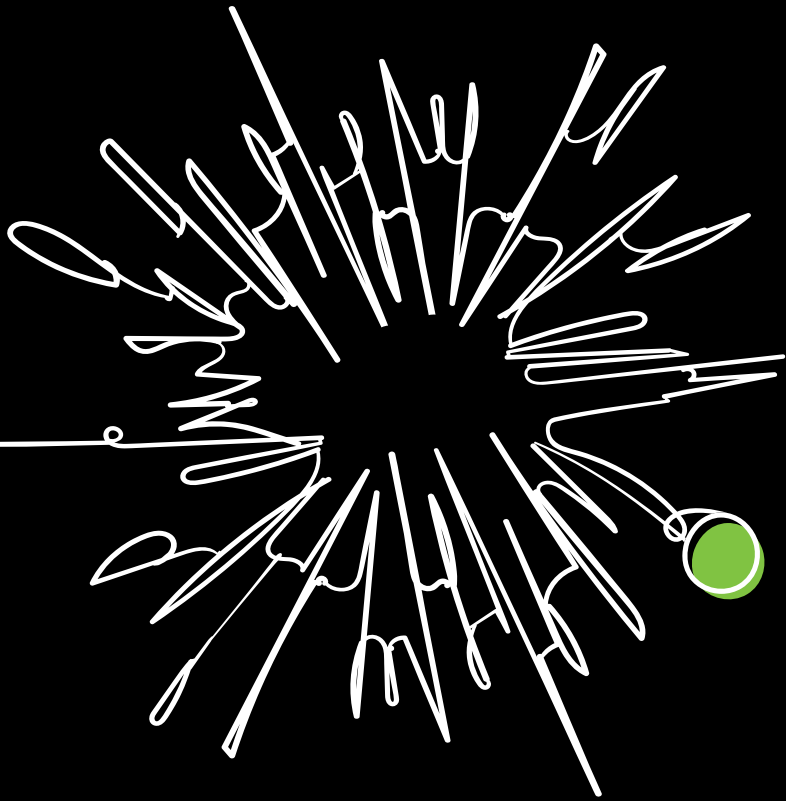


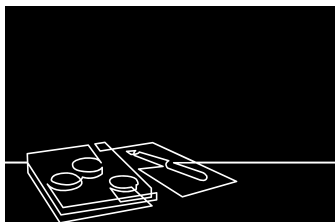
2020 Directors' Alert

Reimagining governance and oversight amid digital disruption

Global Center for Corporate Governance

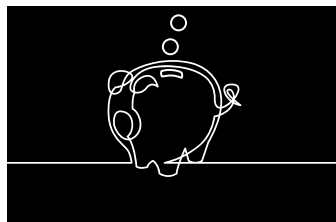


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Can you imagine?

Following the terrorist attacks on September 11, 2001, officials in US security agencies reportedly consulted Hollywood scriptwriters to help develop scenarios of how future terrorist threats might unfold. This was a suggestion that emerged from the *9/11 Commission Report* of 2004, which identified failure of imagination as a limiting factor in US national security policy and noted, "Imagination is not a gift usually associated with bureaucracies."¹

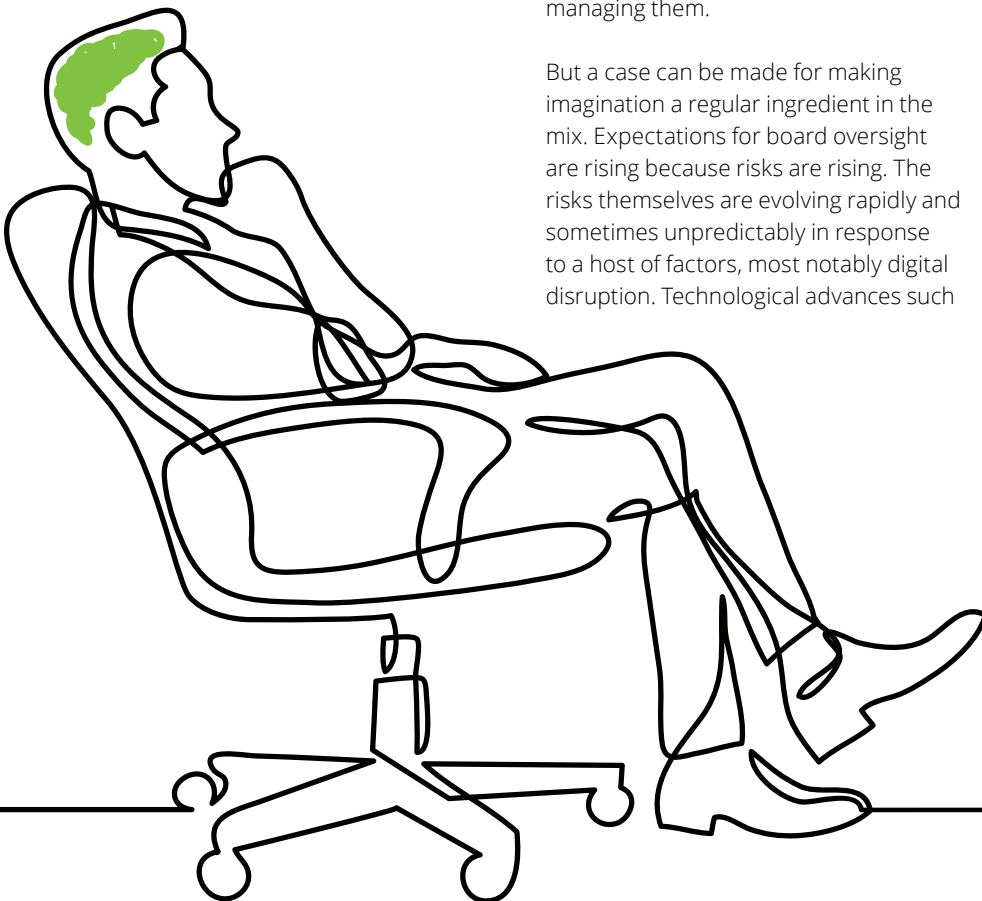
Traditionally, board members were not expected to use their imaginations in overseeing disruption, innovation, and the associated risks. Rather, boards have been expected to bring sharp inquiry, sober judgment, and sound advice to their oversight of organizational risks and the executive team's approach to managing them.

But a case can be made for making imagination a regular ingredient in the mix. Expectations for board oversight are rising because risks are rising. The risks themselves are evolving rapidly and sometimes unpredictably in response to a host of factors, most notably digital disruption. Technological advances such

as automation, blockchain, robotics, and artificial intelligence are changing the business landscape, and 95 percent of board chairs cite disruption as an issue requiring attention in the near future.²

Digital disruption from internal and external forces has risen to the top of board agendas, and we expect this trend to continue. Migration toward digital business models, processes, controls, and reports simply makes business sense. Innovations in cognitive technologies are facilitating that migration. A digitally transformed organization runs largely on data and digitalized processes and systems, and it does much of its business digitally. As a result, boards may find themselves facing previously unimaginable risks.

This edition of *Directors' Alert* aims to stretch your imagination. We will ask you to consider how your organization is incorporating digitalization and cognitive technologies and how the associated risks are assessed. A digitally transformed organization exposes itself to new strategic, ethical, cultural, reputational, reporting, talent, and conduct risks that can be hard to identify, let alone predict, and difficult to mitigate and manage.



Organizational culture can change radically with the adoption of cognitive technologies. Talk of augmented workers and of people being replaced by robots can shake workers' confidence and dash their morale. But history shows that every technological advance creates opportunities for new skills even as it reduces demand for existing ones. Managing culture change becomes a necessity, which management and the board underestimate at their peril.

AI-enabled models present new challenges, mainly stemming from the speed at which they can accomplish tasks when compared with human workers. Unfortunately, AI models can replicate mistakes at a similar rate. Mistakes can result from incorrect design or application of the model, but they can also occur as models learn from new data and generate results that may diverge sharply from management's original intent.

Risk events arising from digital disruption and transformation can readily morph into reputational risks. Public and regulatory scrutiny and the largely unedited, unfiltered, and borderless ecosphere of social media ensure that mistakes rarely go unnoticed. The board must understand how management identifies the reputational risks posed by digitalization, how they are monitored, and how any resulting events are mitigated and managed.

Finance executives and the audit profession have recognized the extent to which financial systems, controls, and reports lend themselves to cognitive technologies. As operational and financial processes have become increasingly digitalized, reporting has been revolutionized. The auditing profession has taken note, and intelligent automation of repetitive manual tasks using cognitive technologies now constitutes the leading edge of audit innovation. Finance functions and auditors are harnessing cognitive technologies to generate greater efficiencies, insights, and value. Boards, and audit committees in particular, need to keep abreast of rapid developments in this area and understand the impact of cognitive technologies on financial reporting.

Although we tend to focus on the disruptive forces that cognitive technologies and intelligent automation have unleashed in the business environment, it would be a mistake to see this development simply as a technology issue. Its impact goes beyond the organization and its stakeholders to influence the entire marketplace, society, and global community.

That is why it is critical for every board member to look beyond the processes and business models management intends to automate. The board also needs to understand the larger implications and work to expand the executive team's focus—and imagination—accordingly. ➤



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A chair's perspective



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The business world has become more complex. The spread of digital technologies is vastly disrupting most industries and changing the way people consume and respond to information. The 24-hour news cycle regularly spotlights the latest corporate shortcoming. And the public's view of business is shifting: More and more, companies are expected to “do no harm” and expand their missions not just to serve shareholders, but to influence the broader world in positive ways.

With the confluence of these trends, corporate accountability and responsibility have never been more important, especially as companies continue on their paths to digital transformation. Advanced technologies like AI, blockchain, and robotics offer an array of opportunities for companies to innovate their own businesses and to create positive change globally.³ However, these technologies also present moral and ethical dilemmas that shift and expand with every advancement. Companies have to contend with cybersecurity, privacy, new government regulations, safety issues, and concerns about what the workforce of the future will look like, to name a few.

Boards today have a duty to ensure their companies have the right culture in place to use data and technology in responsible and ethical ways. This means boards need to be bullish on transformation and open to new ideas. Their companies need an expanded purpose beyond profit, as well as a workforce that is reflective of society and nimble in response to change.

Leadership that's ready for transformation

What it means to be a successful leader has fundamentally changed over the past decade, largely thanks to advances in technology and the impact of the Fourth Industrial Revolution.

Companies and board members must think creatively about how to navigate the opportunities and risks posed by digital technologies. They need to think about what could disrupt their companies and get there first. To lead the market, they need to create new road maps for core business strategies and even consider developing entirely new business models. Good leaders must be open to change and have the long-term foresight to invest significantly in technology to make sure their business is fit for the future.

A long-term purpose

In this age of disruption, companies can no longer focus exclusively on short-term gains and profit. The stakes are too high to take shortcuts and not consider the unintended consequences technology may have on employees, customers, and society at large. This is no simple task, considering that technology continues to change and so do its risks.

A good starting point for boards and C-suite executives is to mandate formal corporate missions and values that reflect a broader societal responsibility and then project them from the very top of the organization. With a more altruistic “north star” in place, the hope is that those in charge of implementing

new technology, from the senior leaders making the investment decisions to the data scientists coding the algorithms, will take a more human-centered approach to their work. However, good intentions alone won't go far enough without meaningful cultural change and action.

A diverse and inclusive workforce

Research has shown that enhancing diversity is not only the right thing to do for your culture, but also leads to better business outcomes. Increased diversity at all levels of the organization, including the board, can lead to smarter decisions. It also contributes to the bottom line, powers innovation, and protects against blind spots, among other benefits. A diverse workforce is critical for companies that are developing technology-based solutions that affect how humans live. The best way to reduce bias in AI algorithms, for example, is to ensure the people working on those algorithms reflect the diversity of society.

Board accountability for diversity and inclusion is vital. The board and management must work together to oversee and assess how diversity and inclusion are woven throughout the organization, addressing cultural issues and ensuring leadership accountability for building a truly inclusive environment.

A culture of lifelong learning

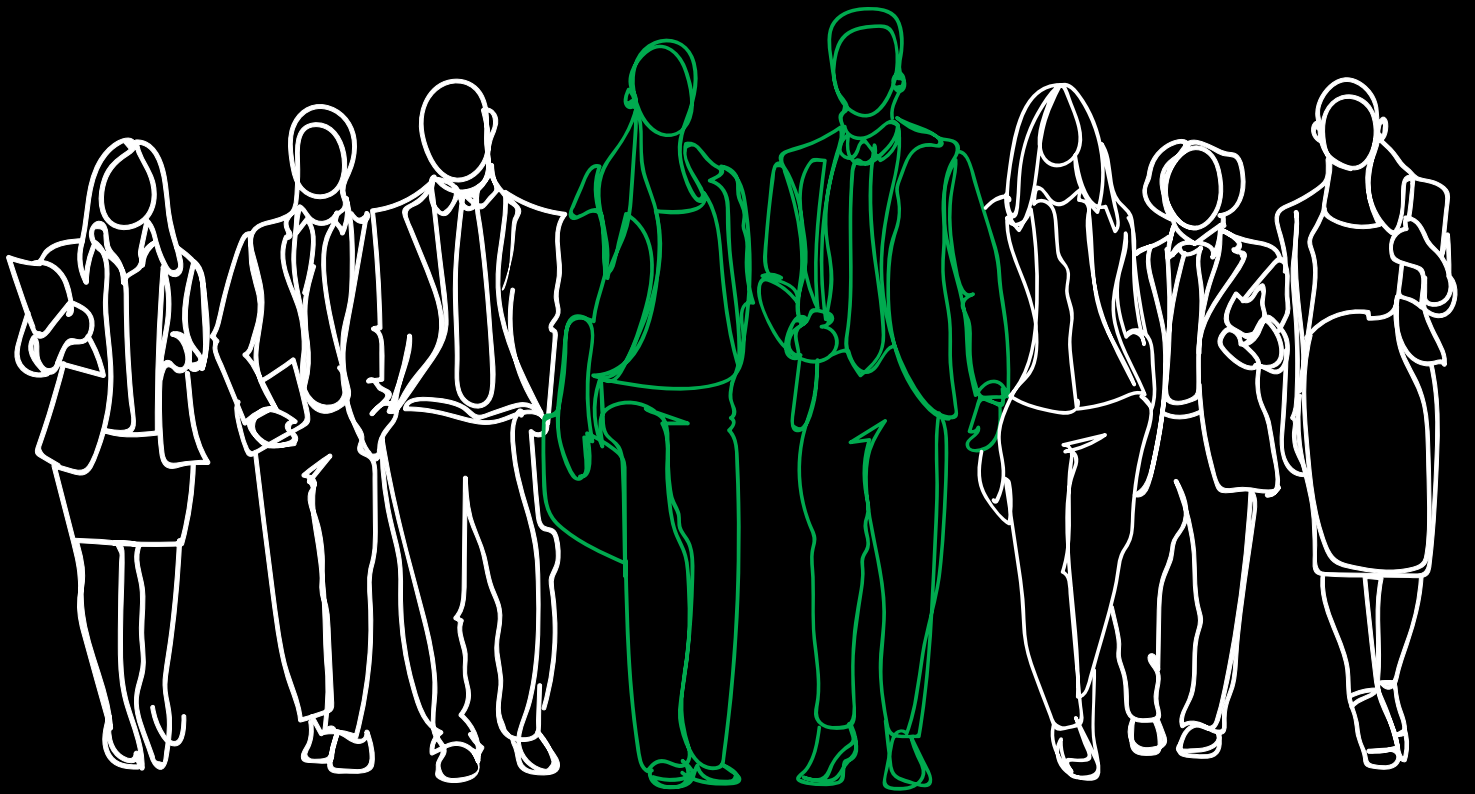
Given the sheer volume of information available today, companies must employ perceptive data analysts and base their decisions around those analytics. However, data analysts and those versed in other coveted STEM fields, such as coding, are often in short supply and high demand. Finding the right talent with the skills needed for the future is one of the greatest challenges in business. Further complicating things, the skills of the future are constantly changing, and even those who have an adequate technology background today will need to update their skills continuously.

In this environment, companies will need to take on expanded responsibility for educating and developing their people. That's why it's vital that boards help companies create a culture of agility and lifelong learning where their people can continue to adapt to new things and thrive. It will also be important for companies to start to hire for characteristics such as curiosity and flexibility, rather than specific experience, to anticipate what's coming in the years ahead.

As we head into the 2020s and beyond, we enter a critical moment for the business community to prepare for the disruption and uncertainty that unquestionably lies ahead. Boards are uniquely positioned to oversee and set their organizations' culture and direction for the long term. And they have a responsibility to do so, for the future of their individual businesses and to play their part in creating a more equal and inclusive society for all.

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Look before leaping (into the future)

Reassessing culture, conduct, and reputation in the digital age

It's funny. A digital decision here, an automation initiative there, and before you know it, the organization you are charged with overseeing has been transformed into something different and maybe unfamiliar. Your entire industry may be transforming. But as a board member with a view from the bridge, you must look ahead to the storms and rogue waves in the virtual ecosphere while confirming that the course stays true.

On the one hand, this calls for looking toward the horizon. On the other, it requires close scrutiny of the course management has chosen. Both entail overseeing risks and clarifying opportunities that may escape management's attention, including those related to culture, conduct, and reputation. Each of these factors can be profoundly influenced by digital transformation or even a single intelligent automation initiative.

Digital transformation means different things to different people, but here we define it as modifying, updating, or entirely changing processes, business models, and organizations by means of digital technology. Increasingly, this includes the use of cognitive technologies. Organizations are projected to spend nearly \$2 trillion on digital transformation in 2022, spurred by a proliferation of new technologies and a fear of disruption by tech-enabled competitors.⁴

At this point, many of the barriers to achieving true digital transformation are related less to technology and more to culture, talent, and strategic execution and risk management. These attributes need to be considered to develop a business

case for adoption—something many organizations are still coming to terms with. The most common barriers to scaling intelligent automation are not regulatory issues or lack of senior-level support or board approval, but challenges related to the business case, talent, capabilities, governance, and culture. These are the findings from a recent Deloitte survey of 166 individuals in digital, change management, technology, risk, and internal audit functions of organizations across EMEA, the Americas, and Asia Pacific.⁵

Additional Deloitte research indicates that organizations whose boards actively engage with technology issues typically perform better financially.⁶ Boards can help catapult businesses to higher levels by overseeing management's efforts to use technology in ways that benefit the organization.

The impact on the larger enterprise can be significant, and the prospect of overseeing culture, conduct, and reputation risks can drive many board members out of their comfort zone, even to the point of minimizing the issue or leaving it to others. That's understandable. After all, relatively few of today's leading organizations began as digital businesses, yet most are becoming so. In digital transformation, those organizations are experiencing disorienting rates of change amid an explosion of data, technologies, opportunities, and risks. Even boards of organizations founded as digital businesses have difficulty keeping up with the pace of change.



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During digital transformation, an organization may move away from analog processes, for example, by changing the delivery method of physical goods from humans to drones or moving from one computerized process to another, such as offering payment by smartphone at point-of-purchase locations.

Although the movement from analog to digital may seem more radical than movement from a manual process to an automated process, both can be transformative for organizations. For example, payment by smartphone can eliminate the need for a credit card, confer security benefits, and open doors to new intermediaries. Mobile capabilities can also enable payments to come from new sources, such as cryptocurrency, as well as from traditional bank accounts. That's transformative for customers, retailers, credit card issuers, banks, and cryptocurrency providers. It's also disruptive, because it influences business models, processes, and human behavior.

Rapid, significant impact leads to disruption and change—abrupt, sharp, unpredictable breaks with existing patterns and practices. Digital technologies, including the Internet, social media, scanning and imaging capabilities, and voice generation and recognition have already altered industries, as well as our cultural and political landscape. Cognitive technologies such as artificial intelligence have only begun to transform business and society.

In an environment of ongoing disruption, senior executives face seemingly discrete but related decisions:

- Which features of our business model and processes can be digitalized and to what extent?
- Which digital technologies should we consider? Which ones have proven most useful and reliable?
- What is the best use of our funds? Which model for building, buying, or accessing the needed technologies and skills is best for our organization?
- What is the potential impact of digital transformation on our employees, customers, investors, and other stakeholders? Where are the best opportunities for our organization? What are the risks, and how can we monitor, mitigate, and manage them?
- What does an executive team need from the board to manage digital transformation? How can board members provide the guidance and oversight stakeholders need?

These decisions seem discrete because digital transformation often arrives through individual

initiatives that apply technology to the business. They are related because digital technologies foster connectivity and interaction. That means the initiatives must be aligned strategically for them to work together for the benefit of stakeholders. It also means that risks will arise from unexpected areas and may generate equally unexpected ripple effects.

To provide proper governance and oversight, the board must focus not only on discrete initiatives but also on the strategic intent and collective impact of those initiatives. Each initiative will pose its own benefits and risks; together, they can have a far greater cumulative effect.

When dealing with something truly transformative, it's often best to assess the big picture: the impact of digital transformation on organizational culture, conduct, and reputation. Culture centers on how the organization uses digital technologies and its values, ethics, goals, and incentives for that use. Conduct concerns how stakeholders behave when influenced by digital technologies. Reputation involves the impact on brand and the evolving views of stakeholders in an organization undergoing digital transformation.

Organizational culture, conduct, and reputation are critical risks requiring strong board oversight. If management fails to manage culture, conduct, and reputation risks well, other risks may become secondary, because these elements can undermine the organization's ability to pursue and implement its strategy.

Gauging the stakes and the risks

Organizational leaders benefit by thinking in terms of the potential upside and downside impacts of digital transformation on the organization's strategy, culture, conduct, and reputation. Achieving powerful results requires organizations to coordinate their cultures, people, structure, and tasks and to keep them in alignment as technology evolves. A Deloitte/MIT Sloan Management Review survey found that 80 percent of respondents who identified their organizations as "digitally maturing" credited a clear and coherent organization-wide strategy.⁷ Among organizations characterized as "least mature," only 15 percent had adopted an articulate strategy.

The strategic stakes

The strategic questions largely boil down to this: Do we want our organization to be a disruptor or the disrupted? The choice may not seem that stark, but it often is because competitors who have adopted digital business models have already proven highly disruptive

to incumbents in many industries. Does management have a history of embracing powerful trends? Digital technologies level the playing field in ways that favor organizations with relatively few resources and those unencumbered by legacy business models.

Given the disruptor-or-disrupted question, management must identify where to apply cognitive technologies to best advance the organization toward its strategic goals. They must also locate threats from innovative or digitally enabled competitors—those who usually aim to exploit underserved markets or to improve inefficient customer-facing or supply-chain processes.

In a world of such rapid technological change, it can be easy to focus on the technology. But the business need for transformation should be the primary driver. Once real requirements have been identified, efforts should turn to creating well-researched, compelling business cases and locating employees with the skills to fulfill those needs. Effective leaders will formulate a clear vision of the transformation and communicate it throughout the organization on an ongoing basis. Conversations about strategy present a natural opportunity for the board and management to discuss the culture needed for implementation.

The cultural stakes

Most boards understand that an organization needs an optimal culture to achieve certain goals. Yet most are less informed about how to define that culture, identify what needs to improve, and oversee management's efforts to bring about change. Many also underestimate the impact digitalization can have on the culture. For example, intelligent automation can undermine morale as employees fear loss of autonomy or their jobs. It can leave an organization short of the skills needed to sustain success. It can raise new ethical questions, which management may not be prepared to answer.

Culture can also advance or inhibit digital transformation. The consequences of failing to align the initiative's goals with organizational values can range from slow adoption of digital technologies to loss of market competitiveness, productivity, and revenue. To pave the way for an effective digital transformation and cultural alignment, efforts should span human resources, risk, finance, accounting, and other functions, not only the areas that are already strong users of technology. Cultural alignment should extend to the extended enterprise partners and temporary workers who may have limited understanding of the organization's strategy.

A look at the leading edge

A Deloitte survey of more than 500 executives across a range of industries found that 58 percent of organizations had started to use robotic process automation (RPA) and artificial intelligence at some level by the spring of 2019.⁸ Among those using intelligent automation, 38 percent are in the piloting stage (1 to 10 automations), 12 percent are in the implementation stage (11 to 50 automations), and eight percent are automating at scale (51 or more automations). That eight percent is double the four percent that were scaling in 2018.

Our survey found that organizations that scale their efforts successfully tend to exhibit six characteristics:

- **An enterprise-wide strategy** for intelligent automation that leads to higher returns in workforce capacity, cost reduction, and revenues.
- **Combined RPA and AI initiatives**, leading to an average increase in revenue of 9 percent, as opposed to 3 percent in organizations that do not combine the technologies.
- **Supportive IT functions** with the required technology, infrastructure, and cybersecurity resources in place, enabling a 21 percent reduction in costs as compared with 13 percent in organizations that lack this characteristic.
- **Mature processes with clear definitions and standards**, which produce an average increase in back-office workforce capacity of 19 percent compared with 12 percent in organizations that do not have these processes.
- **A clear understanding of how to capture value**, leading to an average cost reduction of 21 percent versus 15 percent in organizations with less understanding.
- **Radical simplification of processes** driven by a need for cost reduction, which is reported by 73 percent of scaling organizations versus 61 percent of those in the pilot stage.

The board should provide guidance in many of these areas, particularly strategy, support functions, process maturity, and understanding of value capture, and ask questions that challenge management's assumptions. Successful digital transformation also depends on management's ability to maintain a positive, productive culture and manage the conduct and reputation risks that accompany these initiatives. This implies a need for continuous oversight at the board level, with ongoing reporting from management to the board on the goals, expected outcomes and progress of the digital transformation and any modifications to the strategy.

Boards and CEOs can differ on reputation risk

A 2018 Deloitte survey of 200 CEOs and 200 board members⁹ found that boards tend to be more concerned about reputation risk than CEOs are. Results included the following:

- Boards and CEOs are closely aligned on their perception of security risks, crisis response capabilities, and extended enterprise risks as potential sources of reputation risk.
- Boards have more concerns than CEOs about product quality and safety, ethics and integrity, and employee and executive misconduct as potential sources of reputation risk.
- In the past year, only half of the board members and CEOs surveyed had discussed the organization's reputation or how to address reputation risks, or how to enhance reputation.
- About half of the organizations surveyed lacked programs, such as formal risk sensing, to identify reputation risk events; more than 50 percent did not have plans to develop or acquire tools to monitor and manage these risks.

Boards are in a strong position to intensify management's focus on reputation risk as part of the broader conversation about culture and conduct. The board should also learn about, and advise management on, formal risk-sensing programs that monitor and manage reputation in social media and across the digital ecosystem.

If management can build a culture that is more adaptable to change, implementation of new technology and business processes can proceed more smoothly. Those are among the conclusions of a study by Deloitte/MIT Sloan Management Review based on responses from more than 16,000 people in 157 countries and 28 industries.¹⁰ Nearly 60 percent of respondents from digitally maturing organizations noted that their organizations drive digital adoption and engagement by cultivating values such as risk-taking, collaboration, agility, and continuous learning.

Digital transformation calls for a new mindset, typically one that is more innovative, flexible, collaborative, and tolerant of failure than the current one. It will also be less amenable to command-and-control management. It will favor experimental, agile methods of development over highly planned, linear, inflexible waterfall approaches. The required mindset will drive teamwork across multiple functions and enable rapid response to changing conditions.

In an environment undergoing digital transformation, leadership entails asking powerful questions and fostering continuous learning. The executive team will need to lead cultural change by communicating openly and consistently, modeling the desired behavior, and using formal change management methods. Failure to develop the right culture poses its own significant risk. Management must appreciate how critical the right culture is to success and clearly define its goals. Management must also appreciate how transformative cognitive technology is for most organizations. It's not about the technology or even the process; it's about new ways of working, new skills, and new ways of thinking.

The board must understand how management should approach these tasks and track how the executive team manages the cultural transition. For example, rather than attempt to bring about enterprise-wide digital transformation all at once, it's usually best to start with small projects, iterate rapidly, learn from each iteration, build

the culture's agility muscle as individuals accommodate and absorb each change and then launch broader initiatives.

During those early efforts and throughout the transformation, pulse checks on the culture can provide a window to management and the board on how technology affects people, what accelerates change, and which skills are needed.

The conduct stakes

Conduct risk generally refers to unethical business practices and behaviors that harm stakeholders or the community, society, or financial system. It encompasses the risk of fraud, collusion, insider trading, misrepresentations to stakeholders, and inaccurate or dishonest financial reporting. Conduct risk can emanate from a subculture within the organization or from factors such as bad hiring decisions or poorly designed incentives.

Although heightened conduct risk does not arise directly from digital technologies, it poses new opportunities for bad actors. For example, employees could design a bot to bypass controls for their own enrichment or to exhibit sexism, racism, or other biases. Intelligent automation initiatives must be well understood and well controlled, and the models must be monitored properly. The board needs to receive adequate assurance that this oversight is, in fact, occurring.

Use of cognitive technologies to monitor conduct also poses risks. Some financial institutions now monitor employee emails, texts, and social media accounts, then use analytics to identify patterns that indicate potential conduct risks with respect to people, products, exposures, and locations. One organization linked conduct risk with increased use of sports and war metaphors in emails and texts. This kind of monitoring must be conducted with care. The board should be concerned with fairness; it should confirm that appropriate disclosures are made to those being monitored, and it should take guidance from ethics and legal professionals. Overreliance on data in monitoring conduct can also encourage people to "work to the numbers" rather than align with organizational values.

In addition to obtaining information on conduct risk, the board needs to maintain an ongoing conversation with management about culture. Management and the board should foster the desired culture by discussing values, telling stories, and celebrating ethical wins as well as marketplace gains. Leaders reinforce values by modeling behavior such as sharing information, collaborating, experimenting, tolerating failure, providing appropriate rewards, and putting employees and customers first.

The reputational stakes

New technologies have a significant potential to augment, disrupt, or replace business models. The risks brought by new technologies are likely to have a broad impact across the enterprise, and it is critical that businesses reflect on whether their governance models are fit for the future and flexible enough to navigate the rapid pace of change. This includes having a firm grasp on where new risk areas are, who is responsible, and how they are managed, monitored, and mitigated.

Reputation risks arise from operational, financial, technological, cyber, data privacy, regulatory, legal, sustainability, third-party, and other risk events that become public knowledge, particularly when management's response is perceived to be inadequate. Reputation risk can harm the organization's brand, market value, license to operate, employee morale, and recruitment efforts.

Given intense news coverage of business, distrust of large institutions, and the realities of social media, management must be proactive in addressing reputation risks. Even with cognitive technologies still in the early stages of adoption, several organizations have seen their brands harmed by events related to chatbots, biased algorithms used in hiring, and digital employee scheduling.

If AI models can use biased data to "learn" the wrong things or are programmed to do so, they can create reputational risks as serious as those posed by rogue employees. Worse, they have the potential

to do more damage in less time. That risk stands apart from reputation risks arising from poor communication about intelligent automation and any negative effects on employee morale.

Given the broad impact of digital technology in all areas of business, management and boards need a clear view of where responsibility and accountability for digital risk reside. In most organizations, it is in the IT, strategy, or marketing functions, or it is not well defined: 33 percent of participants in Deloitte's global survey indicated that digital risk is the responsibility of the chief information officer. It was the most frequent response. Twelve percent suggested that responsibility is not clearly defined. Approximately eight percent of respondents indicated that digital issues are handled by the chief technology officer, the chief executive officer, or the chief risk officer.¹¹

The broad impact of digital transformation creates links and dependencies between risk owners across the business that can inhibit risk remediation. Management and risk teams need to make sure that governance models put the right people at the table with the right information at the right time, supported by a culture of transparency and collaboration.

Significant culture, conduct, and reputation risks arise from employing intelligent automation at scale. But even limited use of cognitive technologies can create issues resulting from the poor choice of use cases, insufficient controls, lack of communication, or other mismanaged aspects of model development or deployment. The board must be prepared to understand and oversee these risks.

Steps for directors to take

The following are suggestions to help boards oversee the culture, conduct, and reputation risks of digital transformation and intelligent automation:

- **Discuss the strategic goals and rationale of the transformation.**

Given the board's role in overseeing and approving strategy, directors should

understand how management intends to use cognitive technologies, as well as their anticipated impact and risks. The board should review management's intelligent automation plans for alignment with the strategy. These plans may focus on reducing costs, improving processes, increasing market share, entering new markets, developing new products or services, meeting competitive threats, or other strategic goals. The board should also ascertain the scope and timing of management's intelligent automation plans. If management does not intend to use cognitive technologies to advance the strategy, the board should understand why.

- **Assist in aligning digital initiatives with the organization's principles.** Senior executives, under board oversight, are responsible for the ethical and fair use of cognitive technologies, particularly in AI decision-making processes. To set the context, the executive team and board should define principles for the use of cognitive technologies. This does not require a deep understanding of how the models work; it does require knowledge of which processes they will be applied to, who is affected by those processes, and the potential outcomes. The clearer the principles and policies, the better. For example, if an ethics committee has no visibility and developers have no mandate to make in-the-moment design choices based on fairness, it is difficult for organizations to confirm that ethics are being operationalized.
- **Gauge the cultural impacts and how they will be addressed.** The board should understand the cultural changes that cognitive intelligence brings to, and demands from, the organization. Learn how others have been affected, including peers and organizations in other industries. The board should assist the executive team in defining the culture needed to deliver on the scope and timing management envisions. This means defining cultural attributes and developing a plan to realize them. It is also important to gauge management's ability to lead cultural change and ascertain what

resources may be needed to support it. Be wary of executives who minimize the importance of culture in digital transformation or who believe that technology can solve strategic or organizational problems.

- **Review and monitor the change management plan.**

Central to culture change is a plan to coordinate management's verbal and behavioral messaging and to make any required adjustments to KPIs and compensation plans. Before-and-after cultural assessments can be extremely useful. Culture and culture change are nebulous concepts, so the more objective and concrete plans and metrics are, the more information the board will have to evaluate management's performance. As noted in "The rise of the smart machine: Rethinking risk governance around intelligent automation" in this issue of *Directors' Alert*, consider establishing a center of excellence to provide resources and coordinate digital transformation.

- **Evaluate applications that monitor conduct.**

Using cognitive technologies to monitor conduct presents ethical issues. For example, it is now possible to develop an "ethical score" for an employee or customer based on data from internal systems, surveys, credit reports, and other sources. This score could be used to gauge a person's inclination toward misconduct and signal a need to intervene with guidance, training, or risk limits for that person. But these scores can be inaccurate, unfair, or invasive of privacy. The situation may be different if the technology monitors a group, with notification and consent, rather than an individual, but the issue remains cloudy. Recent data privacy and misuse scandals have drawn attention to how organizations store, manage, and use employee and customer data. With input from legal or ethics personnel, management must decide what to monitor and how to respect privacy and individual rights, and the board must oversee those efforts.

- **Understand and monitor reputational impact.**

Because boards tend to be more sensitive to reputational impact than management,¹² they are in a strong position to lead discussions of how to improve an organization's oversight of reputation risk. Executives should be proactive in developing strategies for managing and enhancing reputation. The ability to scan for risks and design dynamic safeguards will be essential in a world where risks continually evolve. Efforts should include launching positive social media programs, cultivating individuals in primary stakeholder groups, simulated exercises and scenario planning with interdisciplinary experts,

developing networks of supporters who believe in the organization's mission and purpose, and monitoring trends in sentiment among employees, customers, and other stakeholders. A formal risk-sensing program can also provide early warning of positive and negative trends.

- **Obtain adequate assurance on these risks.** Risks related to culture, conduct, and reputation can escape the attention of second-line risk management functions and internal auditors. As management develops, launches, and maintains technologies such as RPA and AI, it is essential that the risk committee, audit committee, and full board receive adequate assurance that all risks are identified and monitored and that controls are in place and operating effectively. Each of these risks should, at a minimum, be on the internal auditors' rotational plan, with more frequent reviews as automation scales. When an organization undergoes digital transformation, its board should confirm that the risks associated with change management have been identified and addressed and that proper resources and accountabilities are in place. These risks should be considered explicitly in assessments of the organization's risk appetite, profile, and tolerance. By designing mechanisms to remediate risks swiftly, organizations can preserve trust and build resilience in responding to unexpected points of failure.

- **Prepare the board for the digital age.** Unless they have an IT background, most directors lack expertise and experience with cognitive technology. This can put the board at a disadvantage in overseeing digital transformation. The board should be able to provide credible challenges to recommendations from management, which obligates members to stay informed. Boards should be diligent in identifying and addressing gaps in their knowledge of technology. Chief information and technology officers and other internal or external experts can help educate the board. Those that lack cognitive technology skills should tap into the expertise needed to illuminate the challenges and opportunities that cognitive technologies and digital transformation present. They should also cultivate new members who can bring that understanding to the board, including former CTOs or CIOs with exposure to cognitive technologies and executives from successful digital businesses.

As the ultimate overseers of the organization, the board must be aware of the potential for cognitive technologies to disrupt culture, shape conduct, and affect reputation. Those technologies can either accelerate and enhance or distort and derail an organization's strategy.

The board should insist on clarity when discussing culture, conduct, and reputation risks with management. Ascertain that management is clear about these risks and intentional in identifying and addressing them. The board also needs to confirm that management is doing what is needed to realize the upside potential of developing a supportive culture, ethical conduct, and a sound reputation as the organization embarks on intelligent automation.

As the ultimate overseers of the organization, the board must be aware of the potential for cognitive technologies to disrupt culture, shape conduct, and affect reputation.

Questions for directors to ask

- What digital disruptions in the marketplace could influence the organization's business? How does management view the role of digital technologies in its strategy? How has management evaluated the use of these technologies in the context of our strategic goals?
- Where is the organization with regard to cognitive technologies? How many automations have we developed? How many have we launched? What have we learned so far, and how are we applying those lessons? How will the organization measure success?
- What kind of culture do we need to succeed in the digital age? How can we foster technology-enabled innovation? Which cultural characteristics do we have or lack, and in which parts of the organization? What is management's plan for establishing the type of culture needed for digital transformation?
- How has management identified the conduct risks presented by cognitive technologies? How does the organization monitor and manage those risks?
- Do we use technology to monitor or measure conduct risks in our organization or among customers and extended enterprise partners? How comfortable are we that our methods are ethical, legal, and appropriate?
- How does our organization's reputation compare with those of our peers? Do we monitor our reputation through a formal risk-sensing program, particularly among key stakeholders and in social media? Is management proactive in managing reputation, and if so, how and with what results?
- How is the board informed about culture, conduct, and reputation risks related to digital technologies? Have we defined these risks? Do we have policies and procedures for reporting these risks and related events to the board?
- Do we have sufficient technology expertise? What characteristics and experience should we seek as we fill openings on our board? How can we improve our knowledge of digital technologies and their impact?

A conversation with Hiroko Ota



Hiroko Ota chairs the board of Mizuho Financial Group and is a non-executive director on the boards of Panasonic and JXTG Holdings.

Now a senior professor at the National Graduate Institute for Policy Studies in Japan, where she was vice president from 2009 to 2011, Ota specializes in public finance policy. She was previously an associate professor at Saitama University.

Ota was the Director, Deputy Director General, and Director General for economic research in Japan's Cabinet Office from 2002 to 2005 and the Minister of State for economic and fiscal policy from 2006 to 2008. She also currently serves as a member of the Tax Commission and chaired the Regulatory Reform Promotion Council.

Ota graduated from Hitotsubashi University in 1976. She's written many books, including *Reform Reverse Run*, published by Nikkei.

Q. What major business challenges are digitalization and technological disruption creating?

A. We have entered a new phase of digitalization, with technologies and business models both changing rapidly to the point of disruptive transformation. In Japan, this can help us deal with our aging society and shortage of labor, as it can in other economies with those issues. The biggest challenge for us is making structural reforms quickly enough. I worked on regulatory reforms in government, and that process has been slow to keep up with technological change. Many major companies also have trouble matching the speed of technological advances. So while there is tremendous opportunity, there are also major challenges.

Q. How are companies addressing these challenges?

A. Many Japanese companies have trouble just trying something first, allowing failure, then trying again. But some companies are learning. For example, they are creating their own so-called *dejima* that allows for trial and error—and can serve as a hub for innovation. This term comes from the *Dejima*, or “exit island,” which was an autonomous Dutch trading post kept apart from Japanese society during the Edo period. I serve as the vice chairperson of the Japan Productivity Center, which recently released a survey that found that 23 percent of Japanese companies have created a *dejima*. This enables employees to experience failure. Japanese company presidents often say, “take on challenges” or “don’t be afraid of failure,” but then failure ends up being a negative factor on performance evaluations. So, companies are working to help employees experience failure and learn to iterate.



Q. What can boards do to help these kinds of efforts succeed?

A. The big challenge is how to change the organizational culture while trying things like the *dejima*, because they become meaningless if they end up as isolated islands. So, the board needs to discuss human resource issues, such as evaluations, management, and policies for employees, something they do not usually do. At the company where I serve as an outside director, reforming HR management is a major pillar. For example, the system made it hard for employees to improve their evaluations once they had fallen, but the company has adopted a multitrack system that makes it easier to address those situations. The board should help management create a culture that allows failure, which is necessary for innovation to occur.

Q. How else can the board contribute to organizational culture in this area?

A. Every company and industry has its own culture, and while that can be a strength, it can also be a liability. That's why directors who know other industries and who can view the culture objectively can help improve decision making. For example, they can point out problems of bureaucracy or an insular focus. A Japan Productivity Center survey showed that 66 percent of Japanese companies found it difficult to initiate disruptive innovation, and the main reason was management trying to avoid taking risks. It also identified factors such as too much bureaucracy or a culture that does not allow for failure. Senior executives at Japanese companies have a strong sense of crisis and can act rapidly, but when you get to the middle-management level, you see risk hedging and *sontaku*, which loosely means "following unspoken orders."

Q. Shouldn't senior executives set the tone at the top regarding culture for those middle managers?

A. Yes, they should. When I talk to people at innovative companies, the most important capabilities—even more than technology—are laying the internal political groundwork, being persuasive, and getting people to act. The changes to HR that I mentioned, such as taking new approaches to evaluations, management, and policies for employees, are also critical. Senior executives need to demonstrate to middle management that innovation should be rewarded in performance evaluations even if it fails, as long as the reasons and intention of the innovation were sound.

Q. What other challenges are companies facing when it comes to digital disruption?

A. Globally, companies are struggling to change their business structures along two lines. One is to create new businesses and the other is to rethink existing businesses. Often, existing businesses will decline before the company launches new businesses, so executives need to create new businesses quickly. But of course, outside directors cannot take charge of the growth strategy. They can provide ideas, but not plan the actual strategy. However, there can be strong resistance to rethinking the existing business and to scaling down businesses and shifting resources elsewhere. This isn't so much opposition to developing new business as reluctance to withdraw from an existing business can be strong. Outside directors can help management recognize that.

Q. Would you give us an example of that?

A. For manufacturing, the main pillars for new income will be software, the Internet of Things, and movement to a more digital business model. For example, some construction companies are moving toward smart construction, and the question is how to deliver solutions and develop recurring business. It's not simply a matter of dropping this business and fostering that one; rather, it's a matter of restructuring the basis for profitability. That is, the business model and the strategy. And the board, including outside directors, is responsible for advising management on the business model and strategy.

Q. Let's now turn to risk. How can the board continue to be effective in its risk oversight role in this changing landscape?

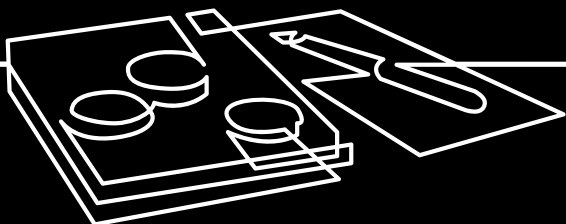
A. I think a risk appetite framework is effective not only for financial institutions but also for manufacturing and other companies. In a risk appetite framework, you first decide the number and type of risks to take to achieve a management goal. Then you link that framework to the annual business plan and financial plan to build a system to support internal control. It's also useful to set maximum and minimum limits for risk. Especially in a financial institution, there should be a minimum level of risk you must take, and follow-up to see that management is actually doing so. As a board, we often discuss the overall approach to risk and the basic policy for the framework, then help decide on the maximum and minimum. We check repeatedly to be sure that the risks the organization needs to take are being taken.

Q. But are senior executive teams and boards actually quantifying or visualizing business risks?

A. A few are, but nonfinancial companies are now creating risk committees, which are geared toward operational risks, cyber risk, risks to the business strategy, and geopolitical issues like the situation between the US and China. So, they are making these kinds of risks more explicit. Outside directors are important, because a board member who comes to a manufacturer with a background in financial services sees the cost of capital and risk-based decision-making as part of the conversation. It can be hard for some companies to develop a risk-based business portfolio, but when outside directors see that as the norm, they can bring that to the boardroom discussion.

Q. The Corporate Governance Code was introduced in Japan in 2015 and revised in 2018, changing corporate governance in various areas. Yet few executives talk about their expectations of outside directors. Can you comment on that?

A. Japanese companies have undergone real change. While some say it is only in appearance, putting those governance systems in place is important. It means that outside directors are involved now, and once they are brought in, they are there to stay. That creates a need for executive accountability, and there can be tension when executives don't know what questions outside directors will raise. Overall, it is important to have tension as well as trust between management and the board. Trust is necessary, but without tension, outside directors will be unable to fulfill their role.



Overall, it is important to have tension as well as trust between management and the board. Trust is necessary, but without tension, outside directors will be unable to fulfill their role.

Q. What will be the longer-term impact of digital technology on business?

- A. The changes in digital technology are so large and happening so fast that it is difficult to predict their long-term effects. It has been 10 years since the emergence of the smartphone. The level of change during that 10 years has been immense. Now we must look to the long term, but also incorporate mechanisms for changing quickly. However, many companies have, to date, simply customized the changes in technology to match their business rather than changing themselves.

Q. What would be an example of that?

- A. In the shift toward digital technology in the late 1990s, Japan invested in technology, but it did not increase productivity. That is because they often left inefficient processes untouched, preferring to customize the software to match existing businesses. This mentality persists, and the board needs to verify that the company has an internal mechanism for change. Do they have a structure that can change, and a methodology for change? Often, the extent to which companies can bring in outside people is a major factor. For example, a company whose board I serve on brought in leaders from other firms and that changed things. The company also brought in new leadership for its own *dejima*. That doesn't mean everything has changed, but I think that is a good start.

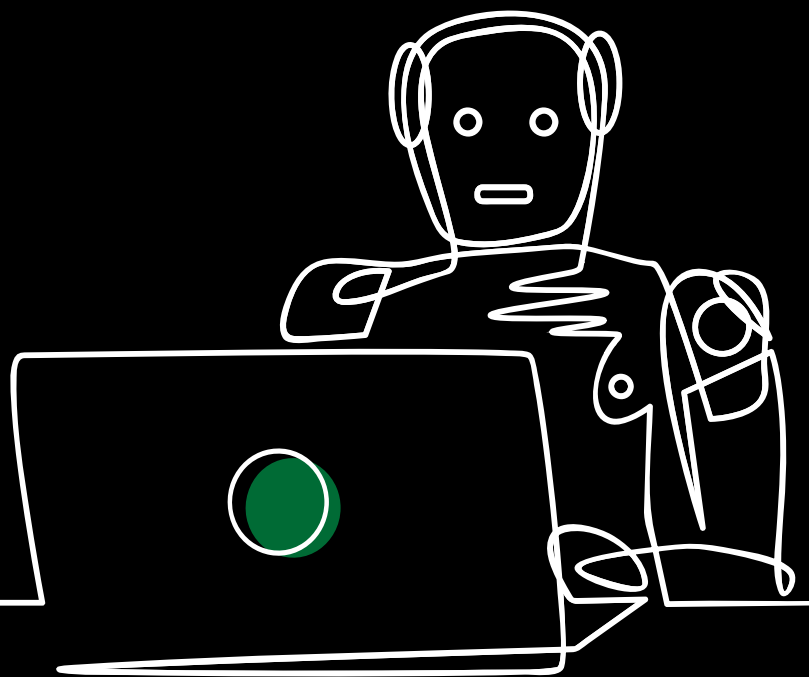
A lack of fluidity in a company will inhibit innovation. Change isn't easy—you need to leverage your strengths and be willing to try things outside your comfort zone. If the structure is too fixed, it will be difficult to create revolutionary

ideas. You need to gather good people from the outside, but first you need to develop an understanding within the company that exploration of knowledge takes time and often fails. A board has to look at that sort of thing, and at the way the company needs to change, from a perspective that differs from that of the executives.

Q. Can outside directors really bring about that viewpoint?

- A. Yes, and senior executives understand that. But there is often resistance. Strongly resistant companies tend to discount the value of outside viewpoints, and that's something the board needs to look at closely. There is real value in having outside directors look at the company's situation and evaluate whether it is acceptable from that objective viewpoint. Although you may understand what needs to be done as an outside director or even as a board, it can still be difficult for management to make the needed moves, even if you aren't going all the way to the level of disruptive transformation.

Finally, I would say that you have to create a culture of diversity on the board so that many kinds of people can contribute. You have to get used to the idea that you will have people on the board who will sometimes say extremely surprising things. And that is fine, because you won't see innovation from a group of people all dancing to the same beat.



The rise of the smart machine

Rethinking risk governance around intelligent automation

Renowned physicist Stephen Hawking said, "Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks." Given his reference to "the last," he was no doubt referring to artificial intelligence of the kind portrayed in the 1991 film Terminator 2, in which machines become self-aware and decide to obliterate the human race.

That's well beyond concerns about being overheard by our digital assistants and targeted for pop-up ads. But when Hawking advised us to learn to avoid the risks, he was issuing a warning, and not even he understood all the risks AI might hold. Yet boards are responsible for overseeing those risks, regardless of the uncertainty.

AI refers to the intelligence of computer-enabled models, as differentiated from

human intelligence. It is artificial in that it is man-made; it is intelligent in that it learns from experience. When AI programs can beat world champions at strategic games such as chess, they clearly possess the type of intelligence needed to discern patterns, anticipate outcomes, and make appropriate decisions. Yet chess has rules that define actions (moves) and structures (boundaries), as well as beginnings, middles, and ends.

Business processes differ sharply from games in that they pose significant risks to the organization and its stakeholders. These risks must be identified, understood, monitored, and managed by the executive team under the oversight of the board. AI and the intelligent automation it enables are new to most boards and encompass a range of technologies, starting with robotic process automation.

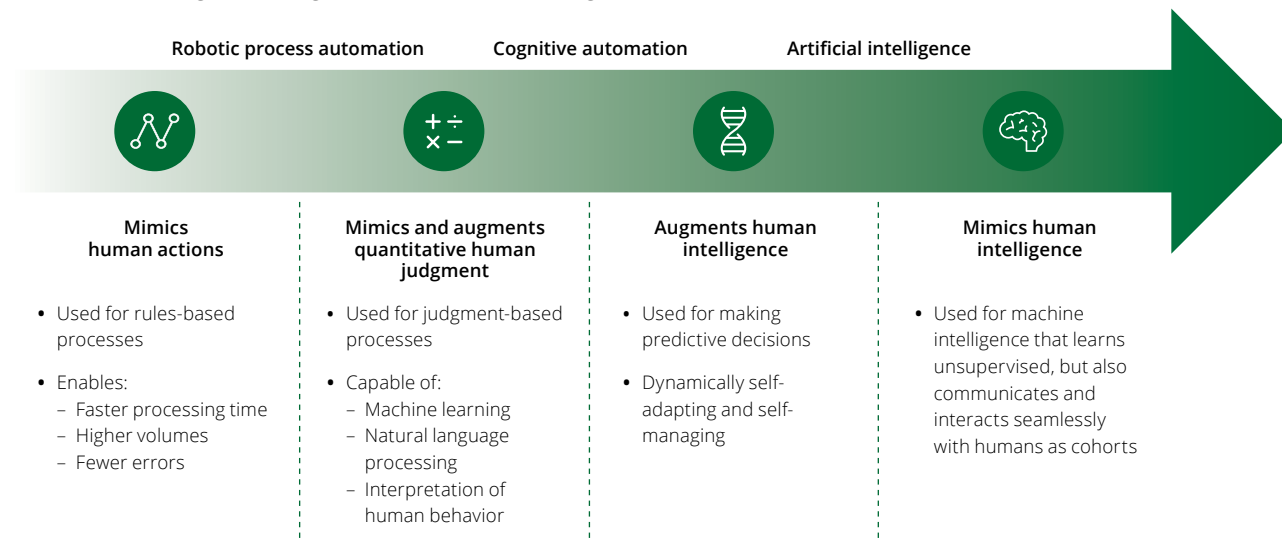


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Chart 1 – The range of intelligent automation technologies



Source: Smart cyber: How AI can help manage cyber risk, 2019, Deloitte Touche Tohmatsu Limited

Why your organization is, or will be, using AI:

- **Increased speed and accuracy:** Models powered by AI can perform tasks exponentially faster than human workers and perform them more accurately.
- **Reduced costs:** As the cost of AI capabilities decreases and the technology becomes more user-friendly, intelligent automation becomes more economical.
- **Rich data:** The availability of extensive internal and external data, together with advances in unstructured data analytics, have dramatically expanded the applicability of AI.
- **Predictive capabilities:** As AI models gain experience, they can generate their own hypotheses, predict risks, and recommend ways to address them.
- **Risk-driven value creation:** Mature risk management processes have become a strong driver of business value and competitive advantage in most industries; the insights AI can provide allows management to make more informed strategic decisions and better tactical moves.

Why board oversight is challenging:

- **Rapid adoption in the business:** AI innovations often originate in the business, which typically lacks the risk awareness and technical expertise of a proficient IT function. Without central monitoring, management and the board may not even be aware of all AI applications the organization uses.
- **Evolving technologies:** AI technologies are evolving rapidly, and their risks can be hard to predict. Although off-the-shelf vendor solutions may be convenient, the organization typically assumes the risk of their deployment.
- **New exposures:** As AI models learn from new data and outcomes, they can shift in ways that can be difficult to track and audit. It can also make them hard to explain to regulators. For example, some organizations have experienced cases where loan applicants and job candidates have been subject to racial and gender bias after models learned in ways that were unintended by the application's designers.
- **Lack of expertise:** Demand is high for experts in AI development and related fields. There's also strong demand for risk managers and internal auditors who can provide guidance and assurance in this area. Few board members have AI expertise.
- **Potential extended impact:** As noted in the "Look before leaping (into the future)" article in this issue of the Directors' Alert (see page 9), the potential organizational, social, and reputational impacts of intelligent automation extend well beyond those of traditional computer programs and pose far greater risks.

Most organizations are introduced to intelligent automation through robotic process automation, which does not rely on algorithms and does not learn from new data and outcomes. In contrast, cognitive automation does both. In smart machines, algorithms learn iteratively from data and outcomes and, without additional programming, modify the models in which they reside. Natural-language processing systems can understand human language, create baseline markers of human behavior, and monitor departures from those markers. The term AI refers broadly to intelligent machines as well as to models that augment and mimic human intelligence.

AI technologies represent an abrupt change in the power of models. They take the organization into uncharted waters, which the board must help management navigate.

Fortunately, AI itself has applications in risk management. When scanning and pattern recognition are coupled with analytical and data visualization capabilities, AI-augmented risk management becomes a reality. Early detection of emerging risks enables management not only to mitigate threats, but also to capitalize on the opportunities that come with risk. Boards need to be aware of these capabilities; discuss them with the executive team, particularly the CEO and the CRO; and make every effort to understand the risks.

Artificial intelligence poses genuine risks

Risks associated with AI fall into familiar categories, all of which the board is responsible for overseeing, but the introduction of any level of intelligent automation poses risks that differ in their potential scale and impact.

- **Algorithmic risk** occurs when models using algorithms are developed and trained on data sets that create biases or ethical issues, whether inadvertently or deliberately. It can also occur when a model is used for a purpose other than intended, which can lead to incorrect decisions. Feedback into AI models must be well controlled and monitored to avoid inaccuracies in the model and its subsequent output.

- **Operational risks** associated with AI resemble those that arise from introduction of any technology into a process, but at exponentially higher scale. An AI tool completes tasks much faster than human workers, but it can generate errors at a similar rate. Incident management and crisis recovery may become more challenging because the application and the data are virtually fused.
- **Financial risks** arise from algorithmic, operational, and other AI risk events, particularly when they pose threats to customers, brand, and reputation. The tax implications for organizations using AI to replace workers, or using it at all, can be significant. Taxes follow value, and AI models create value just as surely as human workers do.
- **People risks** arise from potential loss of expertise and institutional knowledge, limiting the ability for human workers to intervene when a process goes wrong. To remain competitive, organizations need to hire or train data scientists, developers, and other experts who are currently in short supply. Organizations risk losing talent if they fail to accommodate the evolution of the workforce through training, recruiting, and change management.
- **Regulatory risks**, although currently unclear, will undoubtedly arise as regulators better understand uses of the technology and respond to future AI risk events. Regulatory requirements could develop rapidly; it is possible for regulators to designate some processes as off limits for intelligent automation, at least for a time. Regulators also tend to focus on business models rather than technology, and the ways in which an organization uses AI are likely to be of most interest to them.
- **Cyber risks** are associated with the use of AI itself, because the use of data-intensive applications in a process exposes that process to targeting by cyber criminals. AI is already being used to enhance criminal activities, and most IT security teams are ill-equipped to address that threat.

- **Strategic risks** stem from lack of a coherent AI strategy or failure to develop qualitative and quantitative metrics that gauge progress toward objectives. Although experimentation is valuable, actual applications of AI should be aligned closely with the organization's strategic goals.

AI also poses the usual dangers people face in adopting any new technology: failure to appreciate the risks, overreliance on the technology, misjudgment of the human impact, and more. Other risks in this vein include choosing the wrong AI technologies or service providers, both quite common in a field developing as quickly as AI. The fact that these models learn from new data and outcomes makes them far more useful, and far riskier, than traditional computer programs.

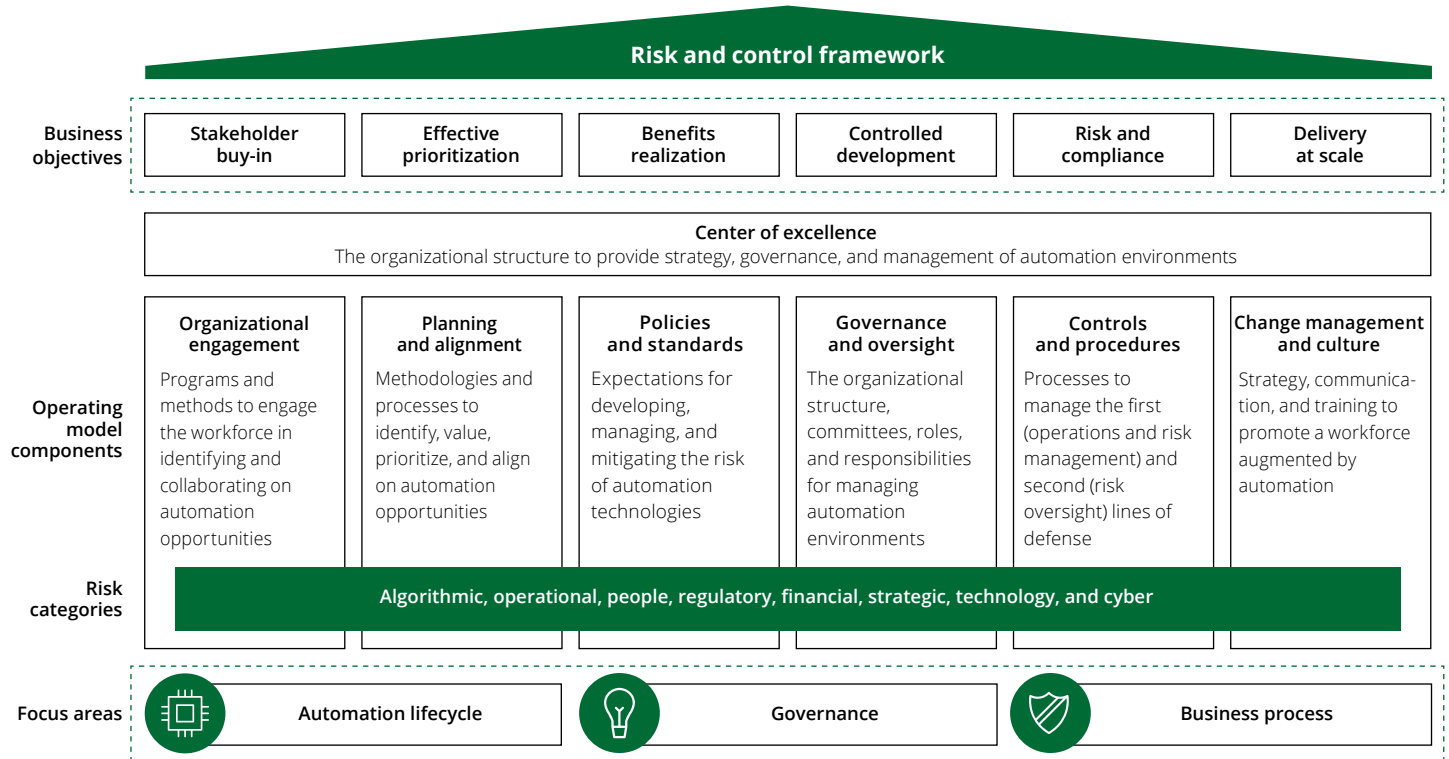
In light of these factors, there might be an understandable temptation for management to postpone adoption of AI. But delay poses its own risks, the most obvious being a failure to keep pace with competitors who are embracing cognitive technologies. When to adopt AI is a critical strategic decision facing organizations, and the board may need to prompt management to make it in a deliberate but timely manner. An awareness of risk should not prevent management from identifying areas where AI can enhance operating performance or usher in transformative change. The potential risks and rewards are substantial, and it is left to boards to oversee the risks in a way that optimizes the rewards.

Getting a handle on the risks

Because AI models cannot yet exercise fairness, empathy, or judgment as humans do, management must monitor them rigorously and test them for unexpected or biased decisions.

The risk landscape has fundamentally changed with continued advances of digitalization. Boards, and management, must adhere to a modified risk and control framework like the one presented on the next page to address the new emerging risks associated with automation.

Chart 2 – Intelligent automation risk and control framework



The top-line business objectives, ranging from stakeholder buy-in through delivery at scale, apply to most initiatives and processes. The operating model components related to each objective must accommodate the characteristics of AI. That is, organizational engagement, planning and alignment, policies and standards, governance and oversight, controls and procedures, change management and culture must consider the challenges, impacts, and risks unique to AI.

This framework proposes establishing a center of excellence (CoE) to provide strategic, governance, and management support of AI initiatives and environments. Not every organization that experiments with AI needs a CoE, but a center of

this kind enables management to move forward in a disciplined fashion. Typically, CoEs house data scientists and AI practitioners, make them available to the entire enterprise, and support the risk and control framework. A CoE also provides a central repository of information on AI models and initiatives for the organization.

AI is a departure from computing as usual. Updating an organization's risk and control framework forces leaders to confront this reality and adjust risk management approaches accordingly. This fine-tuning includes allocating development and risk management resources equal to the organization's ambitions for intelligent automation.

Steps for boards to take

Many board members initially find AI mysterious or intimidating, but the fundamentals of risk governance and management oversight generally apply. Often it is the technology itself, or confusing explanations of it, that cause boards to lose sight of those fundamentals.

The following guidelines can assist boards in governing and overseeing management's intelligent automation initiatives:

- **Understand who is accountable.** The board must know who is directly accountable for AI initiatives and their associated risks. As AI models learn and shift over time, management monitoring should be a high priority. This task is easier if there is a clear understanding of who is developing and applying the models and who is accountable for the decisions the models generate. Management should allocate accountability to appropriate individuals in the first-, second-, and third-line functions. Reporting to management, and from management to the board, should occur at regular intervals and when needed, and AI should be a regular item on the board's agenda.
- **Define AI principles for use.** Clearly ascertain where AI will be applied and why, then identify the expected benefits and risks. Discuss how AI advances strategic objectives such as gaining cost efficiency, reaching new markets, or reducing human error. Consider designating certain processes off limits; for example, a trust company banned AI for all activities associated with bereavement, such as estate administration, believing these interactions are best dealt with by humans who can show empathy, unlike machines. Processes calling for fairness, empathy, and judgment generally should be off limits, because those qualities cannot be built into a model. Internal processes, such as controls monitoring or automated assurance, may be the best choices when getting started.

Case in point**A major bank defined AI principles and updated its risk and control framework**

A major bank conducted a risk and controls framework review after recognizing that the existing framework was failing to accommodate new technologies such as AI-enabled chat-bots in customer communications and RPA applications in a variety of processes.

Approach

The discovery phase engaged a broad swath of stakeholders to ascertain what AI and RPA projects were under way across the business and to identify risk-related activities involved in those initiatives. More than 40 businesses were engaged in a discovery process that included the bank's AI center of excellence and head of robotics. This process included a review of existing risk frameworks and related elements and the definition of AI principles for the bank.

Development

A series of framework elements were updated or developed to support management of AI and RPA project risks. Key elements to be updated or developed included overarching AI principles for the organization to adopt, as well as risk assessment, governance, and controls policies for AI and RPA.

Adoption

Stakeholder workshops fostered discussion and acceptance of the new elements, and communications were established between the chief risk officer, the executive team, and the board. Stakeholders across the business and risk functions provided input on all elements. The office of the CRO issued updates to the executive team and business leaders, and all stakeholders agreed to pilot the new risk governance and management elements.

Outcomes

The review engaged stakeholders and generated an updated risk and controls framework for AI and RPA. Newly defined AI principles, which were reviewed and approved by the board, will govern AI use cases. The board also engaged in discussions regarding the implication of bias in the use of AI. The risk governance and risk appetite statements were updated to reflect the use of RPA and AI.

- **Establish proper governance and controls.** Several major brands have deployed chat-bots or scoring models for job or credit applicants only to have the technology learn undesirable modes of expression or decision making. In some cases, this has even resulted in discriminatory practices. These failures suggest that AI development was not managed appropriately or that monitoring was inadequate. Poor monitoring can allow models to acquire and exercise bias in decisions or communications as they operate on new or expanded data sets. The board needs to obtain adequate assurance that risks have been identified and managed through proper design and monitoring.
- **Track AI development processes.** Learn where the organization's AI applications are being developed and why that area was chosen. If they are being developed within the business, what expertise is being accessed? If external parties are being leveraged, does the business have a robust vendor strategy for managing the risks and governing the work of third parties? Be aware of technologies that are purchased from vendors and confirm that the vendor is providing transparency into the technology and its workings.
- **Assess the AI risk management strategy.** Ascertain that there is an updated risk management framework that includes AI, as well as controls, policies, procedures for escalating risks to the board, and backup plans. Management should have a clearly articulated and properly implemented strategy that explicitly addresses AI risks. This should include not only algorithmic risk and risks to processes employing AI models, but the full range of risks associated with AI.
- **Be aware of reputation risks.** Risks to brand and reputation, and thus to revenue and shareholder value, are of particular concern to the board. These risks can emanate from seemingly small decisions about AI technologies and their uses, and AI-related risks can be difficult to measure and track in terms of likelihood and impact. Candid discussions of what can go wrong and of all steps taken to monitor and respond to AI risk events are strongly recommended.
- **Gauge the regulatory implications.** Regulations vary around the world, so multinational organizations need to monitor developments broadly and diligently. Be aware of changes in how the organization may need to communicate with regulators about AI. For example, some financial institutions that use AI in credit risk modeling are required to explain their models for assessing prospects and scoring loans. AI models may also need to be validated in new ways to satisfy regulators. Most regulators are climbing the same steep learning curve as the private sector, which is why they have yet to issue guidance on AI in most jurisdictions.
- **Think of AI models as people (in a way).** Although AI models cannot exercise fairness or express emotion, they can learn to be biased and make mistakes. Like people, they can be gamed by cybercriminals or internal bad actors; consequently, they should be considered in the organization's identity management policies and procedures. For example, to reduce fraud and cyber risks, AI models' access privileges should be granted and revoked as needed. In some jurisdictions, organizations employing AI models may become subject to tax changes before long.

Management should have a clearly articulated and properly implemented strategy that explicitly addresses AI risks.

- **Don't forget actual people.** Many employees view AI with suspicion. Robots have replaced some manufacturing workers, and knowledge workers wonder if they will face job losses. Organizations should explain what they are doing and why, and help workers make any transitions that are needed. Every technological advance brings new jobs and eliminates some old ones, and organizations face significant shortages of people with the skills to develop, deploy, and provide assurance for AI models. Management needs sound strategies for retraining workers, acquiring talent, and retaining institutional knowledge as processes are automated.
- **Consider a central monitoring function.** AI models often are developed with only business priorities in mind. Given that AI falls outside the scope of traditional IT groups and most internal audit functions lack sufficient AI expertise, management should consider establishing a central monitoring function

and platform to oversee AI, as outlined earlier. A central platform can be established to monitor every AI model being run, who is running it, which data it is using, and the data lineage. This enables early detection and rapid remediation of anything that goes wrong—essential capabilities when using AI models.

Board-level briefings, reviews, and training sessions on AI should be part of the board's annual education program, and it may pay to consider candidates' AI expertise when board seats become available. Deep knowledge of the technology is less important than a comprehensive understanding of the uses, opportunities, limits, and risks of AI.

Despite the risks and uncertainties, the promise of AI and other evolving technologies warrants action by organizations. The opportunities are as real as the risks, and the board is ultimately responsible for overseeing that management has identified and addressed both.

Questions for directors to ask

- What is management's strategy for intelligent automation? What are peer organizations doing? Where does management want to be on the adoption curve? Where does the board believe the organization should be with respect to AI?
- How is the organization pursuing opportunities enabled by AI? Is management researching these opportunities and making thoughtful decisions?
- What are the algorithmic, operational, financial, people, regulatory, cyber, and strategic risks posed by AI technologies? How is management identifying these risks and gauging their potential impact? Does the board hear from management on these matters regularly?
- What risk and control framework is management applying to AI? Does the current framework need updating? What governance mechanisms and controls are needed?
- How are regulators approaching the use of AI in our industry and in the locations where we operate? If this is unclear, how can we get clarification?
- What is management's strategy for mitigating the impact of AI initiatives on our current employees? How will management address the talent shortage or changes to the organization's talent model? To the extent that we rely on vendors for AI technologies, how do we establish transparency and oversee their work?
- What resources does the internal audit function require to provide adequate assurance on AI initiatives? If those resources are lacking, how can we get them? What resources do our second-line functions, such as IT, require?
- Has management considered establishing a CoE for intelligent automation? If not, where will AI expertise and information on AI initiatives be housed? If so, what is or will be the structure, role, and responsibilities of the CoE?

A conversation with Shriti Vadera



Shriti Vadera has been the chair of Santander UK since 2015. She is also the senior independent director of BHP, where she has been a member of the board since 2011. She stepped down as non-executive director of AstraZeneca in 2018, having served on the board for eight years.

From 2009 to 2014, Vadera undertook a wide range of assignments, including advising the chair of the G20 and two European countries on the Eurozone and banking crisis, restructuring the debt of Dubai World, and advising a number of large global investors on strategy and asset allocation.

Vadera was a minister in the UK government from 2007 to 2009 in the Cabinet Office, Business Department and International Development Department. In 2008, she led the UK government's response to the financial crisis and was a key architect of its pioneering bank recapitalization and funding plan. Vadera also helped design and negotiate the outcomes of the G20 London Summit in 2009.

As a member of the Council of Economic Advisers at the UK Treasury from 1999 to 2007, Vadera led policy for business, competition, innovation, productivity, and international finance and development issues, as well as the management of the government's shareholdings, asset sales, and public/private partnerships for infrastructure. Earlier, Vadera was an investment banker with SG Warburg/UBS for 14 years, where she focused on emerging markets.

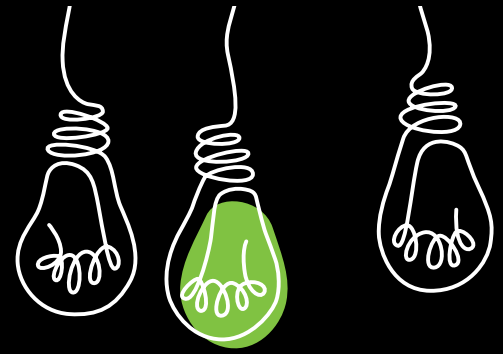
Vadera holds a degree in philosophy, politics, and economics from Oxford University.

Q. How are boards viewing the risks around intelligent automation?

A. Technological disruption is probably one of the most frequent and important topics of conversation for most boards today, along with external macropolitical-type risks. But we don't see just the risks that these technologies present, but also opportunities. A board needs to support management in taking up those opportunities, considering the external environment as well as internal capabilities. If your customers and competitors are adopting new technologies faster than you are, you have a problem. In banking, we contend with many technology companies creating extremely disruptive pressures, but we recognize this also creates opportunities.

Monitoring risks is central to a board's function and, of course, change creates new and heightened operational risks. Cyber risk is always under discussion and ever-present and, with AI, the hygiene and governance around data becomes more critical. In banking, we have huge amounts of customer data which—from the ethical, reputational, legal, and regulatory standpoint—we can't use in the same way that some tech companies seem to be able to. Most firms are finding that cleaning up data and establishing governance around data is challenging. As we look to increase our use of AI, work is ongoing across the financial services sector and with regulators to improve the quality and integrity of our data processing. At Santander in the UK, we are in the process of embedding a central framework for AI governance and creating new controls for robotic tools.

If you're an incumbent company in an established sector, as opposed to a new company starting from scratch, you also have the challenge of keeping up with new technologies while servicing legacy systems.



Q. Could you speak to the board's role regarding opportunities?

- A. Boards are, first and foremost, governance bodies, so it's primarily management's role to identify areas of opportunity and risk. The banking market can expand opportunities by using technology to create new types of products and services and being able to communicate with our customers more easily. For instance, evidence points to customers being more loyal and trusting their bank more when they can check balances regularly on their mobile app. There are so many elements of process automation, transaction monitoring, customer support, and personalization that we can do so much better with advanced technologies. For example, Santander's One Pay FX uses blockchain technology to provide almost instant international money transfer, and at a lower cost than some well-known names for this service.

We're also thinking outside traditional banking to create a number of spinoff businesses, such as Asto. This began as an app-based solution for small and medium-sized enterprises (SMEs) in the UK, enabling them to issue invoices on the go and access fast, simple financing for growth—regardless of who they bank with. Going forward, Santander Group aims to expand this to other countries and increase the services provided. Asto recently partnered with eBay to offer loans to the more than 200,000 SMEs that sell products through eBay in the UK.

Another example of customer benefit in using data aggregation and AI: in November 2019 we launched Mortgage Engine. This is a fintech company backed by Santander that will, for the first time, enable mortgage intermediaries to source simultaneous decisions, in principle, from multiple lenders. The pilot phase currently connects 22 percent of the market, but we aim to integrate 80 percent of the market by the end of 2020.

Q. As a non-executive director, what benefits have you seen in terms of data analytics?

- A. Quite simply, it can give a board better evidence with which to make decisions. At Santander, we had a digital adviser to the board and senior management who often pointed out that data helps provide a healthy counterbalance to the HiPPO effect—the impact in a conversation of the highest-paid person's opinion. With better data and evidence on which to base our discussions, we can generate more effective and credible challenge to prevailing, or perhaps even complacent, thought.

Q. How else can boards have robust conversations on new technology?

- A. If you want to have robust, high-quality conversations on technology, or indeed anything else, you first need to create an environment of openness and transparency in the boardroom to enable a frank discussion.

Ultimately, boards need to ask how data is being used, and interrogate possible biases in the data or the algorithm. Sometimes it's hard to know—for example, when it comes to credit risk. One good question to ask is, "What would you have done without that data and that algorithmic analysis?" Would the distribution of your products or services in the market be different without that data? You also need to recognize, within a broader conversation, that what may seem like a good idea in the short term may not be a good way to run your business in the long term.

Q. What about board composition?

- A. Recent research at MIT suggests that tech-savvy boards outperform their peers. Having people on the board who are technologically savvy is very helpful, even essential, but it isn't a substitute for that open and transparent relationship I mentioned.

If your customers and competitors are adopting new technologies faster than you are, you have a problem.

The board should be a cohesive team of people contributing different skill sets and points of view. But having someone who is tech savvy is not a replacement for management capability, and he or she should not be the only non-executive director asking tech-related questions. We have a fantastic non-executive director with technology expertise, and part of her role is to interrogate those areas. But her role is also to help the rest of us feel comfortable asking those questions ourselves. We also run workshops and training outside the normal boardroom; we've sat down with data and digital specialists and had sessions on cybersecurity, platform infrastructure, apps—you name it!

Q. What ethical and reputational concerns do you see around these technologies?

- A. Issues of gender, racial, and other biases remain some of the most pervasive challenges around the governance and ethics of data. I helped judge the 2019 Financial Times and McKinsey Business Book of the Year, which we awarded to *Invisible Women* by Caroline Criado Perez. Perez highlights many insidious and pervasive examples of gender bias in data and market research and customer-facing situations.

We must maintain trust and transparency in the process so we can demonstrate that decisions are fair and customer data is safe. We should also look beyond the legal permission people provide just so they can access a site or do business with you. How many people actually read terms and conditions?! Of course, this is a conversation that is wider than just the financial services sector.

Q. Isn't some of this the customer's responsibility?

- A. Yes, and you can't really do this on your own. You have to help your customers be proactive in this area and understand how to manage their data and privacy better. When it comes to fraud, for example, our best weapon is defense. At Santander, we wanted to support and engage those targeted most by fraudsters—for example, people aged 25 and below, who are particularly susceptible to online scams and fraud. We created awareness-raising campaigns for this target age group, including a series of short films in partnership with characters from a BBC 3 comedy which, since July, have been viewed at least once by 76 percent of UK social media users aged 18 to 24. We also run Scam Avoidance Schools in our branches across the UK to educate customers about protecting themselves online. And in the case of banks, we should also remember that ID authorization and credit assessment through better machine learning allow them to build the trust of customers by improving the management of their data and privacy.

Q. Have you seen much impact from cognitive technologies on financial reporting and auditing?

- A. There's discussion of how they will support a faster, more streamlined approach to external auditing, and things are indeed changing. But this needs significant investment in systems and processes for auditors to be able to access the data and systems of the companies they audit more easily. We may be underestimating what it takes to harness the opportunity.

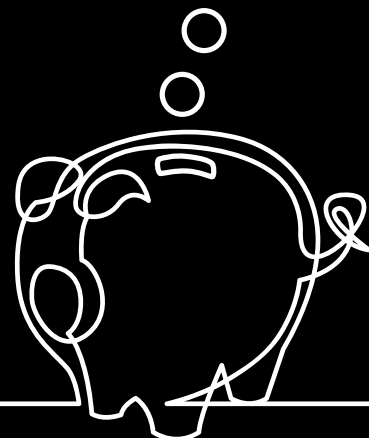
There are some good examples of impact or potential impact, such as the distributed ledger technology. Santander has been working with the FCA, the Bank of England, and other banks to increase efficiency and reduce costs through a new model and framework of digital regulatory reporting. Changes are coming, but even those have been a bit slower than we'd like.

Q. What would you say to boards that are struggling with oversight of AI risks?

A. I agree that getting to grips with AI risks, such as the governance of data, is critical. I worked through the 2008–2009 financial crisis from the UK government side, and it quickly became clear that many boards didn't understand the underlying market risks that banks' management teams had been taking. We're still not sure how much management understood them, but certainly many boards did not. There was a sense that exotic derivative products presented minimal risk, or had even somehow been neutralized. Boards didn't pose enough challenge around that, and some were wary of discussing instruments they didn't fully understand.

We shouldn't allow the same pattern to emerge today on new technologies. Boards must understand and interrogate the use of AI and machine learning. We need to recognize the inherent biases in data and in the way an algorithm may be written.

As they say, there is no such thing as a dumb question in a boardroom. If it's not possible to explain something properly to a board, the problem may not be with the board's lack of technological knowledge, but with the technology or how it is being used. Board members often have experience with many different business cycles, and they can lend useful perspective to long-term value judgments.





The finance function and the audit of the future

Redefining technology use for financial reporting and audits

Not long ago, physicians had relatively limited access to critical patient information. Diagnostic tools such as X-rays, blood pressure readings, and lab work provided useful indicators of health along several dimensions. But those tools pale in comparison to those available today. Doctors now have a far clearer picture of patients' health through advanced imaging, wearable monitors, and telemedicine. Further progress may come with advances in diagnostic testing, micro-cameras that patients swallow, and deep genetic analysis.

Similar technological advancements and innovation are occurring within accounting and finance functions, which are adapting innovative technologies to support their expanding role in developing and tracking key performance and risk indicators to support performance, analyze risks, and assist management in achieving organizational goals. For example, a recent Deloitte survey found that 54 percent of organizations have deployed robotic process automation (RPA) in accounting and finance, while 25 percent have deployed RPA in operational areas.¹³ According to this survey, accounting and finance are the areas where organizations are applying RPA most often, reflecting these functions' need to gather and analyze data from fragmented systems to generate accurate, consistent, and reliable reports. Although the benefits of automating accounting and finance are many, so are the risks, particularly to the internal control environment, the financial reporting system, and the financial reports themselves. Organizations, investors, and capital markets rely

on boards and their audit committees to oversee and govern these technologies and risks with a clear and steady eye.

The audit profession has also embraced cognitive technologies in ways that will have an impact on the methodology, quality, depth, and timeliness of external audits. These technologies often facilitate analysis of entire populations of transactions and accounts, rather than samples. They can enable auditors to conduct a risk analysis that combines company data with external data—in real time, or close to it. Related workflow and collaboration tools can accelerate the end-to-end audit for both the auditor and their client. An understanding of how external auditors are applying intelligent automation—the use of cognitive and workflow technologies to automate repetitive manual tasks—can improve the ability of boards and audit committees to oversee auditor performance.

Accounting and finance departments are automating

Trends such as cloud migration, software as a service, and upgrades to enterprise resource planning systems are providing new opportunities to introduce technology in organizational processes. The data-intensive nature of accounting and finance activities renders them particularly amenable to intelligent automation. Specific activities in the accounting and finance functions can be classified as high, medium, or low with respect to the viability of automation, although circumstances vary across organizations and industries.



Jon Raphael
National Managing Partner
Transformation
Deloitte and Touche LLP (US)

Chart 3 – Accounting and finance processes and their viability of automation¹⁴

Transaction processing				Close, consolidate, and report	
Accounts receivable	Accounts payable	Cash management	Project accounting	Close the books	Legal and external reporting
Maintain customer data	Maintain supplier master data	Perform banking and cash management activities	Perform project accounting	Perform closing	Perform legal and external reporting to regulatory bodies
Manage customer credit exposure	Process invoices	Manage foreign exchange			
Process invoices	Perform payments		T&E processing	Management reporting	Consolidation
Process payments	Period-end processing and reporting	General accounting	Receive and compile reimbursement requests	Perform management reporting to internal stakeholders	Perform consolidation
Manage consolidations		Maintain general ledger master data	Audit and document expense reports		
Period-end processing and reporting	Payroll	Perform journals	Authorize and process payments		
	Maintain employee master data	Process intercompany transactions			
	Manage payroll		Tax accounting		
	Authorize and process payments	Inventory accounting	Perform tax accounting		
		Perform inventory accounting			
		Transfer pricing	Fixed asset accounting		
		Period-end processing and reporting	Perform fixed asset accounting		
			Period-end processing and reporting		

RPA

- High
- Medium
- Low

New applications continually emerge. For example, organizations are using scanning (e.g., Optical Character Recognition) and RPA to address the Financial Accounting Standards Board’s (FASB) new standard for reporting leases. This standard, applicable to financial statements issued by public companies in the United States after December 15, 2018, improves disclosure of lessees’ financial obligations. It requires organizations to separate the service components from the equipment or other physical components in leases and to report the former as expenses.

Organizations with hundreds or thousands of leases face daunting data-extraction and analysis tasks if their systems do not track service and equipment components separately. Cognitive technology can address those tasks at a fraction of the time and cost of human processing and review.

Automation gives rise to new risks related to internal controls over financial reporting. Failure to identify and manage these risks may limit the value created by automation while creating new compliance and reporting issues. It is the board’s responsibility to oversee risks associated with the automation of financial reporting, including:

- To question management on any potential flaws in algorithms or RPA that could create mistakes that were unforeseen and are not readily observable, such as a repeated error in a transaction process.
- Lack of clear standards and governance for the design of automation and algorithms, including continual monitoring for drift, effectiveness, and purpose.
- Misalignment of responsibility for management of intelligent automation across organizational groups, which may lead to gaps in compliance, reporting, and accountability.

To maximize the benefits and address the risks of automation in accounting and finance, the board should confirm that management has reviewed and is monitoring controls on the automated activities. This does not require detailed knowledge of the inner workings of the technology, but rather a grasp of how the technology affects the data-gathering, analytical, controls and reporting processes to which it is applied.

Auditors are also automating

Like their clients, external auditors are adopting RPA, Artificial Intelligence (AI), and workflow automation. These technologies are particularly well-suited to audit work, which involves assessing and visualizing risks, reviewing documents, counting inventories, analyzing control attributes, and other data-intensive activities.

Consider how three common audit activities are already being enhanced by intelligent automation:

- **Confirmation processes** managed through workflow automation minimize the manual work involved in preparing, authorizing, and evaluating information. Machine-learning tools extract and process values from documents attached to a confirmation and can automatically compare confirmed transactions to source records.
- **Inventory counts** of physical goods are far less time-consuming when auditors use smart devices with cameras and applications that collect and consolidate results in real time. Voice-to-text technology is also being used to generate similar efficiencies. In the future, the inventory process can be accelerated further through computer vision and Internet of Things (IoT) sensors to identify items, spot patterns, flag anomalies, and compile counts.
- **Risk analysis** has been enhanced through advanced analytics performed on massive data sets pertaining to accounts, transactions, suppliers, and customers. For example, auditors can conduct more thorough peer comparisons using tools that automatically parse publicly available financial statements. In the future, cognitive technologies could scan financial statements and identify areas of interest in the text while linking disclosures to SEC comment letters, analyst reports, and earnings call transcripts.

Auditors are expected to deliver insights at a faster pace in the future. As the examples indicate, this expectation reflects the extension of current trends rather than

imaginary innovations. The rate of progress will be determined by how quickly auditors and companies evolve toward a shared vision of the role of technology in finance.

For their part, external auditors are applying workflow and cognitive technologies to accelerate their efforts to:

- **Increase transparency into their clients.** Auditors use data and analytics technologies to obtain and deliver sharper and deeper insights into their clients' control environment, greater visibility into financial reporting processes, and a much clearer view of risks.
- **Keep abreast of their clients.** Large organizations in all industries are digitalizing their processes, which increases the amount of data available in real time and enables application of intelligent automation to review processes and controls.
- **Meet escalating expectations for assurance.** Auditors play a critical role in the global capital markets and can use technological advances to provide greater assurance to investors and other stakeholders as the scope of the audit evolves. Expectations for higher-quality assurance are likely to continue to rise as digitalization, disruption, and risks proliferate.
- **Enhance their services.** Like every profession, auditors aim to continually enhance the quality and value of their work and deliver their services more effectively.

Demands are also increasing for assurance on nonfinancial measures, such as environmental, social, and governance (ESG) indicators. For example, 86 percent of S&P 500 companies published some form of sustainability disclosure in 2018, up from 20 percent in 2011. Yet, only 36 percent of these companies obtained assurance on select ESG information and a mere 3 percent obtained assurance on their entire sustainability report.¹⁵ We expect increases in both sustainability disclosures and assurance on sustainability reporting.

Investors realize that ESG issues often have an impact on organizations and their performance, and they want to anticipate and account for that impact. Organizations should position themselves to meet investor needs and differentiate themselves from competitors by applying intelligent automation to enhance their ESG data, report on ESG issues, and obtain third-party assurance.

Blockchain and the future of auditing

Considerable hype still surrounds blockchain—the distributed-ledger technology underlying bitcoin and other cryptocurrencies—but a number of global organizations are interested in or actually pursuing blockchain initiatives. Use cases range wide, from tracking cargo in supply chains to intercompany settlements and development of payment gateways.

Champions of blockchain cite its security, irreversibility, and near real-time settlement capabilities. But a transaction recorded in a blockchain-enabled ledger can still be illegal or fraudulent, executed between related parties, linked to an “off-chain” side agreement, or incorrectly classified in the financial statements.¹⁶

Notions of blockchain eliminating the need for auditors are fanciful, but the technology can be expected to streamline financial reporting and audit processes by providing near real-time data access via read-only views of the blockchains.¹⁷ While the audit process could become more continuous, an auditor’s professional skepticism, independence, and judgment are still essential. Even automated processes require testing and evaluation of internal controls over financial reporting, and a transaction’s purpose and disclosure are always considerations in achieving high-quality financial reporting.

Boards should be aware of blockchain activities in their organizations and their potential impact on and risks to operating and financial reporting systems. Boards and their audit committees should also understand how blockchain-enabled processes and ledgers will promote reporting efficiency and reduce risk, as well as their auditors’ approach to the organization’s use of this technology.

Companies issue audited financial statements annually, but securities are traded based on real-time information released by the organization. This includes key performance indicators and statements by management that are not subject to audit or assurance. It is quite possible that the frequency of audits and the scope of assurance will accelerate as technologies evolve and the expectations of investors and other stakeholders rise (see “Can IoT enable continuous auditing?” on page 38 for more on this topic).

It may not be long before stakeholders start asking, “Why, in a world awash in instantly available financial data and company information, do audits occur only once a year?” Stakeholders are realizing that technology can help meet their demands for broader and more timely assurance, and the audit profession is poised to respond. Boards and their audit committees need to monitor the evolution of the audit and consider how the organization should prepare to meet broader stakeholder demands.

Considering these trends, the audit committee should understand why, how, and where external auditors are applying technology in their work. Additionally, periodic planning meetings between finance, internal audit, and external audit personnel on the organization’s use of intelligent automation will help auditors assess risk, identify relevant controls, and improve quality. This can also help streamline audit work and create a more effective process.

Enhancing board readiness

Boards and audit committees that need education on how intelligent automation affects financial reporting and audits should identify experts or trusted vendors who can assist. Third parties, such as external auditors, technology service providers, and academics, can provide the board with a primer on cognitive and automation technologies.

Intelligent automation will undoubtedly continue to proliferate in accounting and finance, to the benefit of the functions, the internal auditors, the senior executive team, and the organization as a whole. By the same token, external auditors will continue to adopt innovative technologies in their work. Although companies are not obligated to prepare for audits powered by technology, accounting and finance functions that do so can gain advantages. Chief among these is the potential for smoother, more insightful, and more informative audits that will benefit the audit committee and board, investors, other stakeholders, and the reputation of the overall organization.

Intelligent automation will undoubtedly continue to proliferate in accounting and finance, to the benefit of the functions, the internal auditors, the senior executive team, and the organization as a whole. By the same token, external auditors will continue to adopt innovative technologies in their work.

Questions for directors to ask

- Do we understand how management and the accounting and finance functions are using technology and its impact on our internal controls and financial reporting? What risks do these technologies pose to the organization's internal control environment and financial reporting processes? What has management done to identify, monitor, and mitigate these risks?
- What benefits, such as deeper insights and increased efficiency and value, can we expect from the adoption of technology in our finance and internal audit functions?
- How well do we understand how technology is being used by the external auditors? Which technologies are they applying and where?
- How are the organization's internal and external audits changing in response to digitalization in our finance function and operations? How well do we understand these changes and their associated benefits?
- Do we have people on the board, and particularly on the audit committee, who understand the impact of technology on our business and financial reporting system?

Can IoT enable continuous auditing?



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Auditors now see continuous auditing—external audits conducted in near real time and completed shortly after a company's accounting period—as inevitable. The question is, are organizations and auditors ready for it, and how we get there.

The required technologies already exist within certain parts of organizations. For example, data generated by sensors embedded in objects connected to the Internet—the Internet of Things (IoT)—may accelerate the move toward continuous auditing. There were an estimated 15 billion IoT connected devices in 2015; in 2019, that number grew to 27 billion. By 2025, IoT connected devices is projected to exceed 75 billion, and it won't stop there.¹⁸ IoT is evolving at a rapid pace, exponentially increasing the volume of data available to organizations and auditors.

Auditors can use data generated by IoT sensors as evidence to support their findings rather than relying on samples of traditional data and documentation. Powered by IoT and other automated sources of data, continuous auditing will require organizations to revamp their reporting processes and how auditors design audit procedures. It will have an impact on organizations' closing processes, reporting schedules, technology investments, and data security and privacy. For auditors, it will represent a quantum leap beyond manual processes for gathering supporting evidence, which at times rely heavily on hard-copy internal documents and data sourced from outside the organization.

Yet, continuous auditing presents challenges, as well as opportunities, to organizations and auditors. Not the least among these challenges are the need to manage the volume of data collected and optimize its use.

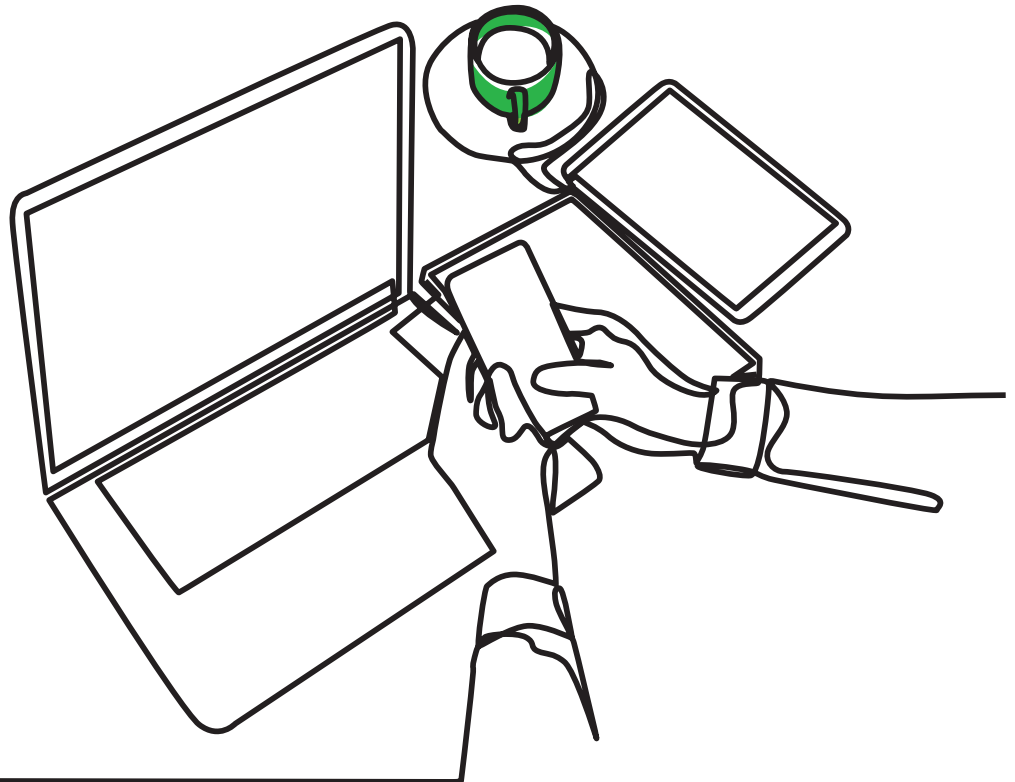
To manage the data, organizations need well-designed processes, appropriate investments in technology and training, and a strong commitment from management. Data privacy and systems interoperability also need to be addressed to accommodate IoT. Robust security is required given that IoT devices expand the cyber threat landscape and create new exposures. In general, management and audit committees will need to understand how the finance function uses IoT data to support reporting, especially as the data relates to underlying estimates and judgments, or is used in the company's internal controls over the financial reporting processes.

Auditors will require new processes to incorporate and rely on IoT data, which will often constitute new evidence. Operational and financial reporting processes that use IoT data will have new internal controls for auditors to test. The quality of audit evidence will be directly influenced by the design and reliability of the sensors and the accuracy and specificity of the data they provide. Interoperability of systems within the organization or with customers or suppliers, and the ability to reconcile data from disparate systems, could be deciding factors in whether the information can be used for audit purposes. Auditors may also need to test internal controls in areas of the organization where they have not previously ventured.

The ability to leverage IoT data as audit evidence presents vast opportunities. Data can be captured in real time to provide the auditor with a live picture that enhances transparency into operations. Results can be interpreted and insights delivered in mere minutes or hours, rather than weeks. IoT data can augment the risk assessment process and provide new ways to test management's assertions. Manual inventory counts could be transformed by IoT, including GPS technology, to track inventory throughout the product life cycle. For example, an auditor can validate sales to customers through inventory transferred from shipper to customer or the assumptions underlying management's estimates for depreciation using IoT diagnostic data from machinery. Access to this type of data can enhance the timeliness and quality of the analysis supporting an auditor's conclusions.

Both external and internal auditors will need additional skills and expertise. The audit committee should keep abreast of these needs, and how they are being met, as part of their oversight duties.

IoT will be one of the critical elements to enabling continuous auditing. Organizations will continue to improve their ability to analyze and use the data they collect through IoT and other sensing technologies. While companies and their external and internal auditors are preparing for this eventuality, boards and their audit committees should be considering how the organization is aligning uses of the technology with its reporting systems and decision-making processes, as well as the associated risks and opportunities.



A conversation with

Maureen Kempston Darkes



Maureen Kempston Darkes is the retired General Motors Corporation Vice President, and President, GM Latin America, Africa and Middle East.

Kempston Darkes currently serves on the boards of Canadian National Railway, Brookfield Asset Management, Irving Oil, Enbridge Inc. and the Canadian Olympic Committee. She has also served on the Boards of Brascan, Noranda, Falconbridge, Thomson Corporation, Balfour Beattie plc, and Schlumberger Limited. Her Board engagements include participation on Audit, Risk Management, Governance, Human Resources and Compensation, Corporate Social Responsibility, and Environment Health & Safety Committees.

Kempston Darkes is a member of the Order of Ontario and is an officer of the Order of Canada.

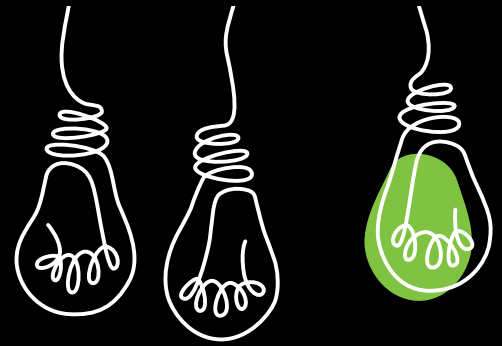
Kempston Darkes holds a Bachelor of Arts degree in history and political science from Victoria College, University of Toronto. She also holds a Bachelor of Laws degree from the University of Toronto Law School and was called to the Bar of Ontario in 1975.

Q. How have approaches to disruptive technology evolved in boardrooms over the past few years?

A. Digital technology has become a very real factor in the boardroom, and in response, boards are becoming more sophisticated about technology risk. It's not that technology is new to the board. What's new is the speed and frequency with which disruptive technologies are emerging. Often, technology can truly disrupt the business model, and when a board realizes that's happening, they have very short time horizons to adapt and respond. For example, organizations can find themselves suddenly dealing with nontraditional competitors whose businesses are built on data gathering, cognitive computing, and data analytics. Meanwhile, the management team may have come up through more traditional environments and may be attuned to traditional risk in the business but not a disruption to the business model itself. As a board, we need to constantly stress-test the business model.

Q. That's an interesting term—stress-test the business model. What does that mean?

A. That's a term I use for assessing the business you're in and the technologies surrounding it. How are these technologies impacting—and how could they impact—your business model? Stress-testing the business model starts with anticipating and evaluating threats outside the traditional business model, then determining if management is ready to respond. Do you have an action plan to use those technologies to upgrade your business model? Is your business model fit for purpose, and will it remain so? Or will it become obsolete? This also extends to looking at other industries undergoing disruption and the lessons we can learn from them.



Q. How have boards come to this more expansive view of technology?

A. When you see Amazon disrupting retail, Netflix disrupting film and TV, Tesla and automobiles, and Airbnb and hotels, you realize you have to be proactive in understanding the technology landscape of your business. The boards I sit on are taking steps to educate ourselves—things like having advisory panels for the board to consult with and visiting universities and Silicon Valley companies to learn how they see the future and how it might affect us. Some companies invest in startups to gain an understanding of where these technologies can lead. There's a much broader focus on the role of technology and how it can influence the business model.

Q. How are boards addressing ethical issues around disruptive technologies?

A. We're very focused on those issues and on asking related questions. How is the organization going to use the technology? Do we have codes of conduct to govern those uses? Does our use of the technology meet the organization's code of ethics? Is it free of bias? Do we have appropriate controls in place? These are in addition to the basic questions of how the technology will help us do a better job of taking care of our customers, increasing efficiency, driving revenue, and making our business model more sustainable.

Q. When boards look at digital technology and culture, how does the discussion go?

A. With respect to culture, we focus on how the organization is positioned to adapt to digital technologies. Does the organization position it as a threat or as an opportunity? Does it embrace it or

avoid it? Does it see it as a revenue or cost? The organization's outlook drives the culture and behavior of people. The board must also ensure that the organization has the right type of talent to use and respond to these technologies. One major cultural concern is attracting and retaining people who can perceive where those technologies can take us and then help us get there. You have to scrutinize your current workforce and identify ways to help them adapt. You need to identify the training required to help them understand these technologies and how to use them, but also to help them see where they need to go in their careers given the impact of the technology on their work. The question of talent acquisition and development is very much on the board agenda.

Q. What about the impact of digital technologies on conduct?

A. The board has to ask questions about whether policies and conduct-risk controls are in place around how data is sourced and used. Management must be held accountable for establishing written codes of conduct for the use of data. These should cover transparency into how data is being used, authorization to use the data in the ways we do, and unauthorized uses of data. For example, products have been marketed on the basis of information that was not collected for that purpose. So, the board should ensure that conduct controls are in place and that senior leaders are ensuring they are well defined and employees understand them.

The board has to ask questions about whether policies and conduct-risk controls are in place around how data is sourced and used. Management must be held accountable for establishing written codes of conduct for the use of data.

Q. How are boards overseeing the reputational risks of digital technologies and greater media scrutiny?

A. The board needs to ensure that management has a rapid-response capability to deal with inaccuracies, data intrusions, and privacy breaches. Management needs to have crisis management protocols in place and ways to respond effectively as events unfold. I think most companies now monitor media coverage and are proactive in correcting inaccuracies and addressing issues that could damage their reputation. In fact, given the value of reputation as an asset, I've wondered whether companies will eventually establish a reputational risk committee of senior executives to oversee the use of data, new products, and compliance with corporate values and regulatory requirements. Managing reputation is fundamental in an age when information is everywhere.

Q. How can the board enhance its own ability to address issues around disruptive technologies?

A. I'm very supportive of boards attending seminars, working with consultants to understand these technologies, and learning from people in the company who are using new technologies. It's a matter of more intense engagement with technology and obtaining the resources that will enable us to oversee these areas. We also have to continually assess whether management has the ability and resources to engage with disruptive technology. Boards should be asking whether the executive team is capable of operating in this environment.

Q. In terms of financial reporting and audits, what impact have you seen from digital technologies?

A. Digital technologies will make financial reporting more efficient and enable audits to be conducted from centralized locations and on a continuous basis. These technologies can eliminate sampling, because you can readily access and analyze full populations of data, and auditors can spend more time interpreting data rather than gathering and reviewing it. But because we are relying more heavily on data, we need extremely strong internal controls. You'll need to verify the data from the first entry on through the general ledger and have controls on data lineage and data governance. I also believe that broader skills will be needed in internal auditing, with data science and data analytics moving to the fore.

I am seeing more internal auditors with business degrees in addition to the CPA designation, which will enable them to bring a fuller range of skills to audits and to spend more time verifying, analyzing, and interpreting data. We can't underestimate the value of critical thinking, which is already important for internal auditors and will become even more so.

Q. To get the most out of digital technologies, an organization often has to address data issues. Are those issues making their way to the board?

A. Yes, I've seen this at both the board and the audit committee levels. We realize that auditing needs to change and that we need to invest in appropriate systems so we can tie information together. We need the resources to secure the data and track its lineage. Having good integrated data is critical as it drives business decisions and can make or break a business. It also influences the accuracy and timing of your internal financial reporting.

Q. Is it fair to say that disruptive technology is always on the board's agenda?

A. It is now. Technology disruptions used to take far longer. It took decades for the telephone to displace the telegraph and for airlines to replace ocean liners. But it only took years for email to displace much of our postal service, for mobile phones to almost replace land lines, for online shopping to disrupt retail, and for social media to become an everyday pastime.

It has been pointed out by economists and business analysts that we're seeing an emerging intangibles economy in which economic development will be based less on physical assets and more on data, software, analytics, and communications. Once those intangibles are in place, you can create economic juggernauts, which can add huge numbers of customers at minimal marginal costs. It's a totally different business

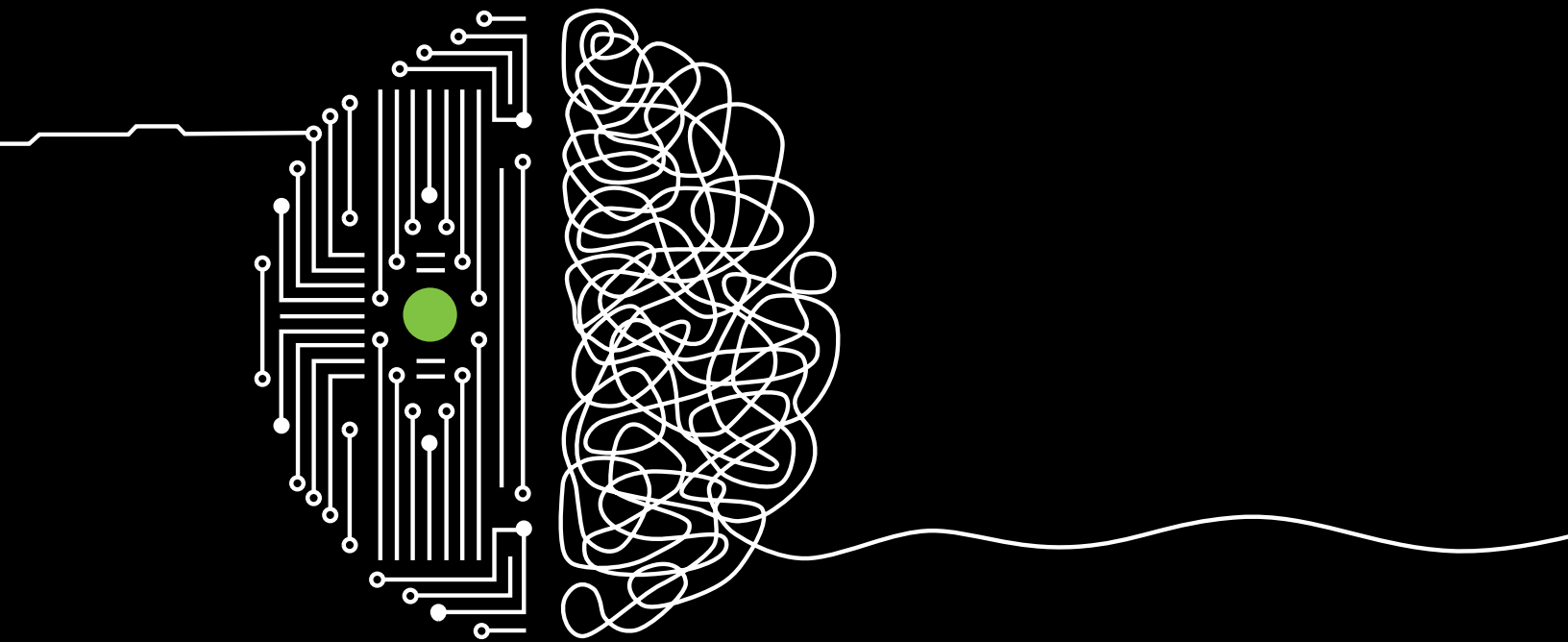
model, unencumbered by the facilities, machinery, and other hard assets of traditional industries. You have to think about that as a board and consider where the business goes from here.

Q. When you say, "Where the business goes from here," that sounds like a focus on opportunities.

A. That should be a strong focus. We talk a lot about the risks of new technologies, but we also need to see the opportunities. For example, rail transportation companies are using automated inspection portals, autonomous track inspection, predictive maintenance, and AI technology that will take the industry to the next level of precision railroading. The industry has massive investments in hard assets but also the ability to apply technology to reach new levels of performance and safety. And in the capital-intensive energy industry, you have new technologies generating different types of fuel, as well as smart grids and load management tools that improve efficiency and productivity.

There's risk, but also tremendous opportunity if you can harness new technologies for greater efficiency and performance. Boards have an essential role to play in that area as well as in overseeing its risks.





Re-envision disruptive technology

Physicists, philosophers, and technologists have posited that the human race may be living in a computer simulation constructed by an advanced civilization for its entertainment. Although that possibility may not warrant discussion in the boardroom, the challenges of overseeing digitalized organizations clearly do.

To be effective, boards need to go beyond keeping up with technological developments and management's use of them. They need to re-envision their roles and responsibilities and take a proactive approach to developing clear, practical ways to evaluate digital disruption and transformation. That re-envisioning will enhance the board's ability to provide thoughtful inquiry, insightful advice, and astute guidance to senior executives with respect to the digital future.

Boards can work with management in a supportive but challenging manner to re-envision disruptive technology by taking the following actions:

- **Prompt management to get started or go further.** Executive teams should be exploring cognitive technologies, considering use cases, and developing and deploying models not only to begin the learning process, but to gain efficiency. Almost any repetitive, largely manual task is a candidate for intelligent automation. Many organizations have scored early wins by automating internal processes, such as payroll. Data extraction and analysis enable second-line functions to design and implement automated controls, representing a boon to internal audit personnel. Other successful use cases focus on invoicing, ordering, employee recruitment, and customer service. After gaining experience, management can plan more far-reaching initiatives.
- **Integrate intelligent automation into strategy.** Although decentralized innovation can be productive as well

as attractive, it poses challenges. Chief among these are the unidentified and unmanaged risks that can arise when models are deployed without sufficient oversight. There is also a risk that the organization will invest in initiatives that lack impact and coherence because they do not reflect a larger strategy. This can occur in areas that hold genuine promise, as well those where management gets caught up in the hype or fails to make the connection with strategic goals. Board scrutiny can help confirm that initiatives are firmly rooted in the organization's purpose and serve the business strategy.

- **Modify the risk framework and infrastructure when needed.** The risk management infrastructure should be flexible enough to accommodate digital disruption and cognitive technology deployment without a major overhaul. If a strong framework and infrastructure have been established, risk oversight becomes largely a matter of understanding the risks, knowing who is accountable for managing them, and confirming that they are measured, monitored, and addressed. Given the challenge of quantifying them, it would be easy to omit risks and initiatives from statements of risk appetite, risk profile, and risk tolerances. The board should see that management addresses these matters explicitly. If the risk governance framework and infrastructure are not flexible enough to accommodate these risks, then a broader review and an overhaul or expansion may be needed.
- **Discuss and monitor culture and reputation.** Management must maintain a culture that is both ethical and effective. An ethical culture helps attract high-caliber talent and balance the often-competing interests of stakeholders. An effective culture empowers people to work together to achieve the organization's strategic goals.

- **Formalize the intelligent automation strategy.** Cognitive technologies developed and deployed solely by the business to automate manual processes often have little oversight and insufficient controls, leading to duplication of effort, lack of coordination, and increased risk. A formal strategy for intelligent automation brings second-line functions and internal audit personnel into the development process so effective controls can be designed and implemented. This is too important to be conducted informally. To maximize their potential, these initiatives should be properly coordinated, funded, implemented, and controlled, all of which can be achieved with management's involvement and an appropriate level of board oversight.

Ultimately, the board needs to be confident in management's response to digital disruption, and this confidence requires members to be educated on cognitive technologies. The audit committee must support the internal audit team's needs with respect to RPA and AI while also overseeing senior executives and the finance function in applying cognitive technology and preparing for the audit of the future.

Whether or not this is all a simulation constructed by an advanced civilization for their entertainment, one thing is certain: disruption is here. It is not too late to get started, but the time has arrived.



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Identity management and its importance explained
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Conduct: Are you in? It's everyone's responsibility
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The "crunch time" series for CFOs: A series on digital
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ReThink series
(Deloitte Canada)

China innovation ecosystem development report 2019:
Rising innovation in China
(Deloitte China)

2020 Global marketing trends: Bringing authenticity to our
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(Deloitte Global)

TMT predictions 2020: Fueling the future
(Deloitte Global)

Nine big shifts that will determine your future business
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Digital with purpose: Delivering a SMARTer2030
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