

Being a smarter risk taker through digital transformation

2019 Risk in Review Study



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Risk functions that are digitally fit position their organisations to make smarter risk decisions as they move through digital transformation. Our study shows that when risk functions are digitally fit, the benefits an organisation receives multiply in the forms of faster progress and greater-than-anticipated payoffs on digital technology investments, and smarter risk taking.

Risk professionals are at a critical juncture. Organisations are rapidly rolling out digital initiatives in an arena defined by more data, more automation, sophisticated cyberattacks, and constantly evolving customer expectations. While many technology risks are not new, the stakes are now much higher as digital rollouts heighten risks beyond the technology itself. As they push to break new ground, C-suite executives and board members need to have greater confidence that the risks are fully appreciated and fall within acceptable tolerances. As the public's trust in companies wanes, business leaders agree they have little room for digital missteps. With the right interaction with their risk functions, organisations can leverage internal and external data to proactively manage risk, and have confidence that risks are mastered as they move through digital transformation.

How can risk functions help their organisations successfully move ahead with digital initiatives? Our study into the digital fitness of risk management, compliance, and internal audit functions—which we call, collectively, risk functions—shows that risk functions that are digitally fit enable their stakeholders to make smarter risk decisions as their organisations move through digital transformation.

What does the expression *risk function digital fitness* mean?

The definition is twofold: (1) having in place the skills and competencies to strategically advise stakeholders on risks and provide assurance over the organisation's digital initiatives and broader digital transformation and (2) changing the risk function's own processes, tools, and services so they're more data driven and digitally enabled to anticipate risk events and respond to them at the pace and scale the organisation's digital transformation requires.

The term *digital transformation* means different things to different organisations. To some it's an overused phrase that's synonymous with *technology strategy*. To PwC, it means more than the simple use of emerging technology. *Digital transformation* refers to new ways of solving problems, of creating unique experiences for customers and employees, and of accelerating business performance; and it has tremendous impact on the kinds of talent needed

across the organisation. Some of the organisations that are digitally transforming are efficiency seekers that use digital assets to *do business smarter and faster*; others are modernizers that create new capabilities to *modernise their businesses*; others are redefiners that are working to change their core business models so as to *redefine their businesses*; and yet others are industry explorers that *break new ground in new markets or industries*. As organisations take on those big initiatives, an early and clear line of sight into threats and opportunities helps them make risk-informed decisions that balance their innovation efforts against their risk appetites.

Being more precise and more predictive is important in an information-poor world. Just 22% of chief executives in our 22nd Annual Global CEO Survey call the risk exposure data they receive comprehensive enough for long-term decision making. That figure is, alarmingly, unchanged in 10 years—despite the abundance of data. Harnessing trustworthy data is essential in order to make risk-informed decisions throughout digital initiatives. This is where risk functions that increase their own levels of digital fitness become far more effective.

PwC surveyed more than 2,000 CEOs, senior executives, board members, and professionals in risk management, compliance and internal audit, and sat down with dozens of executives and board members to explore the things that differentiate risk functions in a digital transformation. We identified behaviours that lead to more-digitally-fit risk functions. And we learned that organisations with more-digitally-fit risk functions are seeing greater benefits from their digital initiatives, including more-effective management of transformation risk and more payoff than expected against planned outcomes, such as improved customer experience and increased revenue growth.

Risk functions can advise on digital transformation without slowing the speed at which the business needs to act.

Indeed, far from slowing down major digital initiatives, some risk functions have become important partners, helping their organisations meet or beat their digital goals. Certain risk functions are getting there now. For others, this is the time to take action.

“Being more digital enables the risk management functions to be more responsive, predictive and engaged. It allows comparison and correlation of things that traditionally didn’t connect in a way that is very provocative and powerful. You can see through the haze with much more clarity to identify things of relevance.”

John Merino, Chief Accounting Officer, FedEx Corporation

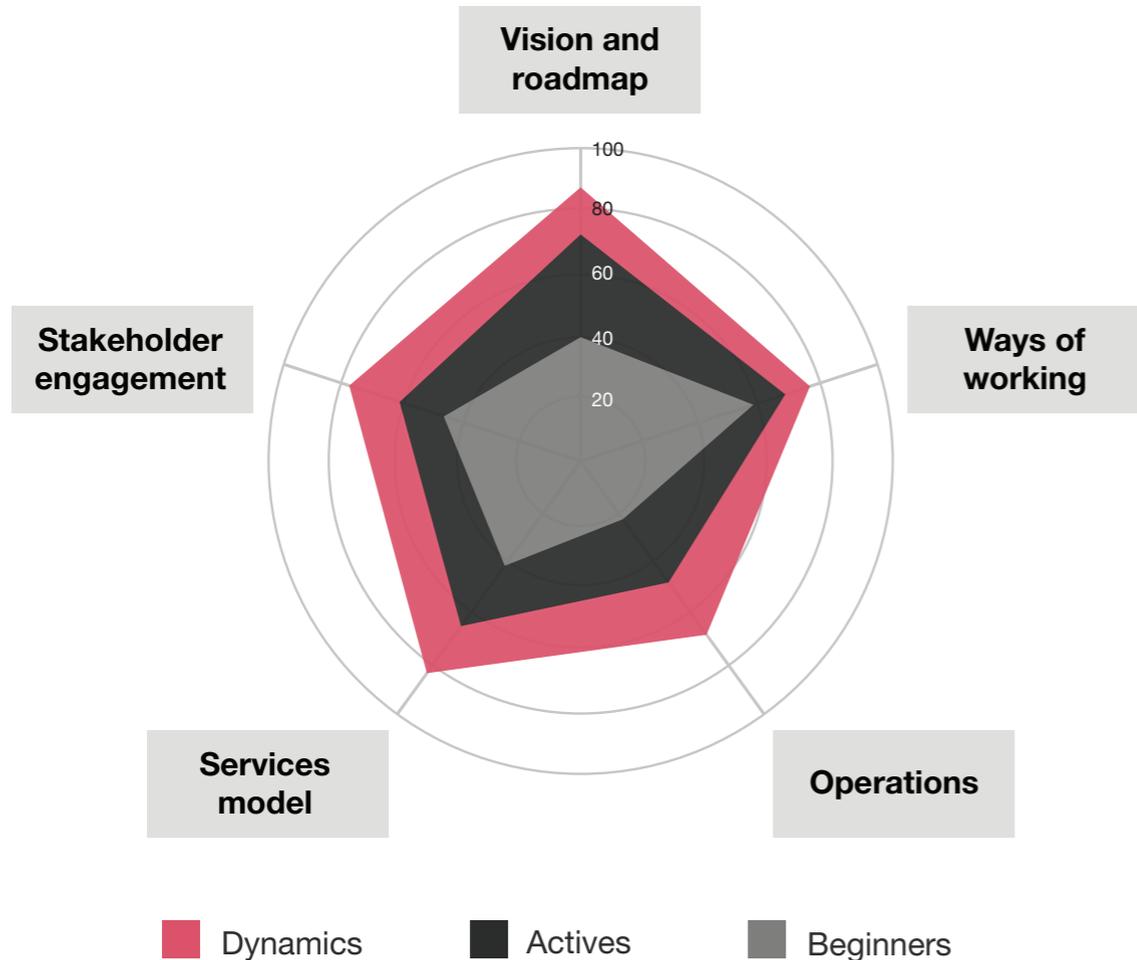
“We are trying to enable the business to have enough data and information to make data-driven, risk-based business decisions eyes wide open, each and every day. To me that is a smart risk taker.”

Nancy J. Luquette, Senior Vice President, Chief Risk & Audit Executive, S&P Global Inc

Figure 1

Dynamics are the most digitally fit

Digital fitness in each dimension



Digital maturity score on a scale of 0 to 100 based on PwC analysis and index calculation. Base: 252 Dynamics; 249 Actives; 500 Beginners

Where digitally fit risk functions stand out

We examined the digital fitness of risk functions across five dimensions.

- *Vision and roadmap*: Do the risk functions have a blueprint to guide their digital transformation that is aligned with the organisation's digital vision?
- *Ways of working*: Do the risk functions have the necessary skills and collaboration tools to work in agile ways across the lines of defence?
- *Operations*: Are the risk functions using data and emerging technologies to streamline operations?
- *Services model*: Are the risk functions (1) creating new services for their stakeholders that support a more-digital organisation and (2) delivering data and information to decision makers digitally?
- *Stakeholder engagement*: Are the risk functions engaging effectively with business leaders and board members with regard to their organisations' digital initiatives?

We identified the top quartile of risk management, compliance and internal audit survey respondents based on those respondents' digital fitness scores across each of the dimensions. We call them Dynamics, and they embody a mix of highly regulated and less-regulated industries, various geographic regions, and different organisation sizes. The second quartile, which we call Actives, are taking many of the steps necessary to become more-digitally-fit risk functions. The balance of risk functions in our survey, which we call Beginners, are conducting or planning to conduct some of the activities we measured, though in more-ad-hoc ways (Figure 1). (See [Appendix](#) for more details on our methodology.)

The case for elevating risk function digital fitness

We focus on the top quartile of risk functions—the Dynamics—because they provide an important lesson: **When the digital fitness of the risk function stays in lockstep with the organisation’s digital transformation, the benefits the organisation receives as it digitally transforms multiply**—thereby offering a clear case for investing in risk function digital fitness at pace with the organisation.

Organisations with Dynamic risk functions reap numerous benefits ([Figure 2](#)) as follows.

- **They progress faster on their digital journeys.** Organisations with Dynamic risk functions are more often on track with—or ahead of—their digital roadmap, or their plan for improving their digital capabilities. The experience of Dynamics shows that when risk functions are agile and aligned with strategy, they know the organisation’s priorities and risk appetite, and they get engaged early so as to promote the organisation’s progress, not hinder it.
- **They are more confident about taking risks consistent with their strategies,** thanks to their risk functions’ having better data and proactively furnishing that data along with more timely insights to stakeholders so as to inform decision making. Organisations with Dynamic risk functions routinely revisit their risk appetites when making decisions about digital initiatives.

“When we talk about digital transformation, it’s not just digitising and automating things; we’ve been doing that for years. To us, transformation is really moving from one way of working to an entirely new way of doing things.”

Robert King, Corporate Vice President and Chief Audit Executive,
FedEx Corporation

- **They more effectively manage transformation-related risks** such as in the areas of cybersecurity, data governance, and operational risks, which our survey respondents ranked as the three most-acute risks stemming from their digital initiatives. That's significant, because PwC's [Digital Trust Insights](#) found that just 53% of medium-size and large organisations cite full management of cyber and privacy risks from the start of their digital transformation project plans. When risk functions perform well and contribute to more-informed decision making, organisations manage risks better.
- **They get more value than anticipated from their digital investments.** According to our survey, the top three benefits organisations want from digital investments are improvement in customer experiences, improvements in decision making, and increased revenue growth; and most organisations with Dynamic risk functions have seen payoff equal to or greater than expected against those goals.

“Why do you put brakes on cars? Most people would say, ‘Well, you have to be able to stop.’ No it’s so you can have the car go faster and still be in control. Brakes allow you to go at increasing speeds without sacrificing control. We view it the same around our risk appetite. We can take big swings at things by having the right controls, to go fast without losing control. Every challenge brings obstacles. How quickly a company makes risk-informed decisions allows you to get back on track and not be paralysed. Internal audit’s role is not to slow down the business but to help it move faster through ensuring an effective system of internal control.”

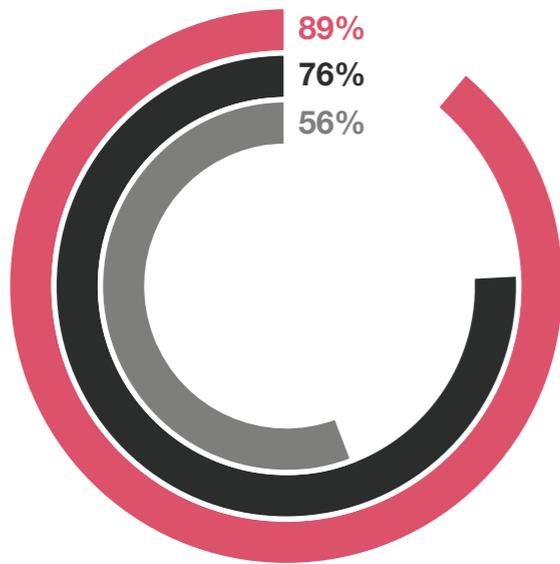
Joseph Pizzuto, Vice President, General Auditor and Head of Strategic Risk Management, General Motors Company

Figure 2

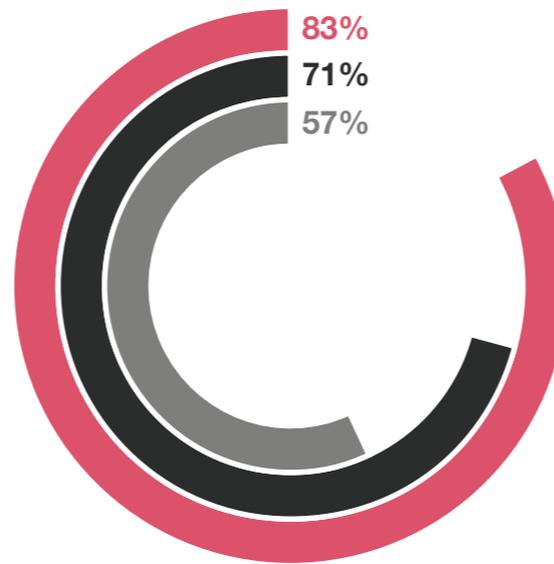
Organisations with Dynamic risk functions experience distinct advantages



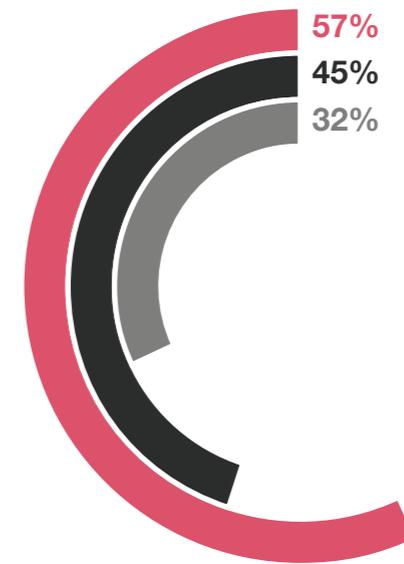
Effective at managing risks on digital journey



Ahead of or on track with digital roadmap



Willing to take on more risk than in the past



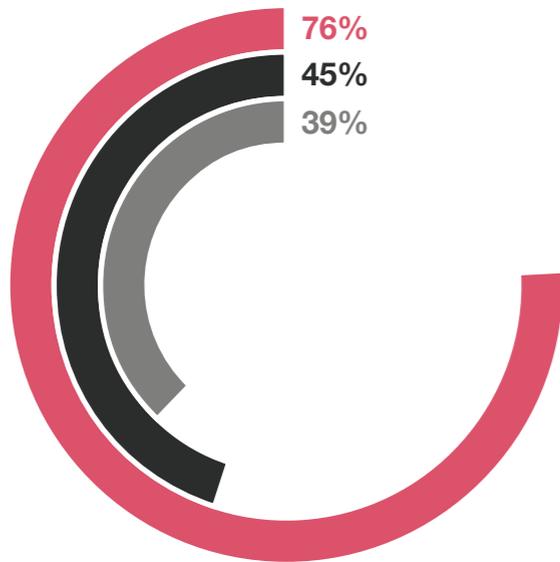
■ Dynamics ■ Actives ■ Beginners

Q. How effectively is your organisation managing risks on its digital journey? Base: 244 Dynamics; 240 Actives; 484 Beginners
Q. Which statement best describes your organisation's progress on its digital journey? Base: 231 Dynamics; 206 Actives; 357 Beginners
Q. What impact has your organisation's digital roadmap had on its risk appetite? Base: 231 Dynamics; 206 Actives; 357 Beginners

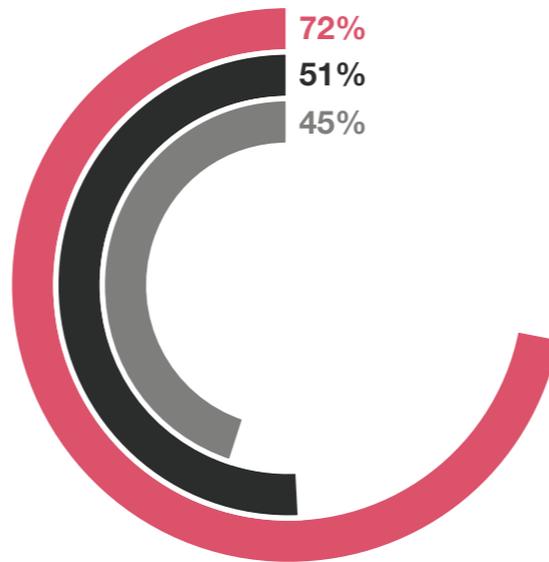
Organisations with Dynamic risk functions experience distinct advantages



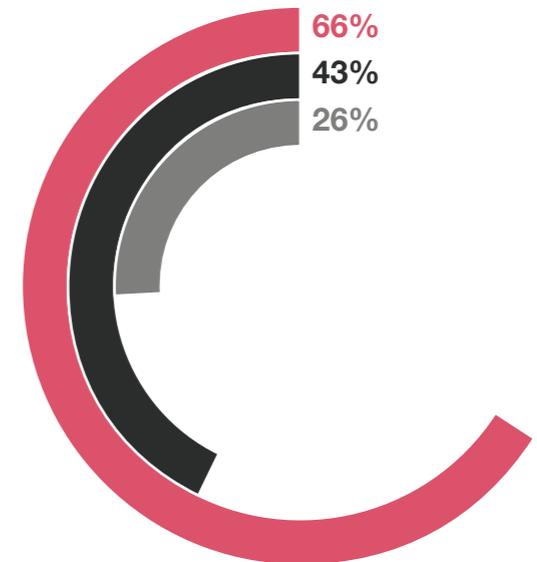
Meeting or exceeding expectations of better decision making



Meeting or exceeding expectations of improved customer experience



Meeting or exceeding expectations of revenue growth



■ Dynamics ■ Actives ■ Beginners

Q. To what extent have your digital investments paid off at your organisation in the following areas to date?
Decision-making base: 95 Dynamics; 90 Actives; 171 Beginners
Customer experience base: 137 Dynamics; 148 Actives; 282 Beginners
Revenue growth base: 82 Dynamics; 72 Actives; 164 Beginners

The six habits of risk functions that fuel smarter risk taking

The more in-step risk functions are with an organisation's digital transformation, the greater the likelihood that the organisation will reach the goals set for digital initiatives. Our study analysed the behaviours that set Dynamics apart from those a step behind in their overall digital fitness. We identified six habits that elevate Dynamics' digital fitness such that they can help their stakeholders become smarter risk takers—and therefore boost their odds of sustainable digital success (Figure 3).

Figure 3

Dynamic risk functions exhibit six distinct habits

- 01** Go all-in on the organisation's digital plan
- 02** Upskill and inject new talent to move at the speed of the organisation
- 03** Find the right fit for emerging technologies
- 04** Enable the organisation to act on risks in real time
- 05** Actively engage decision makers of key digital initiatives
- 06** Collaborate and align to provide a consolidated view of risks



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Go all-in on the organisation's digital plan

Understand the organisation's digital strategy and keep the function in lockstep

A well-thought-out and well-communicated digital strategy is an important element of an organisation's risk culture. Dynamics make sure they understand the organisation's digital strategy and then align their own function's digital strategy accordingly. The organisation's pace of innovation sets the pace for the risk functions. They grow their digital fitness at the rate of the organisation so they can make sure they're providing strategic advice and assurance over the new and changing risks that digital transformation brings.

Identifying the knowledge and capabilities a risk function needs to have in place is a prerequisite for building digital fitness. What stands out about Dynamics is that they make the function's digital vision come to life by setting specific desired outcomes for their digital investments, and they change performance metrics to reinforce behaviours (Figure 4). They make that vision actionable and measurable. Our survey showed that setting and then measuring desired outcomes are the most influential factors in risk functions' ability to advance their digital plans.

When risk functions are digitally fit, they can be valued contributors from the outset of big initiatives. Take the approach at Ameren. The US electric and natural gas provider is moving along its digital transformation roadmap with risk functions plugged into the structure from the start (see "[Ameren drives its digital strategy with risk functions plugged in](#)"). Bhavani Amirthalingam, chief digital information officer, notes: "If you shift left with your cyber, audit, and compliance functions fully integrated, upfront, you're going to be in a better place. If involving risk management and cyber teams gives you speed, then [company leaders] are going to engage with them much more strategically."

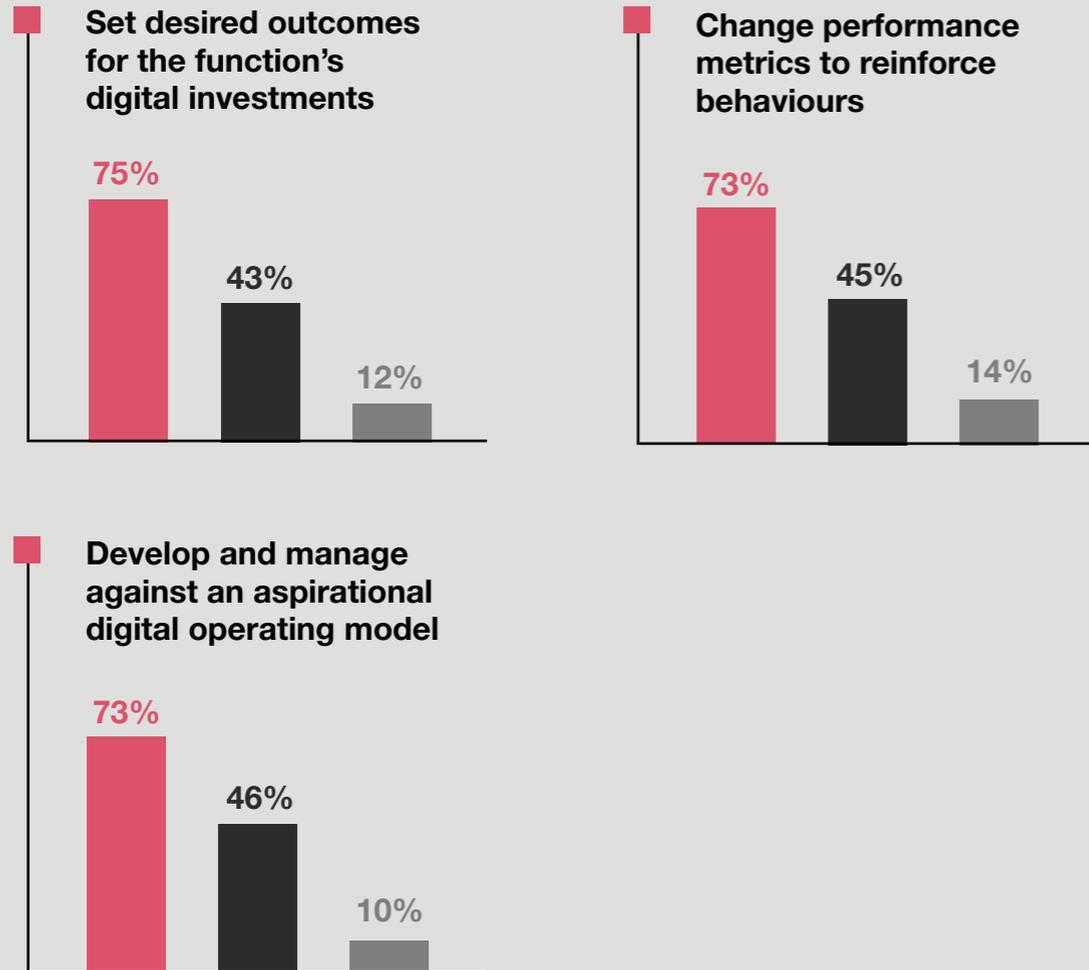
By plugging into the organisation's digital strategy, risk functions can help establish digital governance so that appropriate guide rails transcend initiatives scattered across the organisation.

Vanessa Chang, a member of the audit committee at utility Edison International, brings the importance of this issue to light: "What concerns me is governance over the digital transformation process. Who has to approve what? I worry that a unit is executing a digital transformation, which hasn't been approved, doesn't know approval is required nor from whom and whether somebody should be looking over their shoulder. In every one of the companies I help govern, we need to know, Who can do what? What are their boundaries? And when do they need to bring in someone else?" Dynamics are involved in establishing digital governance standards in the areas of intake process, roles, accountability, decision-making authority, and so forth more often than their peers are, which helps their organisations scale innovations quickly while managing risk.

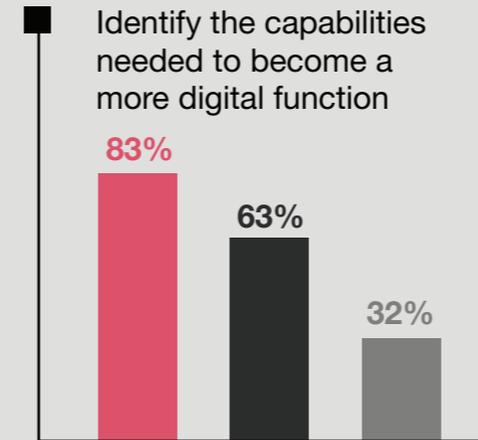
Figure 4

Dynamics action their digital roadmap

Standout behaviours



Baseline behaviours



■ Dynamics ■ Actives ■ Beginners

Q. Is your function conducting or planning to conduct the following activities related to building and managing a digital roadmap?

Response: Doing now

Base: 252 Dynamics; 246 Actives; 441 Beginners

Ameren drives its digital strategy with risk functions plugged in

Ameren's digital overhaul ranges from upgrading its grid for two-way solar and wind power flow to changing how field-workers are scheduled and how customer service reps answer queries through digital technologies, tools, and channels.

Guiding Ameren's transformation is a highly structured true-north roadmap which Ameren's risk management, compliance and internal audit functions helped frame and regularly monitor. As a result, governance over key risks is embedded in its digital strategy and infrastructure. Digital governance is one of five platform pillars. "It's not just compliance. It's not just regulatory. It's not just perimeter security. It is taking a completely different mindset to shift cyber and governance to the left. That's a big part of digital," explains Chief Digital Information Officer Bhavani Amirthalingam.

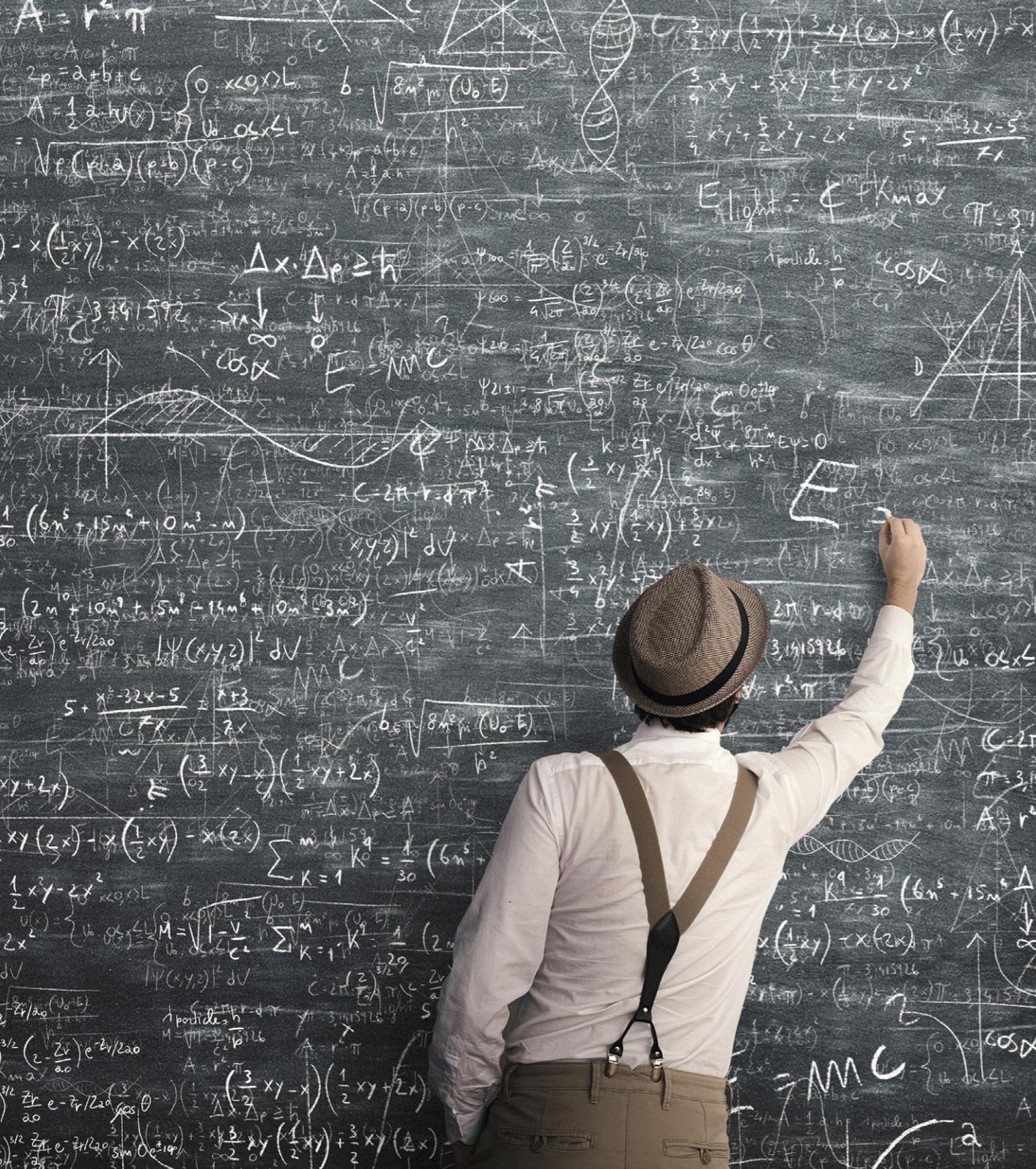
Risk, compliance and internal audit executives weigh in at each scorecard level across the organisation. For example, for the deployment of connected mobile field tools, internal audit, risk management, cyber and external audit functions review monthly all aspects of the tool. Internal audit also conducted multiple internal audits on the tool's change management and practices, testing, and project controls, and helped fine-tune them.

Integrating risk functions' insights and aligning their capabilities with that of the organisation—at the same pace—have helped drive success in the electric and natural gas company's early digital transformation stages. "You have to bring the organisation along and measure and manage against a five-year plan," Amirthalingam says. "Security and risk needs to be a well-trained team sport that is strategically incorporated into the posture."

Go all-in on the organisation's digital plan

Ways to advance

- Align with the organisation's digital strategy and develop a digital roadmap for your function
- Set target outcomes and success metrics for your function's digital investments; evaluate how digital fitness affects your function's future role; and socialise that impact with the organisation
- Revise performance measures to reinforce behavioural change within the function
- Engage with leadership to establish the organisation's digital governance standards to help manage risk



Upskill and inject new talent to move at the speed of the organisation

Creatively source talent to build the function's digital skills and invest to protect the talent you have

Organisations know they must continually add digital skills—and talent is scarce. So, leaders are taking actions on many fronts, including partnering with universities to create relevant curricula and founding digital labs in countries with technical prowess.

Risk function leaders know they need to build digital skills and that risk professionals of the future will look quite different than they do today.

As their organisations take on digital transformations, risk functions need the knowledge and skill sets to provide advice on their risks, including both business and emerging-technology perspectives. Risk functions also need the skills to use digital tools and become more data driven so they can provide insights on risks at the pace and scale the organisation's digital transformation requires. Many of the roles, skills, and job titles of tomorrow are unknown today. But executives we spoke with agree that critical thinking, technology, data analytics, and cyber and privacy skills are needed. Project management, collaboration, and change management skills will also be essential. At least some resources will need data acquisition skills and storytelling skills, which means having mastery of visualisation tools. And the understanding of data governance as well as governance, risk and compliance (GRC) tools will continue to be important. In addition to bolstering specific skills, risk executives are ensuring their teams comprise diverse cultures, backgrounds and thoughts as they recognize the critical role diversity plays in spurring innovation.

Hiring and upskilling for digital prowess are not easy to accomplish.

Many risk functions have hiring and upskilling plans but struggle with putting those plans into action. So, Dynamics are tapping into talent in creative ways: they're relying on centres of excellence or service delivery centres for digital capabilities, and they're bringing in external service providers ([Figure 5](#)). Our discussions with executives showed that risk functions are considering contingent talent in order to onboard specialised skills when needs arise. They're also aligning with their organisations' efforts to add digital skills. And they're drawing on organisation-wide centres of excellence for things like analytical model development, robotic process automation (RPA) programming or general technical training. In addition, in order to reinforce learned behaviours, Dynamics incorporate new performance metrics to assess and reward new, digital ways of working.

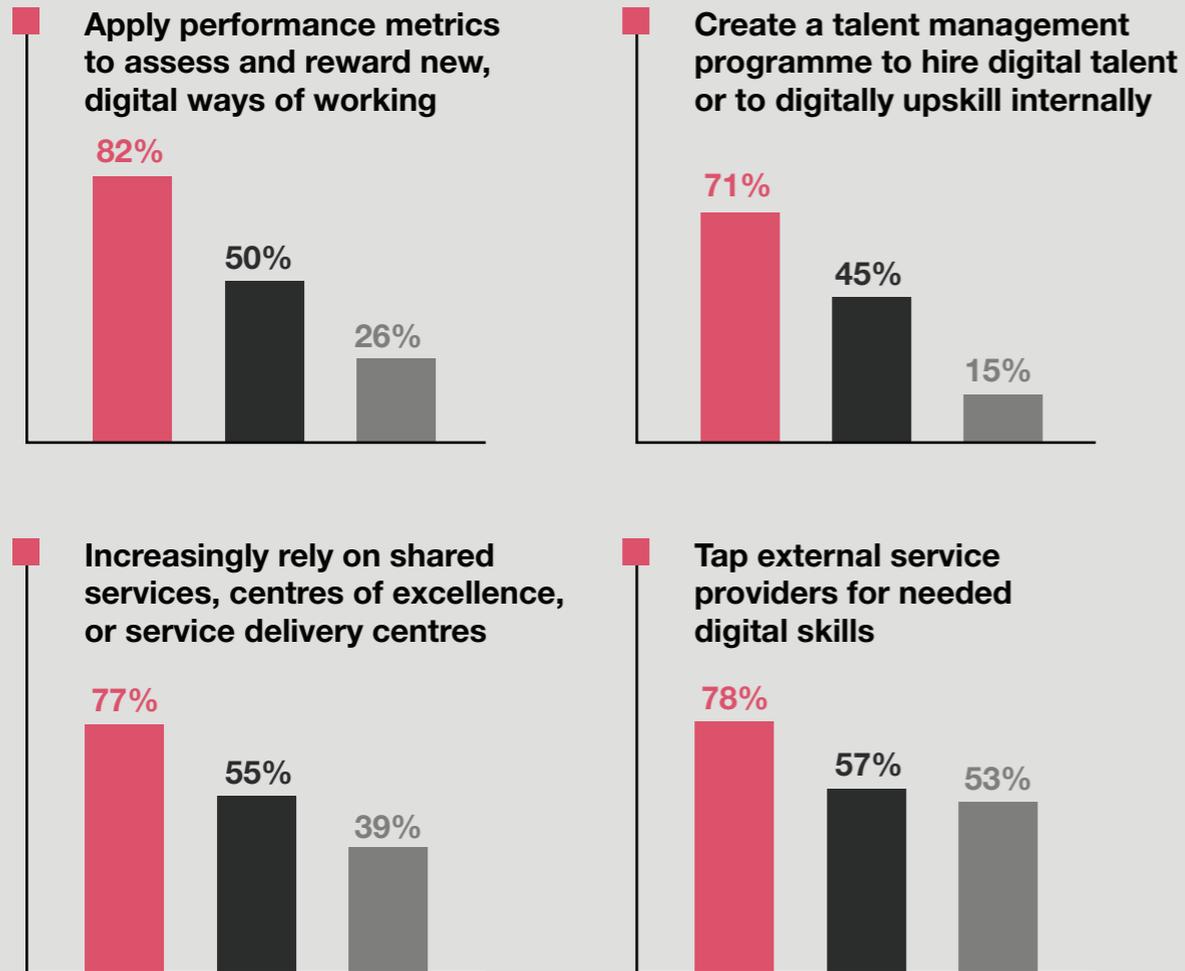
As risk function leaders plan their overall talent mix, a tiered skills strategy may be appropriate.

PwC's [2019 AI Predictions](#) report lays out a workforce strategy with three levels of artificial-intelligence (AI)-savvy employees across the organisation: citizen users, citizen developers, and specialists. Most of an organisation's employees will be citizen users. They'll learn how to use the organisation's AI-enhanced applications, how to support good data governance, and how to get expert help when needed. A more-specialised group—perhaps 5 to 10% of the workforce—will receive further training to become citizen developers—power users who can identify use cases and data sets and can work closely with AI specialists to develop new AI applications. This group will require extensive training and incentives to fulfil the power user role, but they're essential to the scaling of AI capabilities. Finally, a small but crucial group of data engineers and data scientists does the heavy lifting to create, deploy, and manage AI applications. People in this group are hired usually for their specific skills, which are in high demand in the market. This kind of approach can also serve as a good model for approaching *all* skill needs—beyond just AI—and it makes building a digitally fit risk function more attainable.

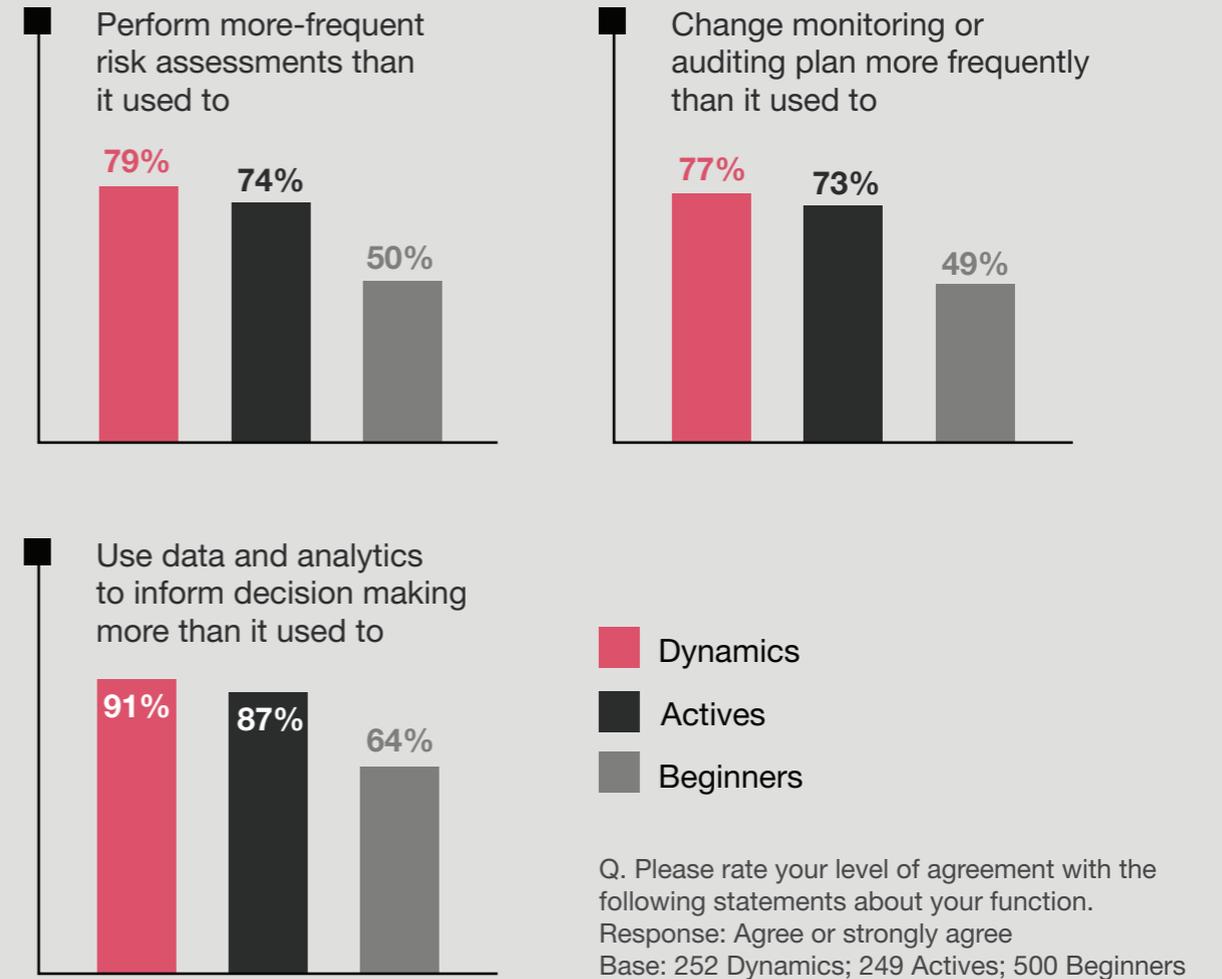
Figure 5

Dynamics creatively source talent

Standout behaviours



Baseline behaviours



It takes continual investment to keep skills fresh as technology evolves and to keep digitally skilled resources satisfied.

Focusing on hiring and onetime upskilling is not sufficient as the market for talent intensifies. The best employers also provide a great learning environment, yet many employees say their employers' tech upskilling efforts fall short. Just half of people polled in PwC's [TechAtWork](#) survey said they're satisfied with the resources their employer provides for this purpose. Some organisations are taking the upskilling mandate as an opportunity to build a culture of innovation. For example, PwC has invested in its own [Digital Fitness](#) app. Employees take an assessment and receive a digital fitness score. They can compare their score with the scores of others in their department and the organisation. They also receive a tailored learning plan based on their score. Employees can choose personal, measurable weekly learning plans that suit their schedules. And, with organisationwide insights, PwC can evaluate the firm's workforce strengths, opportunities, and talent gaps. And PwC's Digital Lab—a virtual hub for finding and sharing digital innovations across the firm—further citizen-led innovation.

In today's highly competitive market for technical skills, risk functions that continually invest in and reward digital skills and provide employees with the technology those employees expect can win the employee retention battle.

“Tomorrow’s skillsets will be much more around analysis of output and prioritizing decisions based on indicators and importance. That’s why auditors will need to know more about the implications of technologies. Not how to code. But what IS coded, how decisions are coded in automated processes, and how to verify and confirm coding.”

Melvin Flowers, Corporate Vice President, Internal Audit,
Microsoft Corporation

“We are rolling out a companywide learning and development programme as a way to ensure that every person in S&P Global can be tech savvy. We are also launching a Data Science Academy so people can elect to get additional training in a very specific technical area. Global Risk Assurance will take advantage of these programmes.”

Nancy J. Luquette, Senior Vice President, Chief Risk & Audit Executive,
S&P Global Inc

Upskill and inject new talent to move at the speed of the organisation

Ways to advance

- Assess your function's current talent capabilities to identify gaps and create a talent programme that specifies the hiring, sourcing, and upskilling steps that will reach the targeted skill sets needed for greater digital fitness
- Upskill and/or recruit resources to serve as data and analytics citizen developers while training the broader team as citizen users
- Leverage your organisation's centres of excellence, shared-services centres, or service delivery centres
- Promote and reward citizen-led innovation
- Invest in data science skills; cosource for specialised needs; consider outsourcing talent to accelerate digital fitness



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Find the right fit for emerging technologies

Automate and streamline the function's operations to expand risk coverage

Organisations continually seek ways to drive greater efficiency by streamlining their operations. Now emerging technologies such as AI, RPA, and the Internet of Things are taking efficiency to new levels. Just over one-third of all of the organisations in our survey said they consistently use emerging technologies like those to boost the productivity and quality of their operations. Organisations with Dynamic risk functions are far more likely to be in this group.

By automating the activities of their functions, Dynamics free capacity and shift resources to be able to work on more-value-added analyses and insights. They also become able to expand risk coverage as digital transformation changes their organisation's risk profile.

Dynamics don't think of emerging technologies as bolt on but as smarter ways to do more.

Dynamics stand out for their deployment of emerging technologies in a number of innovative ways ([Figure 6](#)). At least one-third of Dynamics said they're using AI for such tasks as full population testing or controls monitoring and RPA for routine tasks such as data retrieval. Drones are in use to both assess and maintain compliance with policy and regulatory standards. The majority also use GRC technology within the function to monitor, report, assess, and test risk. This is rapidly becoming a baseline capability as many risk functions and process owners make progress with GRC tools.

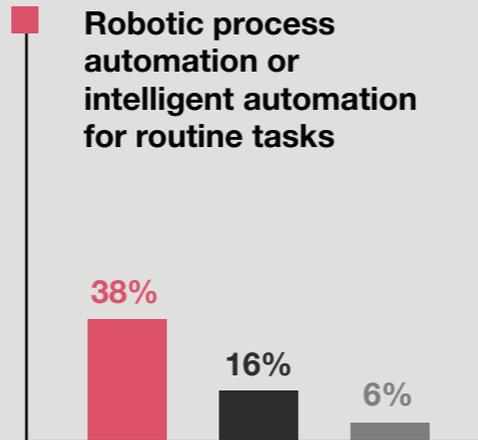
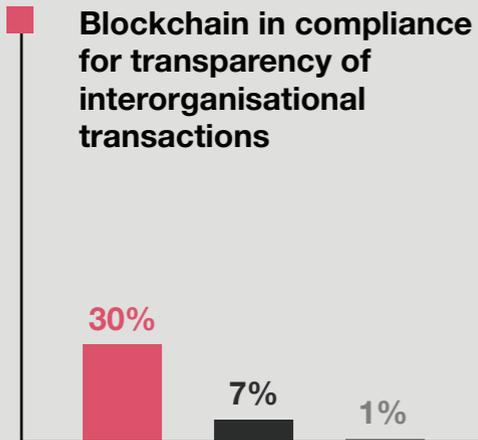
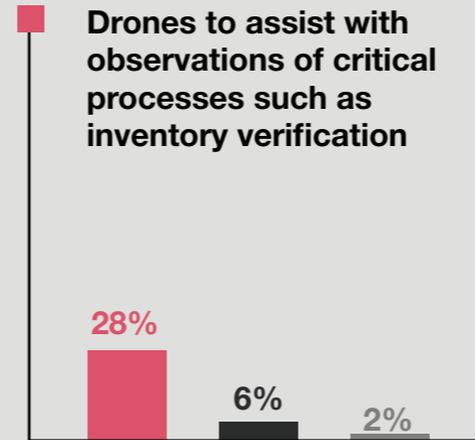
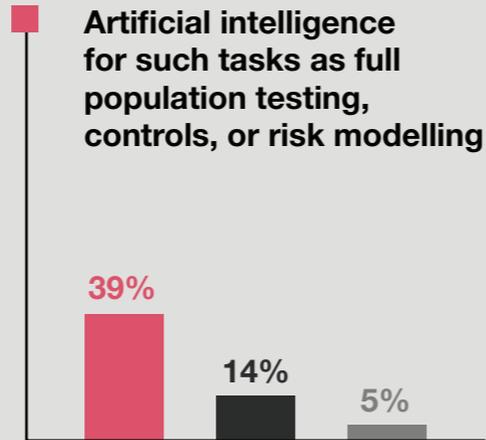
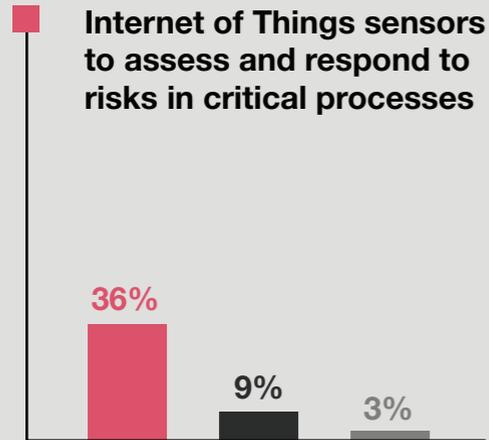
“Cloud technologies, RPA, analytic capabilities, blockchain—all are coming into play at the same time. It really has some very profound implications as to how business services are delivered and consumed.”

John Merino, Chief Accounting Officer, FedEx Corporation

Figure 6

Dynamics find the right fit for emerging tech

Standout behaviours



Baseline behaviours



- Dynamics
- Actives
- Beginners

Q. Which of the following best describes your function's use of each of these technologies?
Response: Using now
Base: 252 Dynamics; 249 Actives; 500 Beginners

Like other risk functions beginning to use bots for reporting, Robert King, corporate vice president and chief audit executive at FedEx, introduced bots into his internal audit function for such tasks as metrics reporting and quarterly quality assessment reviews. His approach to help his team embrace automation was both creative and effective. He introduced them to new employee “Harry Botter” who was joining the group with a strong résumé, including high school athletics and other elements that brought Harry to life. King challenged the team to think about ways Harry could help them and what tasks he could take off their plate. Now, after handling some basic tasks, Harry is transitioning to more-skilled work. This innovative and fun approach has worked well in helping the staff adapt to digital transformation. King points out that, “How well you manage change is, quite candidly, a significant success factor in digital transformation, whether you are talking about my organisation or the company as a whole.”

“We have to be able to provide the business thoughts on internal controls for the use of emerging technologies such as robotics and chatbots. We are also using analytics with internal audit for better performance and deeper, broader coverage across the enterprise. We will also need to challenge how we approach our work as the risk will change once the business implements additional digital capabilities.”

**Greg Jordan, Senior Vice President and Chief Audit Executive,
Nationwide Mutual Insurance Company**

Find the right fit for emerging technologies

Ways to advance

- Encourage digital-first thinking in all aspects of work
- Identify and assess activities throughout the life cycle by following a consistent framework to find the best candidates for automation
- Challenge teams to completely rethink how risks can be identified, assessed, evaluated, and audited by means of emerging technologies



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Enable the organisation to act on risks in real time

Build capabilities to deliver risk insights and assurance when and where it's most needed

Technology, data privacy, security, and project and business process risks are, of course, present in digital initiatives. New—and still unfolding—risks like biases in AI expand the list. And leaders of fast-moving digital initiatives must make frequent decisions that weigh opportunity against risk. That means that risk functions must provide more-proactive and real-time insights to support those decisions.

Dynamics are making use of data and digital capabilities to power entirely new ways of doing things so that the function is agile and is providing insightful perspectives for stakeholders.

This may involve creating analytical models or dashboards for use in an audit. The models or dashboards are then given to the business for monitoring (Figure 7). Or it may be reconstructing existing services, such as using intelligent automation or machine learning for more-timely and more-relevant risk assessments. Or it may involve changing the risk assessment in order to address how quickly the risk would manifest into outcomes.

The likelihood is far greater that when issues arise today, they will snowball quickly. For example, if a nongovernmental organisation identifies an issue with regard to the use of child labour in a company's extended supply chain, the damage to the company's brand can spread across social media before the company can verify its suppliers' connections. A formal risk assessment that is data driven to consider risk likelihood, impact, and velocity can produce a more meaningful set of priorities than one that focuses exclusively on risk likelihood and impact.

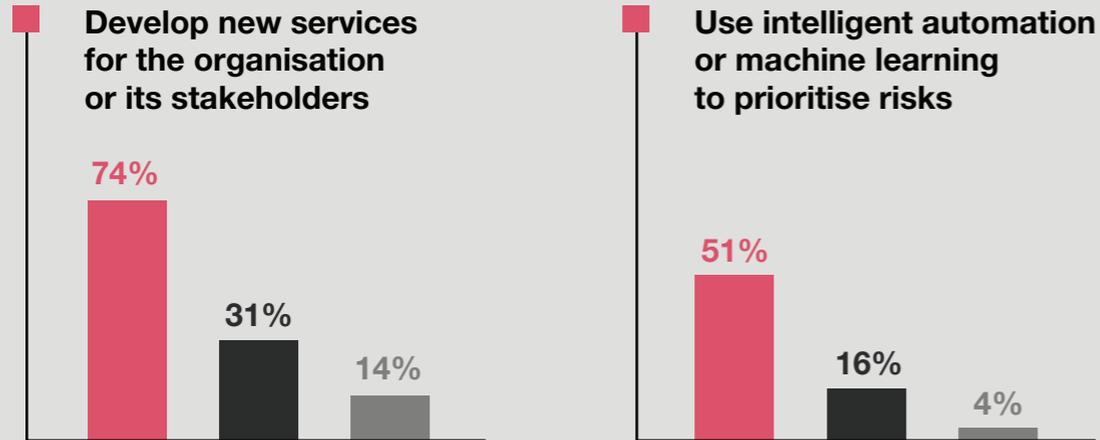
“Risk functions don’t change their monitoring capabilities fast enough to focus on what’s important to a company’s future rather than its past. Spend more time monitoring the product forecast that will make up 80% of revenue in three years rather than the one that makes up 80% of revenue today. Shift the focus to where you are going, in lockstep or right behind management.”

**Melvin Flowers, Corporate Vice President, Internal Audit,
Microsoft Corporation**

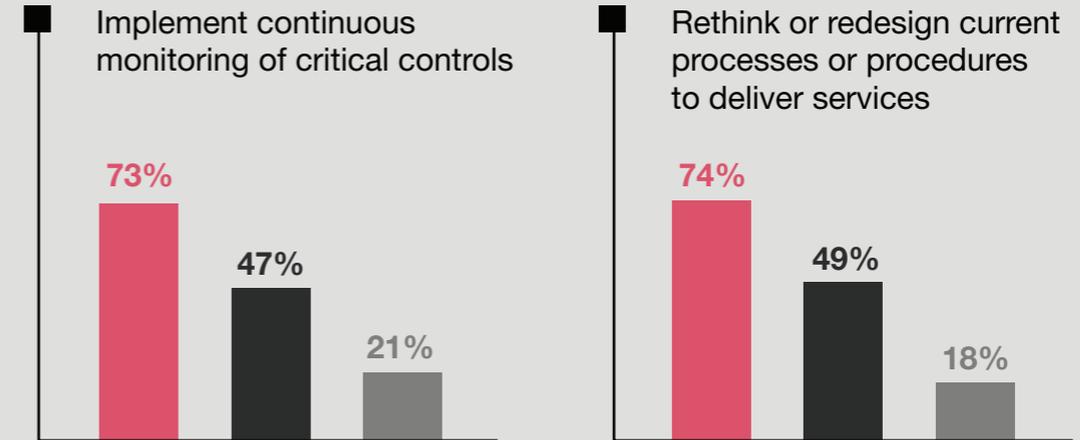
Figure 7

Dynamics embrace new ways to tackle risks from digital innovation

Standout behaviours



Baseline behaviours



■ Dynamics ■ Actives ■ Beginners

Q. Is your function conducting or planning to conduct the following service-related activities based on the availability of digital technologies?

Response: Doing now

Base: 252 Dynamics; 249 Actives; 500 Beginners

Data lakes are also being tapped for real-time risk identification, monitoring, and testing.

A data lake is a central repository that stores both structured and unstructured data at any scale. Data lakes are becoming increasingly feasible to build given declining-cost curves and increasing computing power. When risk functions pair a data lake with AI, powerful risk insights can emerge. DXC Technology's growing data lake serves as the foundation for producing both risk and operational insights that benefit all three lines of defence. (See "[DXC Technology's internal audit data lake platform erects a powerful foundation.](#)")

In each of the foregoing examples, the goal is the same: provide the most-relevant, most-timely information and insights so the organisation can act on risks—in real time. Data is at the centre of achieving that goal.

Accessible and trustworthy data is essential to digital transformation.

Risk functions historically less involved in data governance now have to engage. If a data governance structure does not exist, risk functions must provide input and recommendations with regard to what that structure should encompass. Or they may have to conduct an assessment of the organisation's data governance structure and processes. Because advanced analytics are now being used across organisations, risk functions also have to establish governance processes over the analytical models themselves. For example, one financial institution assembled a separate model governance group that bridges the first and second lines so as to independently test, validate, and verify high-risk analytical models used by the chief financial officer and treasury functions. And as they become more and more involved in data governance for their organisations, risk functions also have to step up governance over their own data in order to make sure that critical information reported to the board is both timely and trustworthy.

“Governance is at the centre of our risk and control considerations for emerging technologies, such as, Who controls the data? Who oversees the governance structure? Who's making sure we've got licenced associates or vendors using drones? Who is managing compliance and privacy with the use of chatbots and voice analytics? We operate a federated model with governance guidelines to be implemented by the business. We want consistency in the design, the application, and the documentation.”

**Greg Jordan, Senior Vice President and Chief Audit Executive,
Nationwide Mutual Insurance Company**

DXC Technology's internal audit data lake platform erects a powerful foundation

As a leading independent, end-to-end IT services company, DXC is on the forefront of helping clients on their digital transformation journeys. DXC Bionix is a data-driven approach to intelligent automation that transforms enterprises digitally at scale. And, DXC security services help identify threats, respond to attacks, protect data privacy and manage identities in the midst of large-scale digital change. DXC's cloud, IoT and many other services are all helping companies unlock value through new business models, better customer experiences, faster time-to-market and increased productivity.

In such a highly innovative environment, DXC's internal audit function knew it was essential to keep pace with the organisation's digital transformation expertise by harnessing similar digital capabilities and the power of data. The function embarked on an innovative journey to build a data lake that used robotics to pull data efficiently. An effort that began with aggregating data to audit journal entries quickly expanded to resource management, time and expense management, security controls and an ever-expanding audit universe. The data lake adds great insight and efficiency to audits and, beyond the audit, is producing insights of substantial operational value. For instance, internal audit's advanced analytics are generating insights the business can use to better manage hiring controls and the quality of hiring decisions.

John Newstead, former chief audit executive and now head of global shared services and chief risk officer, says internal audit's use of data and analytics is providing greater assurance to the board around the quality of control frameworks. But at the same time it is building a foundation for greater collaboration with the business as it continually strives to operate more effectively. "It's the operational side of the business—helping drive efficient operations—where insights could be game-changing," he said. "Bringing insights to the business as it is going through change can be very powerful."

Innovation has also driven a multiple line-of-defence approach. "The creation of the data lake, the quality of data, the analytics we're undertaking, and the insights we're producing have been powerful for enterprise risk management," said Newstead. "As a function, ERM is able to have much broader insights—driven both inside and outside the organisation. That gives more confidence to leadership and the board, informs the enterprise risk assessment, and better informs the internal audit plan. The benefits radiate in multiple directions."

Enable the organisation to act on risks in real time

Ways to advance

- Rethink risk assessment and audit plans to recognise the importance of risk velocity, to better prioritise risks, and to keep pace with digital initiatives
- Leveraging new data- and technology-driven capabilities utilise continuous monitoring of critical controls in order to monitor high-risk areas in real time and expand risk coverage to areas not previously monitored
- Evaluate data governance policies and programmes, and establish common data governance to support the three lines of defence
- Consider the use of a data lake to support risk and compliance in making new data correlations and in generating insights to drive a more dynamic risk identification, assessment and monitoring process



Actively engage decision makers of key digital initiatives

Get and stay connected to be at the forefront of digital initiatives

Even with new tools and capabilities in hand, risk functions must actively engage and communicate with decision makers to contribute throughout the rollout of digital initiatives. Active engagement also helps risk functions get more-timely insights into organisational risks so as to better align resources and effort.

For some risk function leaders, regular participation in digital initiatives includes attending milestone meetings. For others, it involves being consulted about the risks of a particular initiative. Still others have only limited involvement or no involvement in their organisations' digital activities. Those who add the most value to their organisations' digital transformations engage and communicate even when the decision makers overseeing those transformations are more dispersed and varied than risk functions' traditional stakeholders.

Dynamics continuously connect with stakeholders about the risks stemming from innovations.

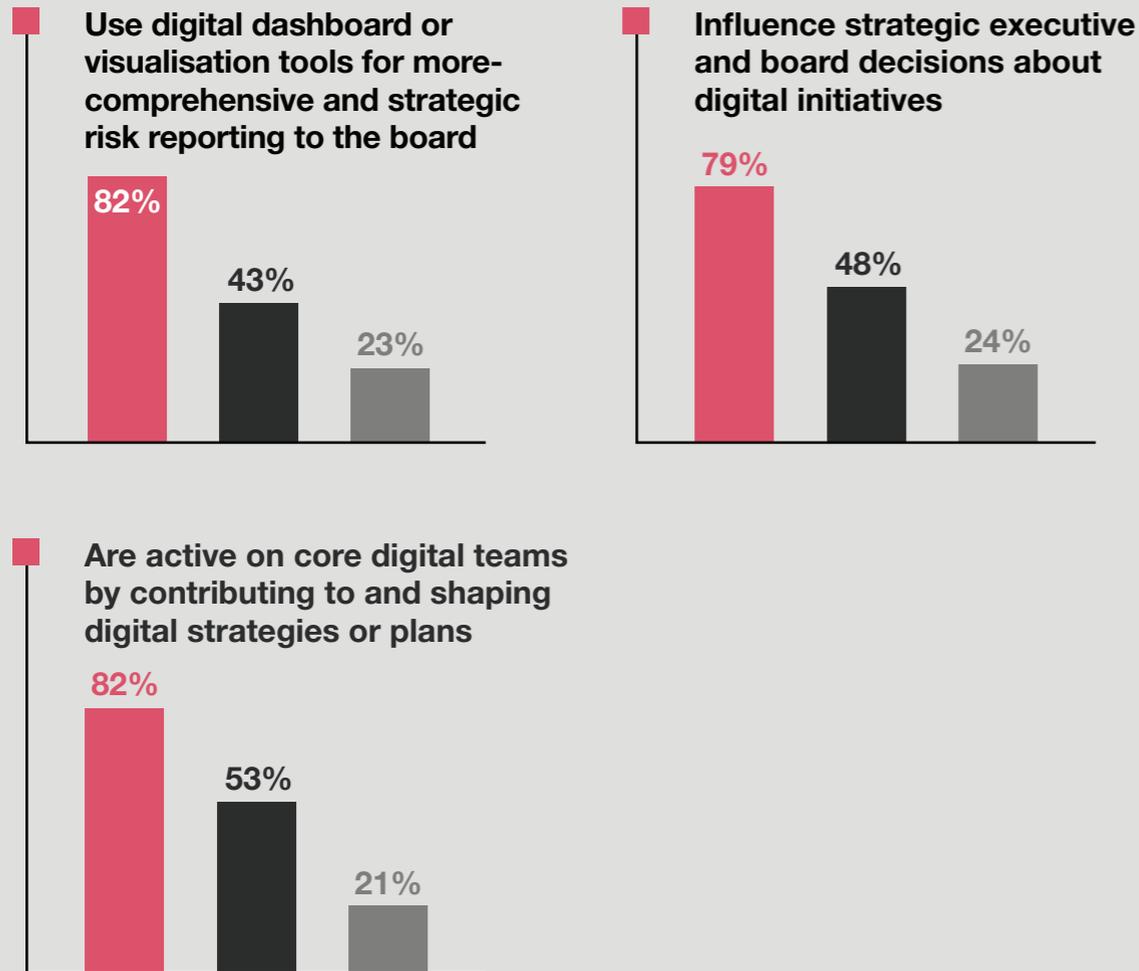
They are active on core digital teams contributing to and shaping strategies and plans. They are involved throughout digital initiatives by recommending controls, assessing risks, and discussing policies. They present a consolidated and easy-to-understand view of risks with the help of digital dashboards. And they chime in at the right time so leaders can make more-informed decisions ([Figure 8](#)).

While many organisations have informal or formal digital roadmaps, they lack effective ways to measure progress; and that extends to risk measurement. In their stakeholder communications, risk functions have to have the right set of key risk indicators (KRIs) to keep decision makers adequately informed. That can be a challenge. In PwC's [Digital Trust Insights](#), only 27% of respondents said they are very comfortable that the board receives adequate reporting on metrics for cyber and privacy risk management. Types of measures that are obtainable and useful depend on many factors, including at what stage the organisation is in its digital journey. Start with what can be measured today, and create a plan to add more-sophisticated metrics over time.

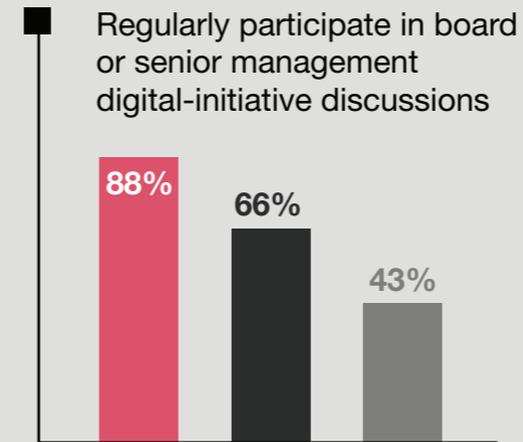
Figure 8

Dynamics keep the board and management current on risks

Standout behaviours



Baseline behaviours



■ Dynamics ■ Actives ■ Beginners

Q. Please rate your level of agreement with the following statements about your function.
Response: Agree or strongly agree
Base: 252 Dynamics; 249 Actives; 500 Beginners

Actively engage decision makers of key digital initiatives

Ways to advance

- Plug into board or senior management discussions on digital strategy and initiatives, and outline your role in those as a risk function
- Get involved early in projects in which the organisation is piloting new technologies—in order to set governance and controls that can be replicated as technology use expands—and evaluate pilots within your function as well
- Use visualisation tools, such as dashboards, and the appropriate KRIs for the audience to keep stakeholders abreast of risks
- Explicitly add digital transformation risks to the agendas of key meetings such as quarterly business reviews, steering committee meetings, and board meetings



Collaborate and align to provide a consolidated view of risks

Find ways to integrate activities and information across the lines of defence

Now is the time for risk functions across the three lines of defence to work in concert in order to help the organisation through its digital journey. Cost curves, technology capabilities, and quality data are making the fusing of some activities more affordable, more feasible, and more powerful. By working from one source of data on a common platform with a common tech stack, risk functions can bring leaders a consolidated view of risk, which boards, CEOs, and other stakeholders crave for more-informed and agile decision making.

Dynamics distance themselves most in their use of (1) one set of risk metrics or KRIs tied to organisational key performance indicators, (2) a common risk taxonomy across the enterprise, and (3) a common policy framework—all necessary steps towards building a common view of risks (Figure 9). Dynamics also stand out by their use of a common GRC tool across functions, which moves them towards a single source of information and a basis for coordinating risk management and consolidated reporting. Many risk functions are also working together to build digital talent and to share investments in recruiting, training, and upskilling.

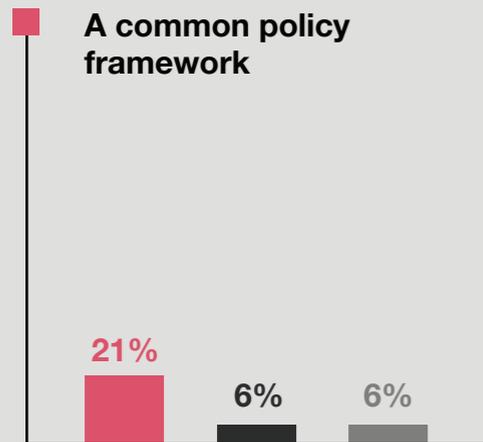
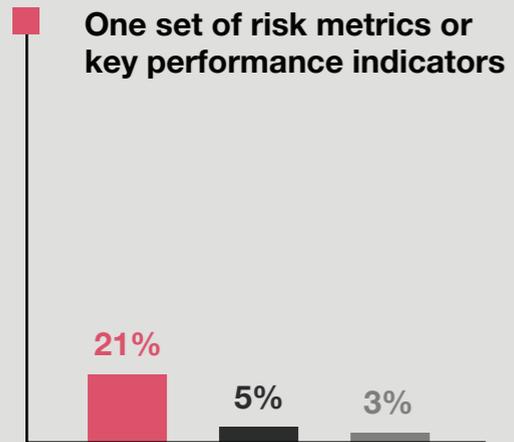
“The ability of data to be leveraged in multiple ways creates inherent efficiencies. We’ve built out the data lake, and it’s quite powerful. Much-broader insights driven by both inside and outside the organisation inform the enterprise risk assessment and the audit plan and give more confidence to leadership and the board. The benefits radiate in multiple directions.”

**John Newstead, Head of Global Shared Services
and Chief Risk Officer, DXC Technology**

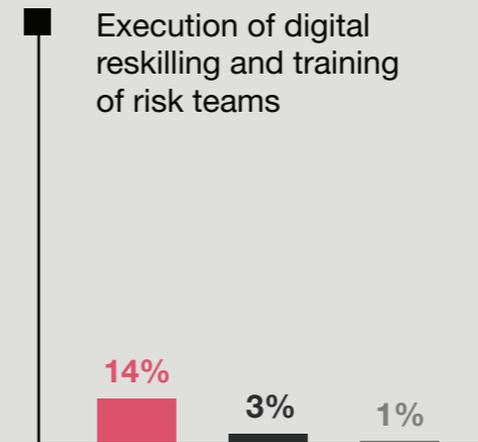
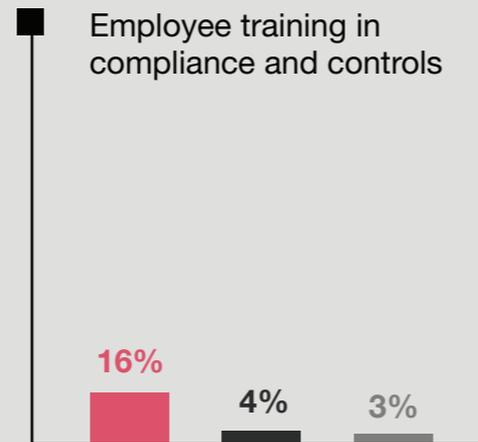
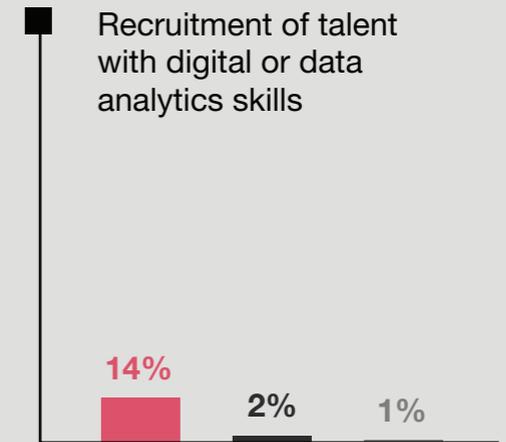
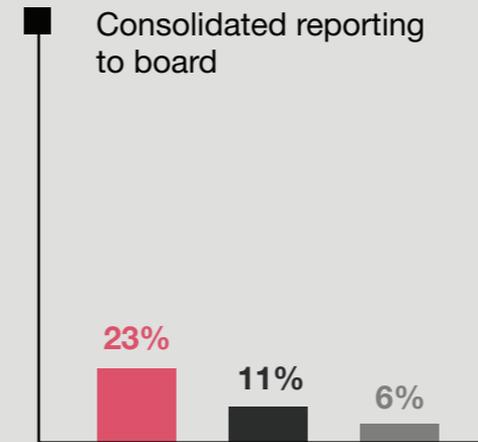
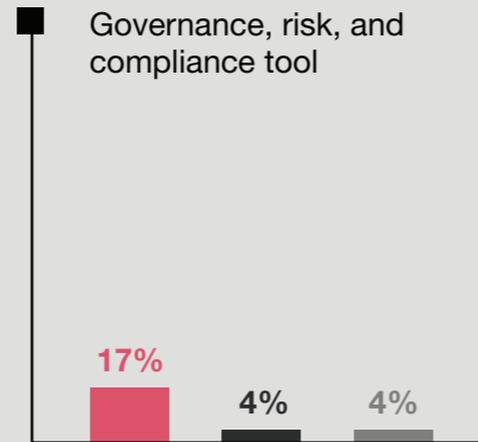
Figure 9

Dynamics are moving to shared view of risks

Standout behaviours



Baseline behaviours



■ Dynamics
■ Actives
■ Beginners

Q. Is your function currently integrated or planning to integrate with other lines of defence in the following areas?
Response: Fully integrated
Base: 252 Dynamics; 249 Actives; 500 Beginners

The ability to correlate data points across existing and new data sources will lead to greater collaboration across the lines of defence and more-dynamic risk identification, monitoring, and testing.

As the risk universe becomes more and more dynamic, all risk functions should push towards working from common risk information and towards furnishing a consolidated view of risks to stakeholders and the board. Technology can make those efforts more timely, more accurate, and more efficient. But a new vision of how the lines of defence work together has now become possible. Risk functions that can partner to bring data and technology together in new ways will connect the dots on strategic risks in a manner never done before.

By bringing structured and unstructured data from both internal and external sources into a data lake, risk functions can better predict, identify, and address strategic risks. Risk functions will have powerful data from which to make correlations that have not been possible before, to better understand risk, and to quickly respond to changes in the risk profile. Strategic risk data platforms are being used for such needs as the dynamic monitoring of risks associated with an organisation's extended supply chain, counterfeit goods identification, conflicts of interest, and ethical use of data. Those correlations can be used by the different risk groups for closer alignment with the organisation's strategic risks and for more-real-time handling of risks. The ability to take advantage of these predictive correlations not only creates an opportunity for risk functions to collaborate on how to manage the risks but also provides more-strategic assurance. Simply stated, the correlations increase both the value of risk functions across the organisation and the insights risk functions can provide. It's an opportunity for risk functions to collaborate in the management and monitoring of risks in better and more-efficient ways.

Collaborate and align to provide a consolidated view of risks

Ways to advance

- Lead efforts to create a common risk taxonomy, metrics, and policy framework by collaborating with other risk functions on the methodology
- Create a common risk management technical architecture that includes data, integration, application, and visualisation layers
- Establish strategic risk data platforms—inclusive of internal and external data—to enable functions to get a broader view of risks and to foster collaboration on how to manage and monitor risks more effectively and efficiently

Being a smarter risk taker

Organisations will become smarter risk takers when their risk functions align with the organisation's digital strategy, respond with the agility needed, and continually deliver to decision makers the information and insights the decision makers need in order to make risk-informed decisions. The more advanced the organisation is in its digital capabilities, the more it needs risk functions that can keep up and stay relevant.

Dynamics show us that risk functions that move in lockstep with the digital transformation of the organisation are substantially boosting the odds of sustainable digital success, which is imperative when public trust defines survival. Organisations with Dynamic risk functions enjoy more-effective risk management, which contributes to greater confidence in taking on risks, a faster and safer digital journey, and greater-than-anticipated value from digital investments.

Dynamics are increasing their digital fitness on two fronts: by proactively plugging into digital initiatives and creating more-digital and more-data-driven functions in parallel, all of which helps them advise the stakeholders who are driving their organisations' digital initiatives. And that makes risk functions not only valuable but also vital to an organisation's digital success.



Methodology

PwC's 2019 Global Risk, Internal Audit and Compliance Survey was fielded from October to November 2018. A total of 2,073 CEOs, board members, and professionals in the areas of risk management, internal audit, and compliance responded. Executives in 99 countries and 27 industries participated. An additional 385 executives began but did not complete the survey because their organisations did not have either digital initiatives or digital roadmaps under way. We explored the things that differentiate risk functions that support smarter risk taking as their organisations undertake digital initiatives.

The survey assessed the digital fitness of risk, compliance and internal audit functions by means of a five-part framework ([Figure 1](#)). A digital fitness index for each risk, compliance and internal audit respondent was created based on the weighting and averaging of multiple survey questions that investigated behaviours in each framework area. The maximum score for each framework area was 100. Scores across the five areas were summed, for a maximum score of 500. All risk, compliance and internal audit respondents were then ranked and divided into quartiles based on their aggregate scores. The top quartile, Dynamics, had scores of at least 348; the second quartile, Actives, scored from 281 to 347; the third quartile scored from 204 to 280; and the bottom quartile had scores of less than 204. The findings are based on assessment of the differences between the four quartiles of respondents, with a focus on areas with the largest differences between the behaviours of Actives and Dynamics—in other words, behaviours that help Dynamics go from good to great in digital fitness.

Our research included more than 30 interviews with business leaders globally who added depth and perspective on their organisations' and their risk functions' digital transformations. We thank all of those participants for their time and willingness to contribute insights to our 2019 study.

pwc.com/us/RiskStudy

To have a deeper conversation about how this subject may affect your business, please contact:

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