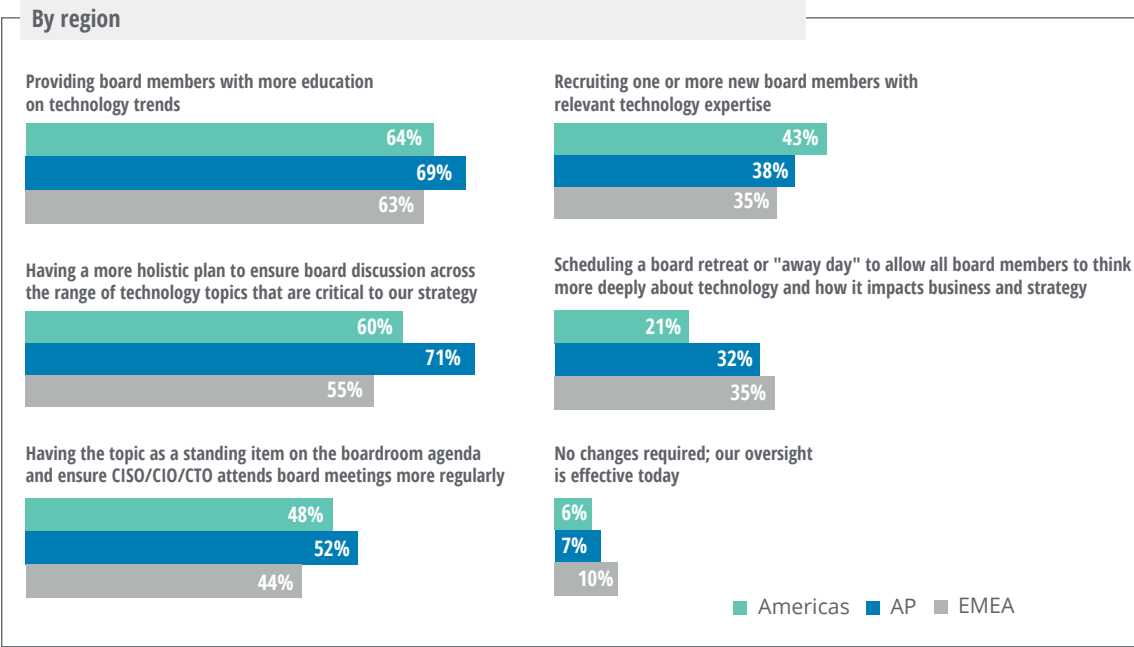
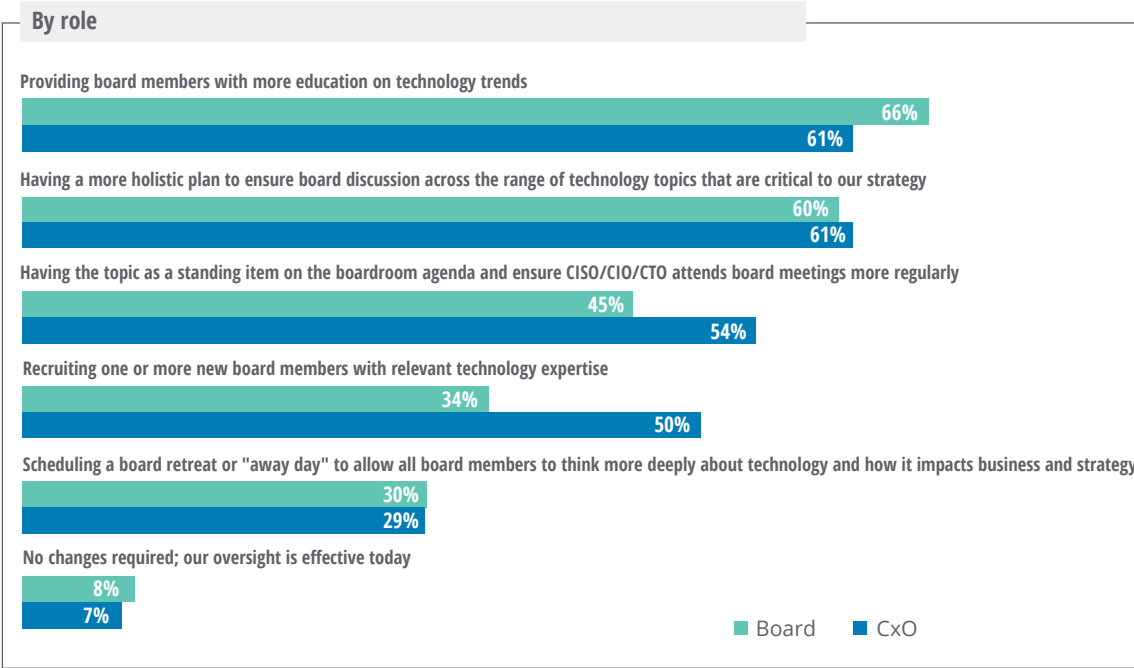
However, across roles and regions, having more board retreats proved to be the least popular

option, even though these events can serve as a focused accelerator. Fewer than one-third of respondents thought having an “away day” to talk about technology could be a productive use of their time.



FIGURE 11

Stepping it up: Respondents indicate the most effective ways boards could bolster tech oversight



Note: Multiple-choice question.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

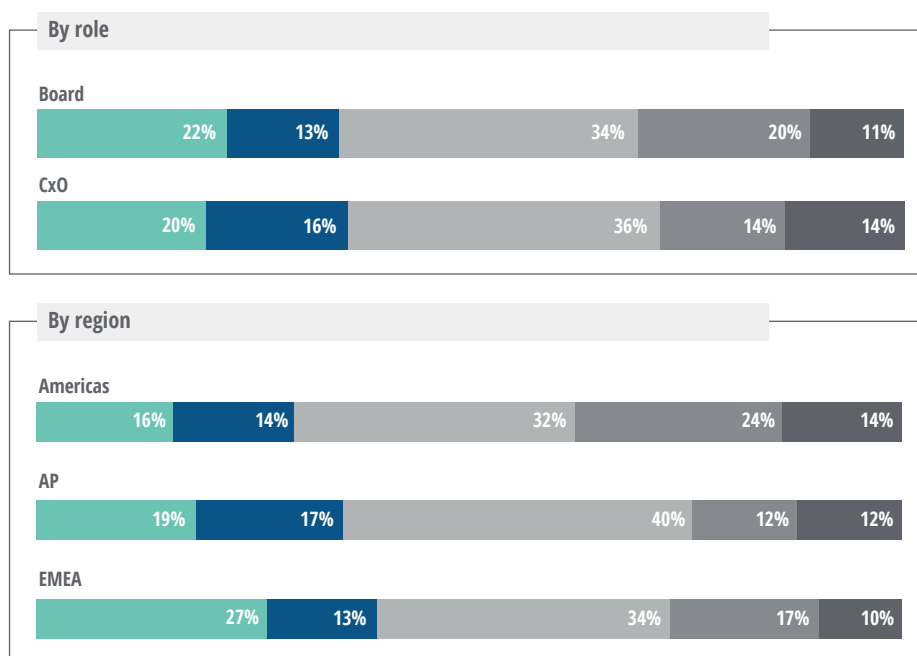
COMING UP NEXT: BUILDING A TECH-ENABLED CLIMATE STRATEGY

Our survey confirmed that most organizations are in early stages when it comes to developing and implementing their climate strategies (figure 12). Only one in five indicate they have a clear strategy in place and have started implementing it.

FIGURE 12

Will technology play an integral role in your organization’s climate strategy?

- Yes, we have a clear strategy and have started implementing it
- Yes, but we are still developing our strategy
- Probably, but we are still developing our strategy
- No
- Not sure



Note: Percentages may not add up to 100% due to rounding.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Talton feels that “linking technology to sustainability is heating up. Equipment manufacturers are all looking for ways to replace steel components with lighter materials that would have less of a carbon footprint, for example. I think technology is going to play a big role in sustainability.”

Sarah Haywood, CIO, Carlsberg Group, describes the huge opportunity for technology in the sustainability area: “Technology will really start to play a more significant role once companies have addressed the basic steps. Right now, many companies have made very ambitious commitments on carbon, water waste, and so on. But it gets harder to start materializing the type of opportunities that are out there and we will need more mature, complex, and sophisticated methods to get to those benefits. This is where technology will really begin to play a much more significant role.”

For more on the board’s role in effecting change around sustainability, read the Deloitte Global Boardroom Program’s Frontier series report from November 2021, *The audit committee frontier: Addressing climate change*.

Based on the survey findings, directors may want to ask the following questions to assess whether, and to what extent, proficiency and stewardship gaps may exist on their boards:

1. Are we doing a good job ensuring tech investments and deployment are driven by longer-term strategic priorities, taking into account both risk and opportunities? If not, what more could we do?
2. How and when do we talk about technology? Do technology discussions mostly happen in committees and if so, how are we ensuring that the full board is engaged with them?
3. Do we have enough technology experience on the board? Or are we relying too much on one tech specialist at the table, on management, or on outside specialists?
 - a. Should we be actively recruiting directors with more technology experience to help fill the gaps?
 - b. What educational opportunities can we initiate to elevate the knowledge and experience of all board members?
4. How can we collaborate more and better with our organization's CxOs and technology leaders

so we are working together to accomplish shared goals?

5. Are tech strategies on the agenda of board strategy sessions? How are we linking tech strategies to each of the business unit strategies?

Nanda believes there is reason to be optimistic that board engagement will improve: "When I attended the Consumer Electronics Show with board directors and CIOs as part of Deloitte Development LLC's Center for Board Effectiveness, the boards and C-suite executives that chose to participate were either technologically inclined or looking to learn by immersion. But they all came with an unbelievably voracious appetite. While management tends to think more about the relevance of adopting new technologies over the next few quarterly periods, board members are much more willing to explore 'what-ifs' and the art of the possible, envisioning future possibilities. It's encouraging, but it requires energy and curiosity."

And while a voracious appetite for learning and questioning clearly isn't everything, it can help leaders find common ground to jumpstart progress. We hope this report raises awareness of potential concerns and inspires action where it is needed.

Appendix

A closer look at respondents

FIVE HUNDRED AND fifty-one C-suite executives (CxOs) and board directors responded to the survey (figure 13). Respondents came from the EMEA (239), Americas (188), and AP (124) regions. The top six countries represented were Brazil (55), the United Kingdom (54), the United States (51), Germany (44), Australia (41), and India (35).

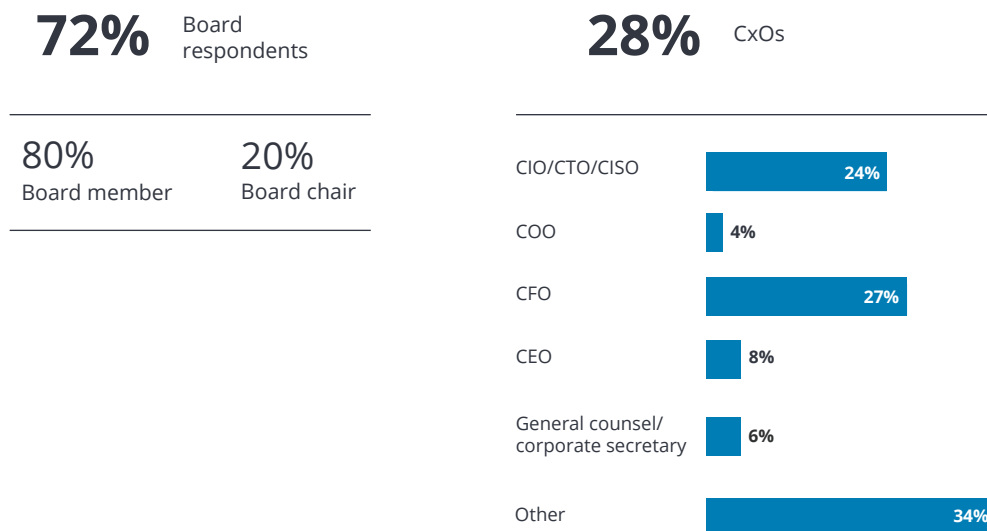
Industries represented include financial services (32%), manufacturing (15%), technology (9%), health care/pharmaceutical (7%), retail/wholesale

(7%), energy/resources (6%), business and professional services (6%), construction/real estate (4%), telecommunications/media/entertainment (3%), and logistics (2%), with 9% identifying as “other” (figure 14).

More than half (53%) of respondents represented organizations with equity market values of more than US\$1 billion. The ownership structure breakdowns were as follows: 49% public companies; 35% private (including family businesses); 6% state-owned; and 10% other (figure 15).

FIGURE 13

Respondents were a mix of board directors and C-suite executives (CxOs)

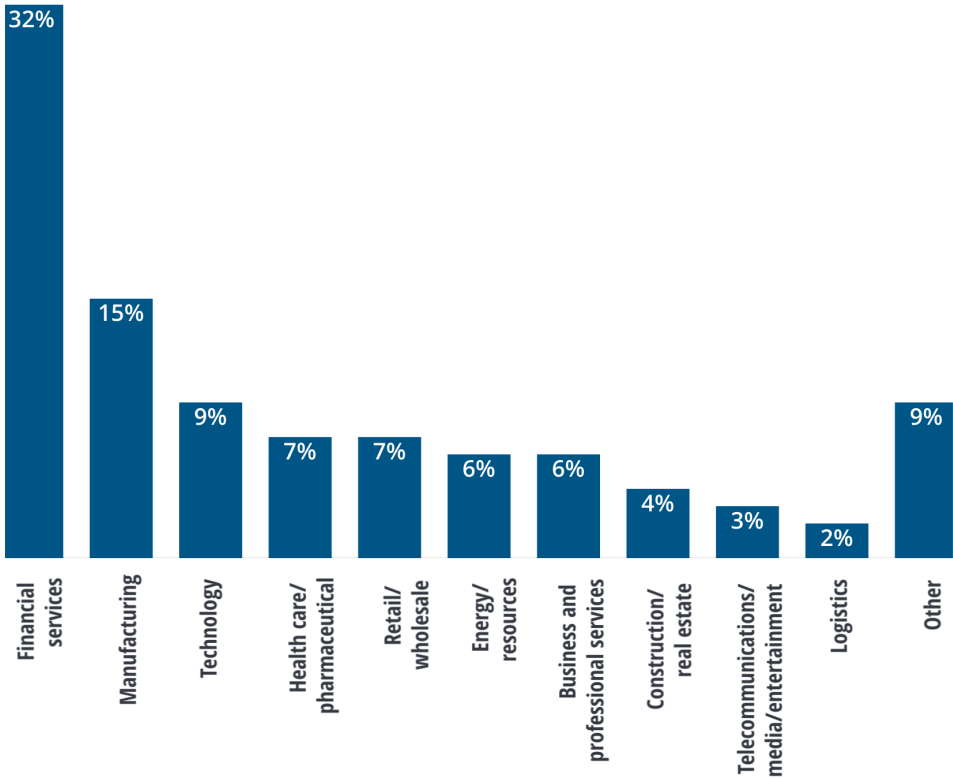


Note: Total respondents: n = 551; board respondents: n = 398; CxO respondents: n = 153.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

FIGURE 14

Industries represented in our survey

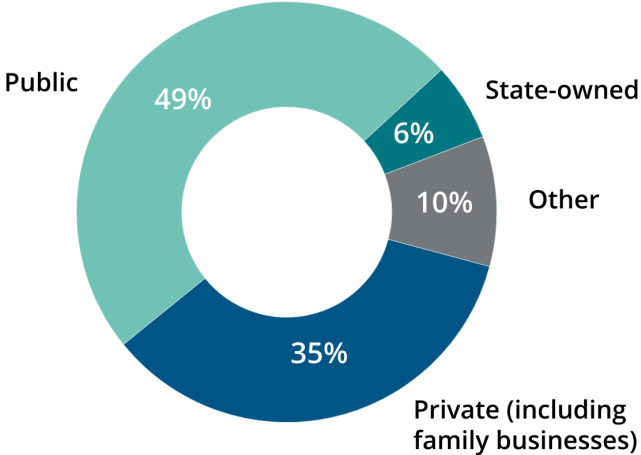


Note: n = 551.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

FIGURE 15

Ownership structure of respondent organizations



Note: n = 551.

Source: The Deloitte Global Boardroom Program's Digital frontier: A technology deficit in the boardroom.

Endnotes

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