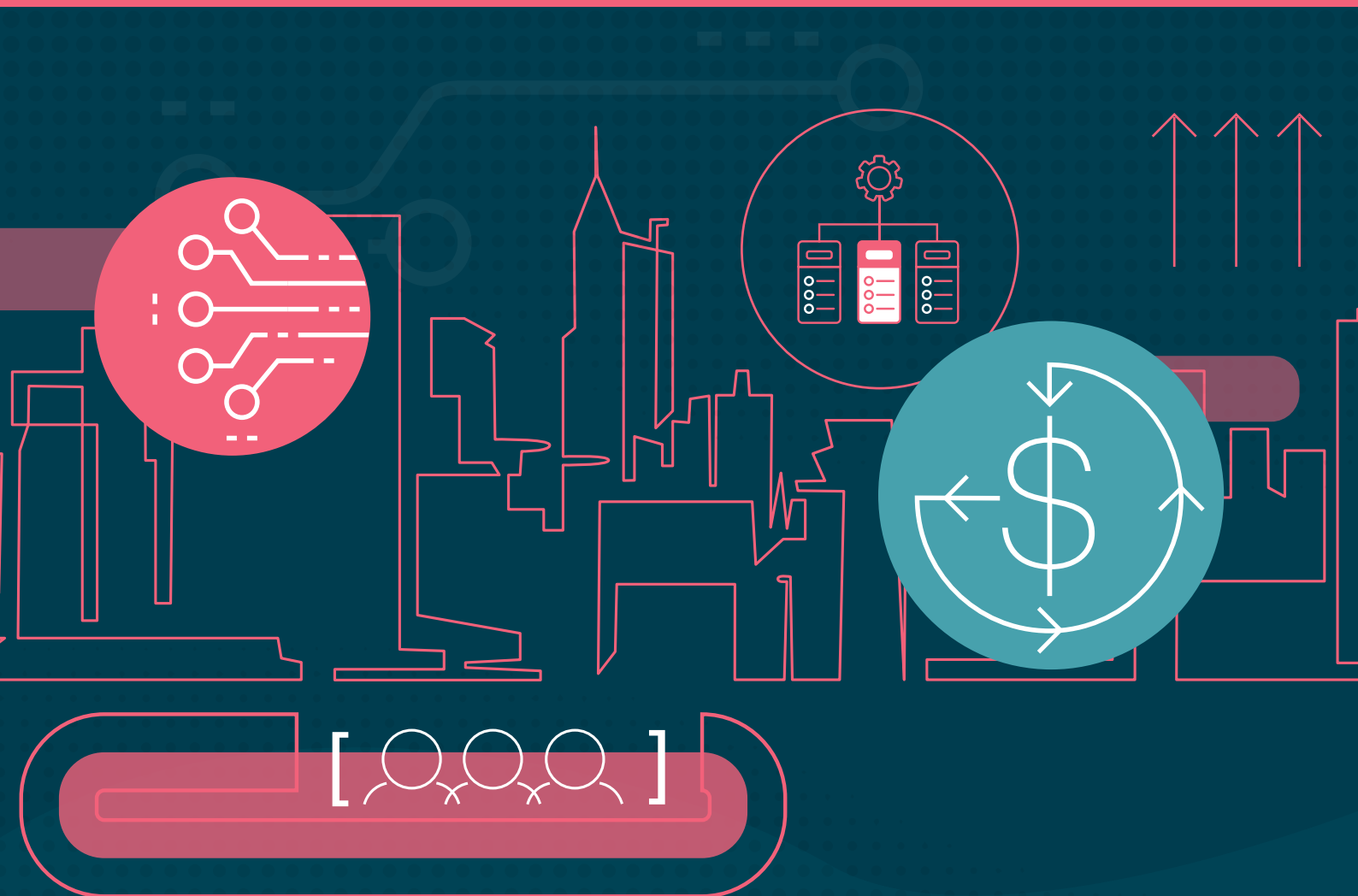


# The state of responsible technology



## Preface

“The state of responsible technology” is an MIT Technology Review Insights report sponsored by Thoughtworks. This report, based on survey research and in-depth executive interviews, seeks to understand how organizations are considering responsible technology, and the various ways in which business leaders are implementing policies, frameworks, or strategies to meet responsible technology objectives. Stephanie Walden was the author of the report, Laurel Ruma and Teresa Elsey were the editors, and Nico Crepaldi was the producer. The research is editorially independent and the views expressed are those of MIT Technology Review Insights.

### The survey methodology

In July and August 2022, MIT Technology Review Insights, in collaboration with Thoughtworks, surveyed 550 senior executives and directors from industries including financial services and insurance, the public sector, healthcare, retail and e-commerce, automotive, and energy and utilities. Respondents to this survey are from nine countries and regions – the United States (12%), Canada (10%), Brazil (10%), the United Kingdom (12%), Germany (12%), India (12%), Australia (11%), Singapore (10%), and China (12%). Each respondent works for an organization with at least \$500 million in annual revenue.

In addition to the quantitative insights gleaned from the survey, this report has been supplemented by a series of interviews with executives, academics, and experts who specialize in data and data ethics, digital privacy, algorithmic bias, and emerging technologies like extended reality and artificial intelligence. These interviews occurred in July and August 2022.

We would like to thank the following individuals for providing their time and insights:

**Gabo Arora**, Head of Creative Innovation, Metaverse Continuum Studios (Accenture Song), Founder and CEO, LightShed.io, and Research Professor, The Johns Hopkins University

**Deb Donig**, Professor of Ethical Technology, California Polytechnic State University, lecturer in data science, School of Information, University of California, Berkeley, and host of the “Technically Human” podcast

**Linda Leopold**, Head of Responsible AI and Data, H&M Group

**Cathy O’Neil**, author, mathematician, and data scientist

**Ralf Sigmund**, Chief Technology Officer, MOIA



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## Foreword

As someone who has spent her life working in IT, I'm an unashamed advocate for the transformational power of technology. I truly believe technology has the potential to improve people's lives. That said, I also recognize that technology isn't necessarily an unalloyed force for good.

This is most immediately obvious when we look at the increasing role algorithms are playing in our daily lives – whether that's helping to diagnose cancerous cells, shaping sentencing policy for offenders, or dictating whether you get that bank loan. These algorithms are touted as an impartial aid to help us all make better decisions.

From the individual's perspective, it's not always clear when life-impacting decisions are being made by an algorithm. And from a societal perspective, it's far from obvious that the results of these supposedly impartial decisions are equitable.

That said, many people are waking up to these problems. They're realizing that algorithms can scale up problems and can massively exacerbate inequality.

At its core, the notion of responsible tech is about ensuring that everyone benefits from the deployment of technology. It relies on you, as a decision maker, to not assume that your deployment of technology is a neutral decision and to validate that your use of technology doesn't exclude or disadvantage anyone.

I'm heartened by what I see in this report: not only that today's executives are starting to grasp the urgent need for the responsible use of technology, but that they're seeing the solid, enterprise-enhancing reasons for doing so.

We've all seen the reputational damage that results from tech programs that are racially biased. But as you'll see in this report, adopting a responsible technology strategy isn't a purely defensive play: we see many organizations embracing the benefits it brings. One of these benefits is attracting talent: people increasingly want to work for organizations whose values align with their own.

Embracing responsible tech isn't easy. To get it right, you have to be prepared to examine in detail many working practices you may take for granted. How do you factor in a diverse set of user requirements when building digital products? How do you assess, model, and mitigate risks of the software you are creating? Do you understand sufficiently the systems underlying the data you are relying on to create the tech?

Many organizations are grappling with those very issues. As you read this report, I hope you'll be inspired by the work that's already underway.

**Dr. Rebecca Parsons**

Chief Technology Officer, Thoughtworks

# 01

## Executive summary

Consideration of how to deploy technology responsibly has become critical as tech and data have become more entrenched in modern society and business operations. Our research makes clear that responsible technology use has become a subject of great interest across industries. In fact, nearly three-quarters of survey respondents either strongly agree (30%) or somewhat agree (43%) that “responsible technology considerations will eventually come to equal business or financial considerations in importance when organizations make decisions about technology use.”

Yet even as respondents agree that responsible technology use is becoming the equal of more traditional business considerations, their explanations of why it is important and what they hope to achieve by adopting it vary widely. For some businesses, responsible technology is a core part of their mission. Others see value in more explicitly financial terms, such as a return on investment, talent acquisition, or improving attractiveness to investors. Yet others seek merely to comply with regulation or to manage risk. Whether and how these disparate efforts and motivations will bring about substantial cultural shifts in how organizations adopt and deploy new technology remains to be seen.

What can be concluded is that responsible technology now goes beyond a hypothetical or a buzzword – it has become a concrete business consideration across industries. Executives are increasingly considering how responsible tech policies may impact brand perception among customers, investors, vendors, and partners. Organizations are thinking more seriously about how their employees, both current and future, view their use and creation of technology. And forward-looking business leaders, at both small and large companies, expect that responsible technology, and practices related to environmental sustainability in particular, will continue to grow in importance.

Here are several other key findings:

- **Organizations expect responsible tech investments to pay off in boosted brand reputation and customer and employee retention.** When asked about tangible business benefits of adopting responsible technology, the top three responses were better customer acquisition/retention (47%), improved brand perception (46%), and prevention of negative unintended consequences and associated brand risk (44%). Closely following these top three were attracting and retaining top talent (43%) and improving sustainability (43%).
- **Large companies take initiative, while smaller companies react.** Drivers for responsible tech policies come from diverse internal and external sources. Large companies were more likely to say they were motivated by desire to attract investors and partners (53%) and to align with their own mission and values (44%), while smaller companies were more likely to cite a desire to improve perception of their organization (54%) and to strengthen employee retention (45%).
- **No consensus on which responsible practices should take priority.** Organizations name a wide range of focuses for their responsible technology practices, with inclusive design, data privacy, environmental impact, elimination of AI bias, and workforce diversification each in the top three for about half of respondents. User privacy and surveillance was seen as less important than all other options offered, with only 35% of respondents ranking it among their organization’s top three focuses.
- **Senior leadership must get on board to make impactful policies a reality.** The most cited hurdles to adoption of responsible technology are a lack of senior management awareness (52%), organizational resistance to change (46%), and internal competing priorities (46%).
- **Organizations are both apprehensive about and appreciative of regulation surrounding responsible technology.** Nearly one-quarter of respondents (23%) name adherence to existing laws, such as GDPR, or the anticipation of pending (and potentially farther-reaching) regulation as a top motivation for adopting responsible tech practices, though this figure varies widely by industry and geography. While some business leaders express trepidation about pending regulation, others cite it as important industry guidance.

# 02 Defining responsible technology

As technology has become a key driver of organizational success across all industries, increasingly urgent questions arise about how to deploy that technology in a responsible way. Alongside innovation's capacity to improve quality of life and enable progress come growing concerns around how issues such as data protection, information privacy, inclusivity, and bias are inherent – or not – in the technology platforms people use every day.

Addressing such concerns in a responsible manner is a pressing challenge for organizations, and how this is done may have significant impacts on society. But just what, exactly, “responsible technology” entails is often ambiguous. “There is some contested terminology around what we want to call this area,” notes Deb Donig, a professor of ethical technology at California Polytechnic State University, lecturer in data science at the University of California, Berkeley, and host of the

“Technically Human” podcast. “Broadly speaking, I think when people talk about ‘ethical technology’ or ‘responsible technology’ or ‘trust and safety technology,’ what they generally are interested in is the intersection of technological production and culture on the one hand, and on the other hand, human values.”

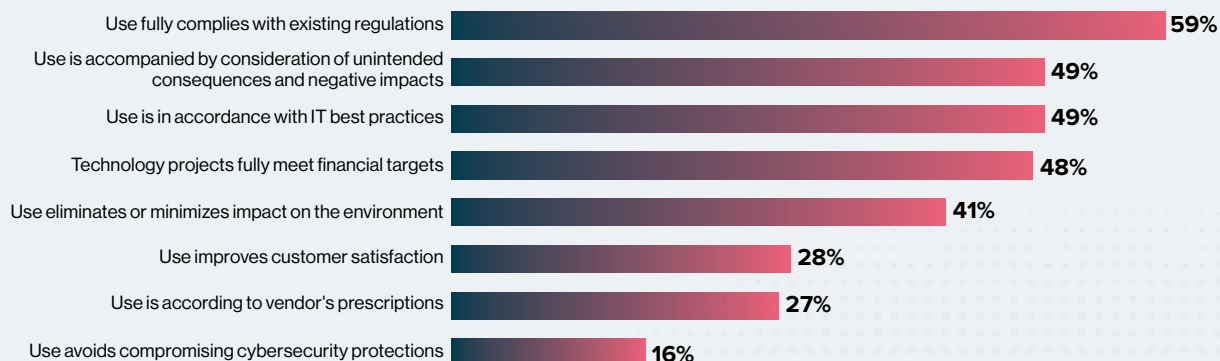
This report is based on the following definition of responsible technology by Thoughtworks:

*Responsible technology is the active consideration of values, unintended consequences, and negative impacts of technology. Responsible tech includes a wide variety of voices in the adoption and deployment process, and seeks to manage and mitigate potential risk and harm to all communities affected by that technology.*

This was also the definition presented to business leaders in an MIT Technology Review Insights survey on how enterprises are thinking about responsible technology.

**Figure 1. How organizations understand responsible technology**

Which of the following most accurately describes responsible technology in your organization?



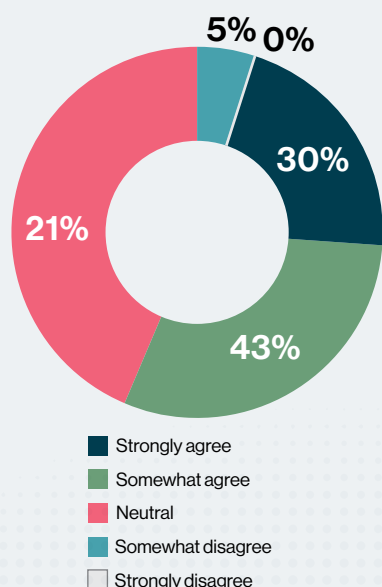
Source: MIT Technology Review Insights survey, 2022

“When people talk about ‘responsible technology,’ what they generally are interested in is the intersection of technological production and culture on the one hand, and on the other hand, human values.”

—Deb Donig, professor of ethical technology, California Polytechnic State University

**Figure 2. Responsible technology will become a significant business consideration**

In the future, responsible technology considerations will eventually come to equal business or financial considerations in importance when organizations make decisions about technology adoption and use.



Source: MIT Technology Review Insights survey, 2022

When respondents were asked about their own organizations, however, the survey highlighted a disconnect between these broader aspirations of responsible technology and what the term tends to mean in practice. When asked how their organization describes responsible tech internally, the most selected description was “when technologies and their use fully comply with existing regulations” (59%), suggesting a limited view of responsibility that ends at legal obligation.

This was followed by “when technologies are deployed and used in accordance with IT best practices” (49%) and

“when adoption and use of technologies is accompanied by consideration of their potential unintended consequences and negative impacts” (49%).

“When technology projects fully meet the financial targets set for them” was the fourth most commonly selected response (48%), highlighting a natural area of tension for business leaders: their responsibility for the bottom line versus their responsibilities to society. Of course, those motivations are not mutually exclusive – but when an obligation to create value for shareholders is at odds with what a reasonable person might consider the greater good, the waters can get murky.

Linda Leopold, head of responsible AI and data at the multinational clothing retailer H&M Group, explains the opportunity as follows: “Legal compliance and security is a foundation for responsible technology. But with our Responsible AI & Data initiative, we are adding an ethics perspective to the picture.” She continues, “This shifts the conversation from only asking ourselves if we are compliant to ‘are we doing the right thing?’”

The idea of responsible technology can extend beyond prevention of harm: it can also aspire to improve the world. Thoughtworks’ definition of responsible technology includes this aspirational notion: *Responsible technology sees technological transformation as an important opportunity too; an opportunity to reinforce notions of social justice, individual and human flourishing, inclusivity and equity, civil liberties and democracy.*

One thing that’s clear, however, is that consideration of responsible technology is becoming increasingly critical to modern business. In the survey, nearly three-quarters of respondents either strongly agree (30%) or somewhat agree (43%) that “responsible technology considerations will eventually come to equal business or financial considerations in importance when organizations make decisions about technology use.”

# 03 Drivers for implementing responsible technology

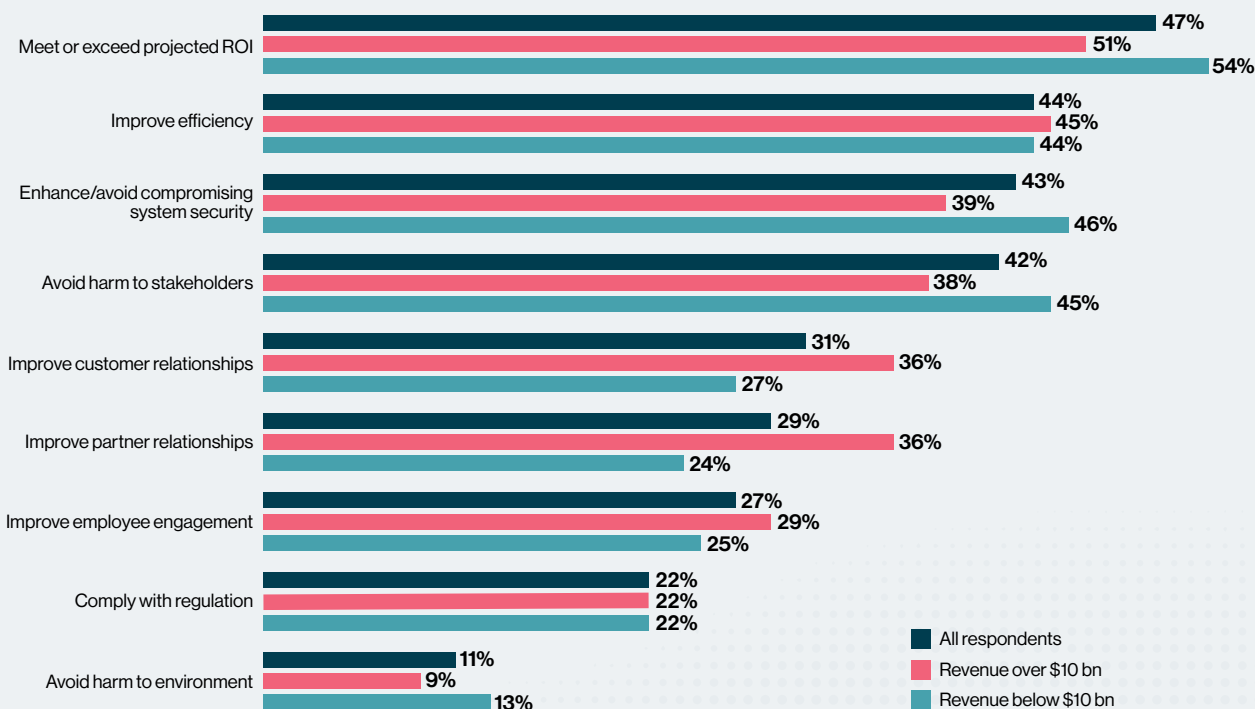
The MIT Technology Review Insights survey investigated two sets of organizational motivations, asking respondents 1) what their organization prioritizes when investing in technology, and 2) what motivates their organization to pursue responsible technology.

When it comes to the larger umbrella – why invest in technology generally? – respondents' top priorities are financial gain and boosts in organizational efficiency.

In response to the question, “When building or investing in new technologies, what are your organization's most important priorities?” (for which respondents were encouraged to select as many responses as applicable), the largest segment of respondents (51%) say that such investments “should meet or exceed the projected return on investment (ROI).” The second most commonly selected choice was “they should improve the organization's efficiency,” with 44% of respondents choosing this answer.

**Figure 3. Why organizations invest in technology (by organization size)**

When building or investing in technologies, what are your organization's most important priorities?



Source: MIT Technology Review Insights survey, 2022

Responsible technology use was, however, mentioned as a secondary priority. Security is a priority for general tech investment, with 43% of respondents selecting “technologies should enhance, or at least avoid compromising, the security of our systems.” Consideration of stakeholders, too, is a factor, with 42% indicating “technologies should be used without causing harm to external or internal stakeholders.”

Companies of different sizes and across different industries outlined distinct priorities. Companies with revenues between \$500 million and \$10 billion are more concerned with ROI (54%), system security (46%), and avoiding harm to stakeholders (45%) and the environment (13%) than are organizations with revenues exceeding \$10 billion (for whom comparable figures are 47%, 39%, 38%, and 9%).

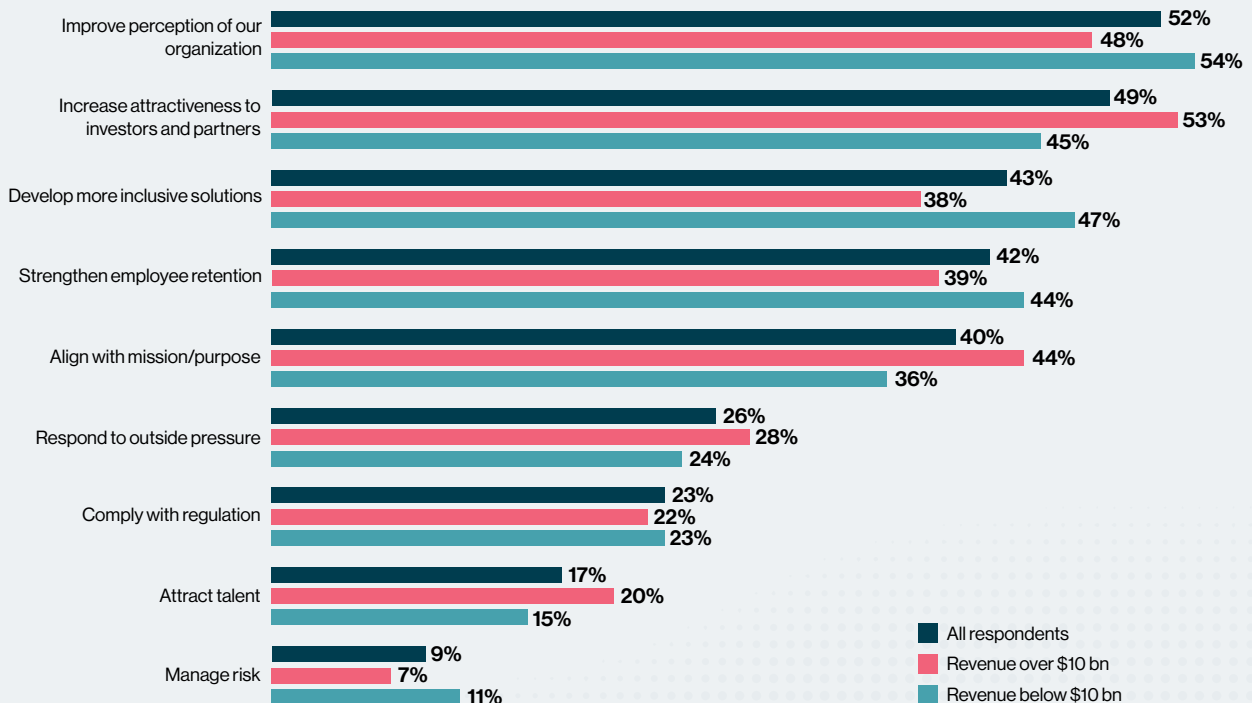
Regarding industry-specific priorities, financial services firms were overall more interested in ROI (61%) and efficiency (66%), while public sector organizations indicated more focus on responsible tech, with pressing priorities pertaining to security (56%) and avoiding harm to stakeholders (52%).

When it comes to the narrower theme of pursuing responsible technology, this work suggests the perceived value of such investment is nuanced. Some business leaders view it as a core part of their organization's DNA or mission. Others see value in more explicitly financial terms, such as ROI or improving attractiveness to investors. Still others appreciate the long-term value of responsible tech – building brand reputation or making a positive impact on the planet, for instance.

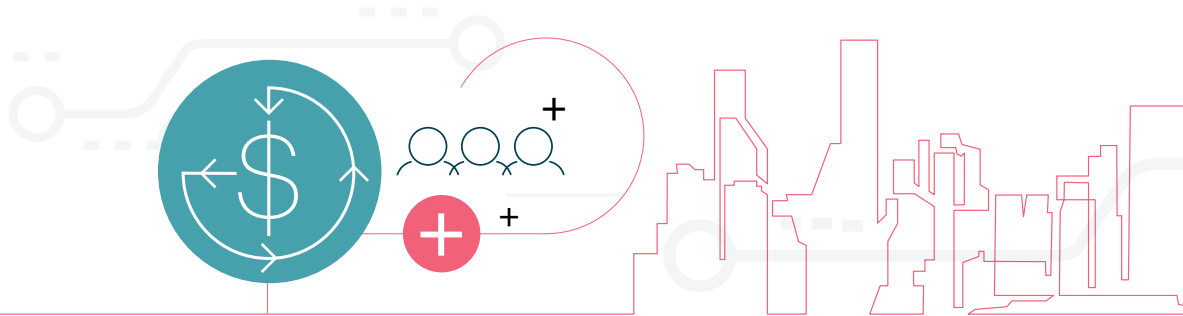
The survey found that improving public perception was a clear benefit perceived by respondents across all industries. In response to the question, “What are your organization's main motivations for pursuing responsible technology practices?” (for which respondents could select more than one answer), more than half (52%) indicated a main driver was “to improve the perception of our organization by consumers/customers.” The second most common motivation was the idea that responsible tech “helps increase attractiveness to investors and partners,” with 49% selecting this. The third most common option (43%) was “We believe it will help us develop more inclusive solutions for customers/clients.”

**Figure 4. Why organizations pursue responsible technology (by organization size)**

What are your organization's main motivations for pursuing responsible technology practices?



Source: MIT Technology Review Insights survey, 2022



The perceived value of responsible technology investment is nuanced. Some business leaders view it as a core part of their organization's DNA or mission. Others see value in more explicitly financial terms, such as ROI or improving attractiveness to investors.

Respondents from large companies were more likely to name proactive reasons for adopting responsible technology, with 53% saying they were motivated by desire to attract investors and partners, compared to 45% at smaller organizations. Their motivations also tended to be more purpose-driven, with 44% saying they were pursuing responsible practices to align with their own mission and values, compared to 36% at smaller organizations.

Among smaller organizations, motivations appeared to be more reactive. Fifty-four percent of respondents at smaller companies selected "improve perception of our organization" as a motivation for adopting responsible technology practices, compared with 48% of larger organizations. And while about 44% of respondents at smaller organizations said a main motivation was to "strengthen employee retention," just 39% of respondents at larger companies indicated the same.

## Generational divides

What employees in the modern workforce value is shifting. Younger employees, including millennials (born 1981–1996) and Gen Z (born 1997–2012), tend to want to work at mission-driven organizations that match their beliefs. According to **LinkedIn's 2022 Workforce Confidence Index** for the United States, 80% of Gen Z respondents want to work for a company that aligns with their values. However, millennials also rank the importance of values at a compelling 59%.

For Linda Leopold, the head of responsible AI and data at H&M Group, the idea that responsible technology can help the organization appeal to top talent is compelling. "We believe that ethical AI and data practices are a key factor for attracting talent," she says, adding that the way such practices are communicated across the organization is an

important component. "Responsible AI and data practices have to be built from the bottom up throughout the organization, making sure they're a priority for all employees globally."

Ralf Sigmund, chief technology officer at German ridesharing service MOIA, agrees that a responsible ethos appeals to prospective talent. "We have around 217 people working in design and product at MOIA," he says. "All of them joined because they want to be part of our mission and want to use technology for the better and to change something."

He concludes, "We would never be able to hire talent internationally without being clear and transparent about responsibility."



# 04 Responsible technology areas of focus

Once organizations begin to implement responsible technology practices, they choose from a large set of problems to focus on. Consulting both the survey data and anecdotal evidence from the interviews, it's clear that companies are aware of a broad range of impacts their technologies may have. Common areas of focus include:

- minimizing environmental footprint
- eliminating biases in algorithm-based technologies
- protecting sensitive company data and improving digital privacy for customers
- diversifying the tech workforce

Survey respondents were asked to rank a list of possible responsible tech priorities in order of importance to their organization: accessibility and inclusive design, data privacy and security, elimination of bias, workforce diversification, sustainability and environmental impact, and privacy and surveillance. No consensus emerged from their answers, with each of the first five options receiving a top-three ranking from at least half of the respondents. Privacy and

surveillance is an outlier, however: it is seen as less important than all other options offered, with only 35% of respondents ranking it among their organization's top three focuses.

## Opportunity for sustainability

Environmental, social, and governance (ESG) concerns were a common theme in both the survey data and interviews. At the German ridesharing service MOIA, where reducing the environmental impact of the transportation sector is central to the company's mission and vision, chief technology officer Ralf Sigmund notes that ESG is a major focus area: "One of our slogans – we actually have it as a piece of art in our office – is '1 million cars off the road.'" He continues, "So the idea is, even as a company owned by Volkswagen, our mission is to get vehicles off the road." Similarly, at H&M Group, Leopold noted that the company has set the sustainability goal of halving its carbon footprint by 2030.

## Improving algorithms

Combatting AI bias was another prominent theme across conversations for this report. Data scientist Cathy O'Neil,

**Figure 5. Responsible technology areas of focus**

Please rank the following in order of their importance to your organization's responsible technology practices. (Percentage of respondents ranking in their top three.)



Source: MIT Technology Review Insights survey, 2022

# “What does it mean for an algorithm to work for everyone who’s impacted by it?”

—Cathy O’Neil, CEO, ORCAA

author of *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* and CEO of O’Neil Risk Consulting and Algorithmic Auditing (ORCAA), stresses the importance of rooting out AI bias that perpetuates systemic racism. She believes there’s an urgent need to look for instances of this type of bias across industries ranging from human resources (hiring) to finance (creditworthiness) to housing and insurance. “I suspect these industries have biased algorithms,” she says, “and I’m eager to audit them.”

“The algorithms that we audit are, generally speaking, human scoring systems. They’re saying, ‘Are you worthy of something? Are you worthy of this opportunity?’” she explains. “So there’s a funnel that people go through before they get to the end goal, whether that’s a job or a house or insurance; they get filtered in iterative steps.”

At ORCAA, O’Neil helps organizations pinpoint where, precisely, algorithms may be making choices rooted in racist or otherwise biased training data. The main question she and her team ask when auditing an algorithm, she explains, is “for whom does this fail?”: “It’s about figuring out who the stakeholders are and how things could go wrong for them—or right. It’s basically asking, ‘What does it mean for an algorithm to work for everyone who’s impacted by it?’”

## Investing in transparency

Transparency about data collection and usage and digital privacy were other areas of interest among the executives interviewed – including those at organizations that have not historically been considered “technology companies.” Leopold, for example, noted that responsible AI and data practices are a growing priority as H&M Group becomes “technology enabled,” adopting solutions and platforms for both in-store and online shopping like contactless payments and personalized styling.

The company has deployed a Responsible AI initiative as part of its relatively new focus on tech. In 2018, it formed a dedicated team to manage this type of work. That team is now a core part of the company’s AI, Analytics, and Data department.

“We work on a three-fold ambition: 1) To do good – to use AI and data-driven technology as a tool to reach our sustainability goals and vision of meaningful growth; 2) To do it right – to actively work to prevent causing unintentional harm in business operations that are AI- and data-driven; and 3) To do more – to lead the way in our industry through exploration, innovation, and co-creation,” says Leopold. The company networks with its industry peers and outside organizations to introduce different perspectives and “ensure we’re thinking about responsible AI from all angles,” she adds.

## A focus on diversity

The importance of introducing more diversity into the tech workforce was another focus area for nearly all interviewees. Despite a mounting emphasis on more diverse hiring in the tech world, the industry’s workforce in countries like the United States remains **disproportionately white and male**, especially at the executive level.

Donig, who leads an interdisciplinary group at California Polytechnic focused on training the next generation of technologists to think deeply about ethics, suggests that more diverse perspectives in the tech industry could produce better guardrails for responsible tech development. “Many people in the growing community of tech critics are talking about things like unethical facial recognition or biased algorithms as a product problem. My thinking has increasingly become that this is not a product problem – that is actually a reactive way of thinking about it. This is a people problem,” she says. “This is a problem with who you have working on the products. And of course, many people have characterized that as a broader diversity problem.”

Donig elaborates that before any technology product is built, it must first be imagined. “Who’s doing the imagining is incredibly important – what kinds of viewpoints and perspectives and values are considered in that process,” she says. “[Including many perspectives] is the best way to ensure that the products that get developed truly serve the robust and diverse nature of human values.”

# 05 Responsible technology adoption challenges

Among business decision makers, adopting emerging technologies is sometimes seen as risky – but ignoring new and disruptive technology is often not an option for companies that wish to remain competitive.

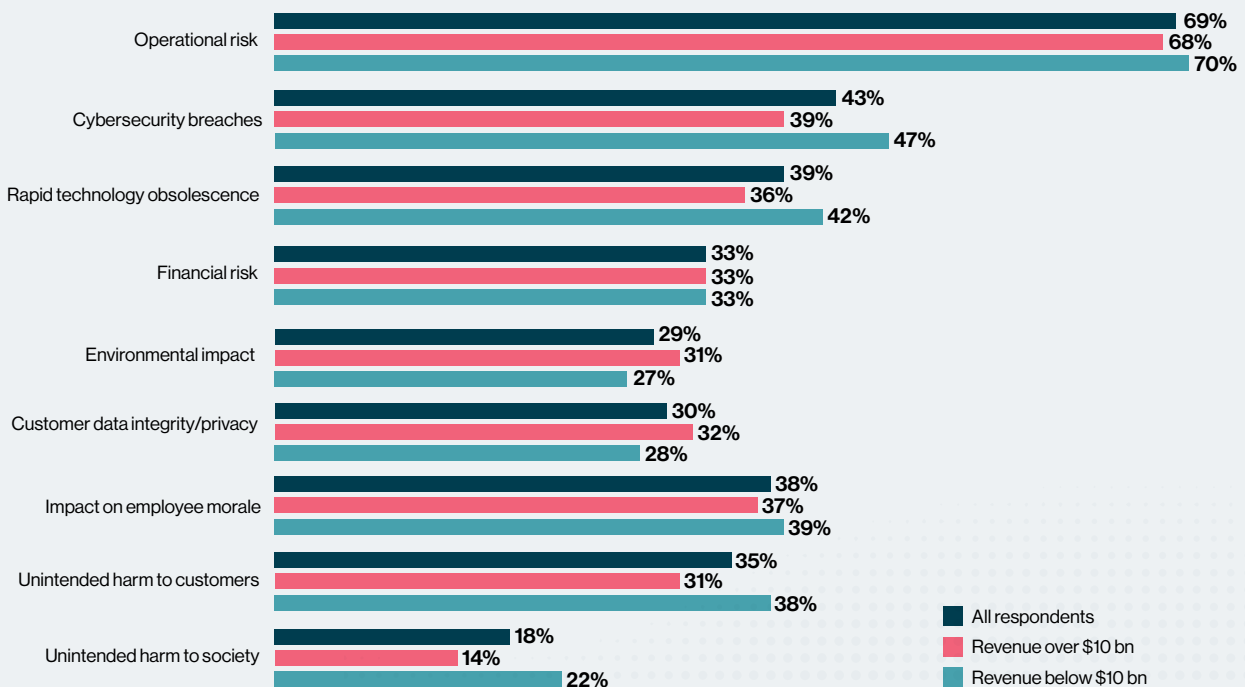
When survey respondents were asked about the main types of risk their organization considers when building or investing in new technologies generally, 69% cited “operational risk” as one of the main challenges. The next

most selected risk category was “cybersecurity breaches,” with 43% making this choice. Respondents in India indicated cybersecurity and privacy and data integrity as the most pressing concerns.

Another commonly expressed fear pertained to rapid obsolescence – the idea that technology advances at such a fast pace that investments may soon become outdated. This was evident across industries.

**Figure 6. Risks when adopting new technologies (by organization size)**

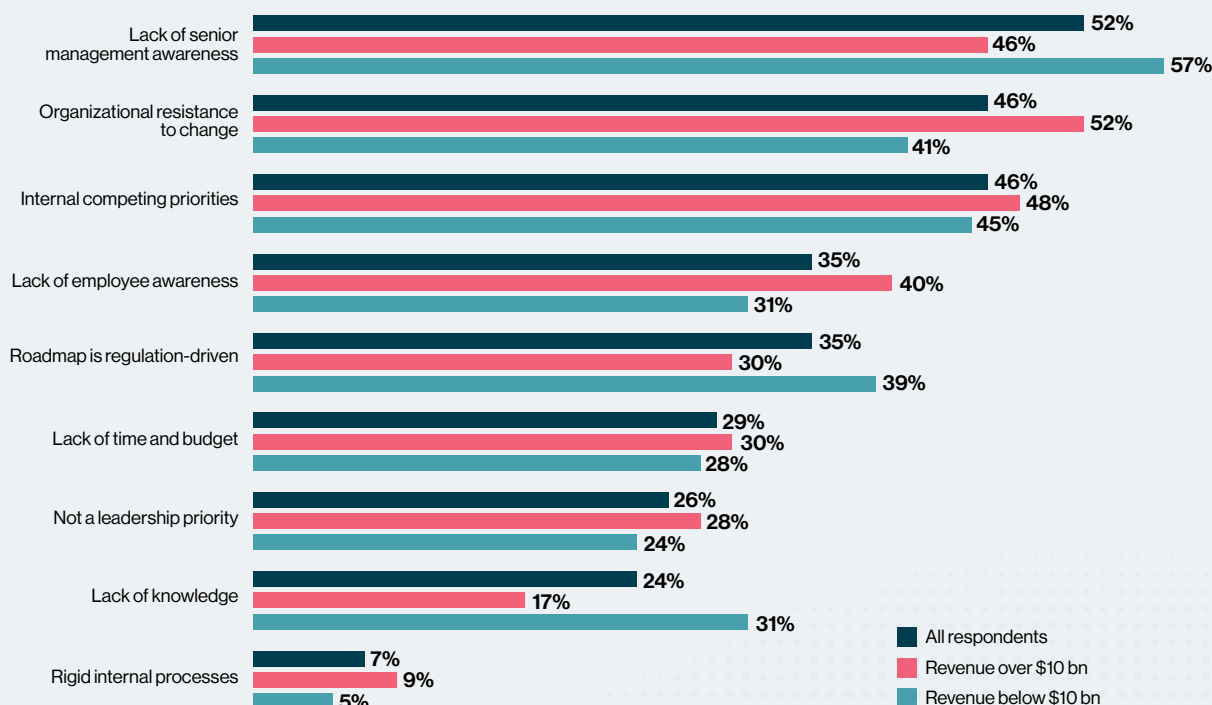
What are the main types of risk that your organization typically considers when building or investing in technologies?



Source: MIT Technology Review Insights survey, 2022

**Figure 7. Barriers to adopting responsible technology (by organization size)**

What are the main barriers your organization faces in embedding responsible technology practices more firmly in its operations?



Source: MIT Technology Review Insights survey, 2022

Smaller companies expressed greater concern about a wider range of potential risks, including cybersecurity breaches (47%), obsolescence (42%), and unintended harm to customers (38%). Twenty-two percent feared causing unintended harm to society, in contrast to only 14% of respondents from larger companies.

When queried about the main barriers to adoption that organizations face when embedding responsible tech more firmly in operations, the most frequently selected responses among all survey participants were a lack of senior management awareness (52%), organizational resistance to change (46%), and internal competing priorities (46%).

Selections varied based on respondents' company size. For small organizations, senior managers appeared to be a bigger barrier (57%), whereas at larger firms, resistance to change had an outsized impact (52%).

Overcoming such barriers may require a serious reassessment of company culture – particularly for large corporations. Leopold notes that H&M Group employs a “mix of different methods” to implement responsible AI and data practices, and that the resources they use change frequently to meet the “moving target” of industry developments. “A key challenge is to keep up with educating the organization, both about the possibilities of AI and data-driven technology to shape a sustainable fashion future, and the importance of ethical AI and data practices,” she says.

She adds that emphasizing digital literacy and fostering community is a critical part of addressing this challenge. “We strive to create what I call a ‘culture of responsible AI’ across the company – making ethics and responsible practices top of mind,” she says. “Storytelling is a very powerful tool for creating understanding and engagement, and my team has been exploring creative ways of doing this, such as through debate sessions on fictional ethical dilemmas in our Ethical AI Debate Club.”

# 06 Methodologies, guidelines, and frameworks

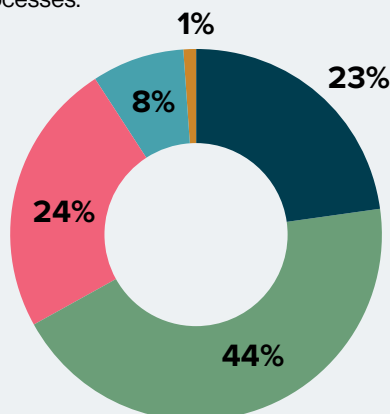
**A**s companies grapple with how to design and enforce responsible technology strategies, some have started implementing concrete frameworks and guidelines. These may be embedded in official company policies, mission statements, or codes of conduct. They often use data to measure the success of responsible technology initiatives.

Frameworks also often involve employee resource groups (ERGs) or dedicated roles – even entire teams. Such jobs, which may have titles like “AI ethicist” or “data protection officer,” work hand in hand with compliance and risk management teams, as well as with product development. At MOIA, Sigmund notes that there’s a dedicated compliance and integrity officer who works closely with the organization’s legal team.

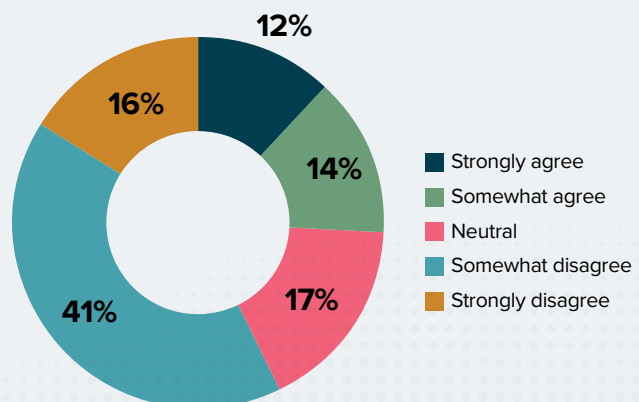
The survey found that a majority of respondents’ organizations have some sort of official policies in place for enacting responsible technology initiatives: A full 67% of respondents said they strongly agree (23%) or somewhat agree (44%) that their organization has methodologies, guidelines, or frameworks for implementing specific types of responsible tech (green code, inclusive teams and design, etc.). These selections were more common among public sector respondents than those working at financial services companies. What’s more, more than half of respondents (57%) said they either strongly disagree (16%) or somewhat disagree (41%) that responsible tech guidelines at their organization are more informal/understood than formal/written.

**Figure 8. Official policies govern responsible technology initiatives**

Our organization has methodologies, guidelines and/or frameworks for implementing specific types of responsible technology practices and processes.



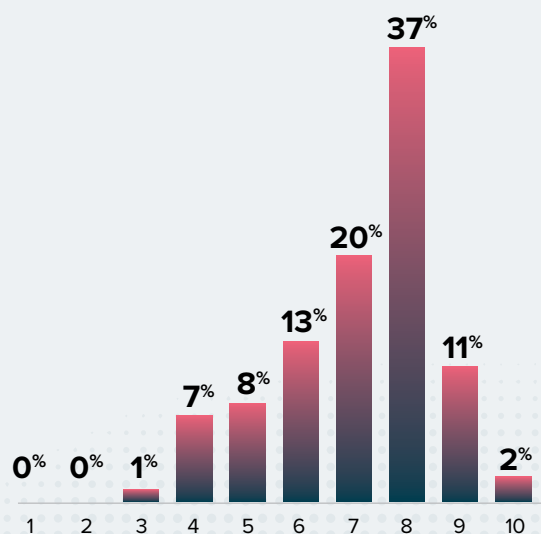
The responsible technology guidelines our organization follows are more informal and understood, rather than formal and written.



Source: MIT Technology Review Insights survey, 2022

### Figure 9. Respondents consider responsible technology deeply embedded in their organizations

How embedded are responsible technology practices in your organization? (1 = not embedded; 10 = deeply embedded).



Source: MIT Technology Review Insights survey, 2022

When survey respondents were asked how deeply ingrained those responsible technology frameworks are in their company culture and operations, the answers skewed high. Half of respondents rated the integration of responsible technology at their organization an eight or higher on a scale of 1 to 10, with 10 meaning “deeply embedded.” Less than 2% of respondents chose a rating of three or lower. This rosy assessment seems improbable, but high ratings may reflect respondents’ perception of their organizations’ effort, results in a limited area (for example, web accessibility), or an understanding that these efforts are important – if still nascent. Respondents from India, China, and Australia were most likely to rank their organization’s adoption of responsible technology highly; respondents from the U.S. gave their organizations the lowest scores on average.

When considering whether responsible technology is really on the rise, one sign may be the recent explosion in responsible or **ethical technology careers**. In 2017, Salesforce made headlines when it hired a “chief ethical and human use officer” – a novel title at the time. When Donig saw this news, she was intrigued. She changed her settings on LinkedIn to get notifications about news

featuring similar roles and was soon receiving hundreds a day.

Since then, Donig has extensively studied the idea of responsible technology as a career path. (An episode of the Technically Human podcast, “The Future of the Ethical Tech Workforce,” explores this topic in depth.) She points out that, as a job sector, responsible technology usually aims to do one of two things: “The first is to check technological production and to leverage humanistic skills and to encode human values on a broader swath beyond what technological culture traditionally has – which is optimization for efficiency and economic value. [The second] is to more capaciously understand technological products to encode and consider and respond to other human values like democracy, social cohesion, justice, truth, human flourishing, kinship ties, etc.”

O’Neil notes that in order for these roles to be effective, the employees must also be empowered to make decisions that abide by the values they were hired to uphold. “This is going to be an emerging conversation,” she predicts. “It’s more than just hiring someone and calling them the chief ethics officer – it’s actually giving them the power to say no to a project that is potentially profitable.”

When it comes to internal company frameworks, another theme from the interviews centered around collaboration. For example, MOIA gets a great deal of guidance from Volkswagen, its parent company, with its Together4 Integrity corporate initiative. “We had the chance to take this framework and apply it to our needs and change it, which in our organization has led to a lot of working groups,” says Sigmund. “So we have an ESG working group; we also work together with Amazon AWS in order to reduce our [carbon] footprint in that area.”

MOIA also works with universities and scientific research programs to dig into data about its real-world impact. “We want to find out if our service actually does reduce the number of privately driven kilometers,” says Sigmund, noting that this is one of the company’s primary metrics of success related to responsible technology. The research is peer-reviewed, he adds.

Leopold also discusses the importance of collaborative efforts at H&M Group, noting that her team recently launched an Enterprise Data Council, a business and tech community roundtable, to ensure they deploy any new technology in a lawful, ethical, and secure manner.

# 07 The role of regulation

**W**hen the historic General Data Protection Regulation (GDPR) first went into effect in Europe in 2018, some business executives celebrated it as a landmark achievement for privacy rights, while others retroactively scrambled to ensure compliance. Although long-term implications of the law remain to be

seen, its passage has had a ripple effect, sparking similar legislation in the **United States, Brazil, Australia**, and other countries. Additional legislation around technologies like high-risk AI may be imminent: the **EU's proposed Artificial Intelligence Act**, for example, would seek to regulate the use of AI generally and ban applications known to create unacceptable risks.

## Regulating the regulators

**R**egulation isn't quite so cut and dry an issue all the time, however. Gabo Arora, an award-winning emerging technology creator, professor, and entrepreneur, points out that while it's important to hold corporations accountable for the tech they develop – and how they develop it – this should not come at the expense of stifled creativity. He also notes that who does the regulating has a significant impact on whether it's actually “responsible.”

“We need a space where [artists, creatives, and innovators] can self-govern and not be afraid. There has to be something that allows people to take risks and not be completely sanitized ... in the interests of governments or profit-making,” he says.

Arora is optimistic about the power of certain emerging technologies to be a force for good, if they're developed intentionally and with careful consideration of a

wide range of perspectives. His own work with XR, for instance, focuses deeply on the idea of empathy building.

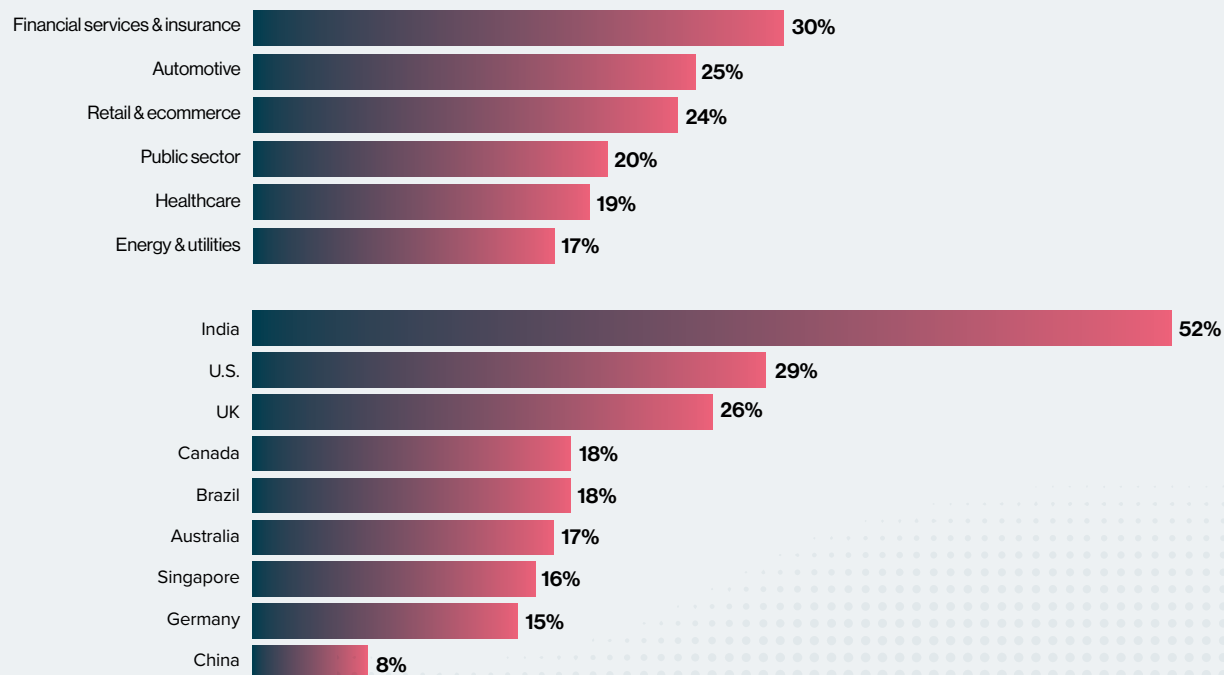
“If you get it right, [these technologies] can have an amazing impact,” he says. “We have to keep in mind that there's something gained and something lost in being too safe or legalistic about them. Of course, we need to make sure people are safe. But we also need to understand the revolutionary potential of these spaces.”

From data scientist Cathy O'Neil's perspective, new regulation of technology may not be necessary to make its use responsible. She says, “People are still – when I say people, mostly lobbyists – trying to make the case that algorithms are too complicated to regulate, which is just of course not true. We have plenty of existing law.” O'Neil continues, “[When it comes to algorithmic bias], we don't need new law, we just need to enforce existing antidiscrimination law in hiring, credit insurance, and housing.” And this is her goal: “I've been working furiously, trying to get regulators to adopt auditing-type approaches to do their job.”

## Defining “responsibility” in the context of technological innovation often falls to governments and regulators.

**Figure 10. Regulatory compliance as motivation to adopt responsible technology (by industry and country)**

Percentage of respondents selecting “comply with regulation” as a main motivation for pursuing responsible technology practices.



Source: MIT Technology Review Insights survey, 2022

The survey data found that across both small and large companies, regulation is closely associated with the concept of “responsible technology.” In fact, when asked “Which of the following most accurately describes responsible technology at your organization?” the largest segment of respondents (59%) selected the option, “When their use fully complies with existing regulations.” This response implies that the onus for defining “responsibility” in the context of technological innovation often falls to governments and regulators.

While the majority of respondents said the “most accurate” description of their company’s responsible technology practices related to regulation, only about one-quarter (23%) cited “complying with government/industry regulation” as a main motivation for pursuing responsible technology in the first place. This figure varied widely by industry: 30% of respondents in financial services and insurance considered regulatory compliance a top motivation compared to just 17% in energy and utilities.

Geographic differences were even more stark, with more than half of respondents in India (52%) motivated by regulation and a mere 8% in China.

Anecdotally, some organizations not only welcome regulation but rely on it. “We kind of depend on regulation and law,” says Sigmund. “Since MOIA offers ride-pooling and not ride-hailing like our competitors, and that’s less comfortable to customers, it’s not an easy product to be responsible for in the market. External regulation that takes into consideration not only the customers but also the city’s needs in changing mobility [is useful].”

This is true despite the effort involved in meeting regulatory stipulations. To comply with GDPR, MOIA must, for instance, maintain a data lake (a scaling centralized repository for data), have sufficient anonymization technology in place, and only use data for its specific, defined purpose.

# 08 Conclusion: What's next for responsible technology

Even as organizations nearly universally claim to be adopting responsible technology practices, the impact of these changes is still to be determined. Are we observing a real shift in business models toward more responsible technology? Will the disparate motivations and priorities that organizations bring to this shift result in meaningful societal good? These aren't straightforward questions, and as the concept of responsible technology continues to evolve and mature, further nuances are likely to emerge in the answers.

As well, organizational motivations are not always sufficient to overcome barriers to change or aligned with how responsible technology practices actually manifest. This is perhaps unsurprising: As companies dig into how to make existing operations more responsible – or build responsible technologies from the ground up – they may uncover unexpected benefits, challenges, or areas of opportunity.

What is clear is that responsible technology is here to stay, and organizations are taking it seriously. They understand that failing to act on these issues may have negative effects

on their brand reputation, their retention of customers and employees, and their ability to comply with new or existing regulation – and that, by contrast, acting decisively may benefit their bottom line as well as the social good.

Demonstrating responsible technology use will be critical to counter the growing phenomenon of “techlash,” or mounting hostility toward Big Tech. While businesses that use technology recklessly or unethically are certainly deserving of aspersions, reflexive suspicion of technology may also hinder its productive use. “There is a huge divide between people who think of technology as something that helps them versus something that happens to them, or that has power over them,” says O’Neil. “The idea of technology as a boss or as an oppressor is a huge problem, and it’s only getting worse.”

That said, she remains generally optimistic about the overall trajectory of responsible technology – and its potential to change the world for the better. “I think people are waking up to these problems. They’re realizing that while algorithms can scale up problems massively and exacerbate inequality massively, they can also do the opposite – as long as we explicitly train them to and insist that they must.”



What is clear is that responsible technology is here to stay, and organizations are taking it seriously.

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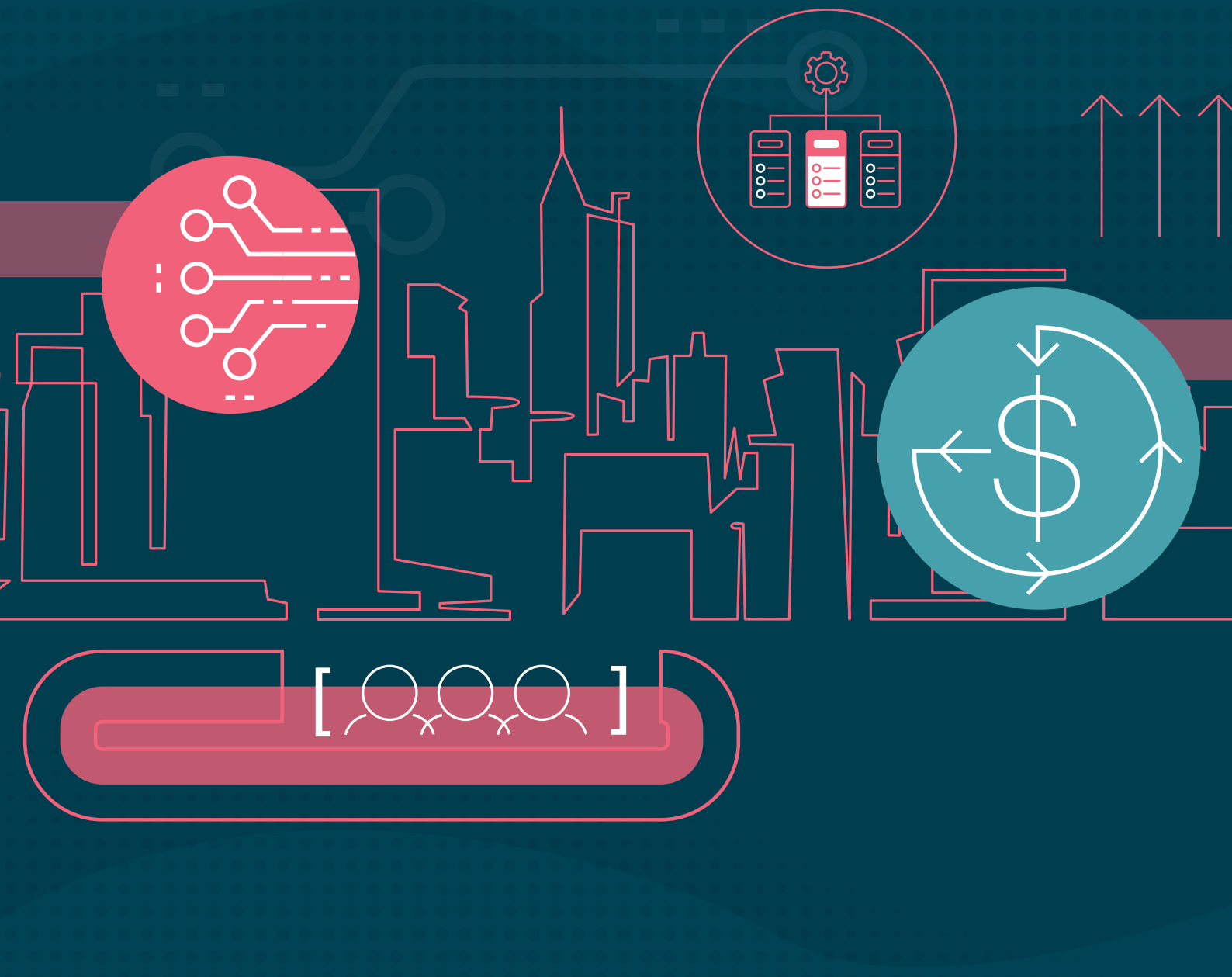
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