Staying ahead of the curve
The business case for responsible AI

A report by The Economist Intelligence Unit

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About this report

Staying ahead of the curve: The business case for responsible AI is an Economist Intelligence Unit (EIU) report that has been sponsored by Google Cloud. The report is a timely call to action on responsible AI development and explores the key considerations that technology companies must take into account when designing, developing and implementing artificial intelligence (AI) responsibly. The purpose of the report is to highlight the value of responsible AI practices in an increasingly AI-driven world. The findings are based on an extensive evidence review, an expert interview program and an executive survey program.

The EIU executive survey

The EIU conducted a survey of 257 senior executives and information technology (IT) decision-makers in the United States, across five non-technology sectors: financial services, healthcare, media and entertainment, manufacturing/industrials and retail. Through this survey program, The EIU developed a unique data set offering the responsible AI–related perspectives of non-technology enterprises, and exploring their business needs and priorities when it comes to the design, development and use of AI technologies. The survey findings have been incorporated into this report to highlight crucial insights from these customer segments.

Expert interviews

The EIU conducted an interview program with a number of technology industry experts between January and March 2020, with the aim of validating our initial hypotheses and guiding our research. Our deepest thanks are due to the following experts for their time and valuable insights:

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Executive summary

The artificial intelligence (AI) revolution is underway. Across the financial services, healthcare, media and entertainment, manufacturing/industrials and retail sectors, three in four firms surveyed by The Economist Intelligence Unit (The EIU) are already experimenting with AI, if not piloting or implementing the technology.[1] These respondents report that leveraging AI delivers several business benefits, the most significant of which include faster, more data-driven decision-making; improved customer experiences; increased employee productivity and satisfaction; and increased revenue.

PwC estimates that AI could boost global GDP by 14% by 2030, or up to US$15.7trn.[2] However, on-the-ground realities suggest that many firms are still working to identify business-specific use cases for AI. Commonly cited speedbumps include the lengthy amount of time needed to implement general-purpose technologies[3] such as AI in traditional businesses; the availability of good data; privacy and regulatory concerns; and more general risks including bias and ethically dubious use cases, such as the weaponization of AI. While AI's potential to change how we live and work is widely accepted, these speedbumps mean that it is considerably less clear just how quickly this change will come. During this early stage in AI's development, the concept of responsible AI has become increasingly important, in part reflecting concerns about biases and other ethical breaches.

While many ethical AI guidelines have been published globally, many firms have yet to meaningfully implement these, and need to do so in order to realize the full benefits of AI.[4] The core purpose of this study is to assess the full benefits of responsible AI, both short- and long-term, and to outline the necessary investments to support it, as firms design, develop and implement the technology. The study's key findings are summarized below.

Responsible AI should be seen as a potential source of competitive advantage, not only as a reactive measure to assuage ethical concerns. Firms that shift their AI development processes to align with more responsible practices are likely to see reduced medium- and long-term downside risks associated with challenges such as dealing with a data breach. However, this study shows that the benefits of responsible AI actually extend far beyond risk management. For instance, improved data security and privacy can boost the availability and use of reliable data, and clearer "interpretability" can make it easier to understand AI use cases within a business. Among EIU executive survey respondents, 90% agree that the potential long-term benefits and cost savings associated with implementing responsible AI far outweigh the initial costs.

Firms that incorporate responsible AI practices throughout the product development lifecycle will build competitive advantage through enhanced product quality. When firms develop technology in a socially responsible manner and build capacity for ethical decision-making around advanced technologies—including efforts to reduce unfair bias against marginalized groups—their software is far more likely to perform well across all user profiles, which will in turn boost product value (in addition to delivering the broader societal benefits of inclusion).[5] Other benefits of responsible AI include careful decision-making around what to build (or not build), improved security and increased transparency. Among EIU executive survey respondents, an overwhelming 97% agree that ethical AI

reviews are important for product and service innovation. By incorporating responsible AI practices across a product's lifecycle (as opposed to retrospectively), firms are also likely to reduce development costs through time and labor savings.

Responsible AI can significantly benefit talent acquisition, retention and engagement, especially given employees' growing scrutiny of their employer's ethics, beliefs and practices. The world's top technology workers are increasingly driven by a belief in "tech for good" and a desire for their work to serve a higher societal purpose, both of which are evident in increased employee activism. If firms wish to align with their employees' values—which in turn will boost employee satisfaction, facilitate staff diversity and reduce employee attrition—the development of responsible AI is crucial. Nearly 80% of EIU survey respondents believe that implementing ethical reviews during AI development and use is either very important or critically important for talent acquisition, and over 75% feel the same about talent retention.

Companies' growing reliance on user data is emphasizing the need for better data management, security and privacy, which will in turn fuel growth in the AI industry. Data security and privacy are key tenets of AI responsibility and governance, and failure to address shortcomings in a timely manner can place a significant financial and reputational burden on firms. EIU executive survey data shows that cybersecurity and data privacy concerns represent the biggest obstacles to AI adoption or implementation by an organization. While data security and privacy investments can be seen as pre-emptive, defensive measures, they can also underpin growth in the industry. Greater consumer comfort with data-sharing can result in larger, more diverse data sets, which will in turn improve AI outcomes.

AI regulation is imminent and firms should invest in readiness. Despite concerns about over-regulation, many stakeholders in the broader AI ecosystem believe that the current lack of regulatory clarity may be feeding uncertainty, undermining public acceptance of the technology and stalling investment. EIU survey data confirms this, with over 85% of business leaders from across sectors reporting that formal AI regulation is long overdue. Regulation is coming, and it is incumbent on market leaders to invest themselves in the process in order to promote a responsible and balanced approach, rooted in the realities of AI technology and its applications. Preparedness for regulation is essential. Companies that invest in responsible AI practices now will be able to engage with regulators and act as industry advisors in crucial conversations about future regulations, potentially preventing the development of sweeping or overly restrictive AI regulations.

Responsible AI can improve a firm's top- and bottom-line growth by increasing customer engagement, broadening revenue streams, offering procurement advantages in competitive bidding processes, and increasing pricing power in the marketplace. As consumers attach greater importance to companies' social responsibilities, firms developing or implementing AI technologies must increase their efforts to align with consumer values. Responsible AI practices can also help to maintain strong business-to-business (B2B) relationships. Over 75% of EIU executive survey respondents believe that the business risk is too high to justify working with an AI service provider that cannot prove responsible ethical design in its products. Indeed, 60% of survey respondents reported that their organization had already decided against working with an AI service provider due to ethical

or responsibility-related concerns. Firms that act early to implement responsible AI practices will also have a significant advantage in terms of product or service differentiation. With ethical considerations increasingly a feature of product and service procurement processes, responsible AI can offer providers a leg up in the bidding process. Finally, responsible AI can increase a firm's pricing power in the marketplace through superior brand awareness and reputation.

Responsible AI is poised to ride the wave of sustainable investing and will help firms strengthen relationships with stakeholders, including competitors, industry associations, academia and governments. A large portion of EIU survey respondents (40%) list shareholders and investors among the top stakeholders whose opinion would influence their organization to implement ethical review processes in the development and use of AI technologies (second only to senior management). In addition, 94% of EIU survey respondents say that responsible AI will produce greater return on investment (ROI) for shareholders, reflecting the clear synergy between responsible AI and sustainable investing. As multi-stakeholder collaboration emerges around responsible AI, firms have an opportunity to position themselves as thought leaders. Advancing responsible AI will allow firms to maintain academic partnerships that help them remain at the leading edge of research and talent acquisition; and as governments move towards the widespread adoption of responsible AI principles, firms aligned with these principles will be more competitive when seeking out public grants, investment and project procurement opportunities.
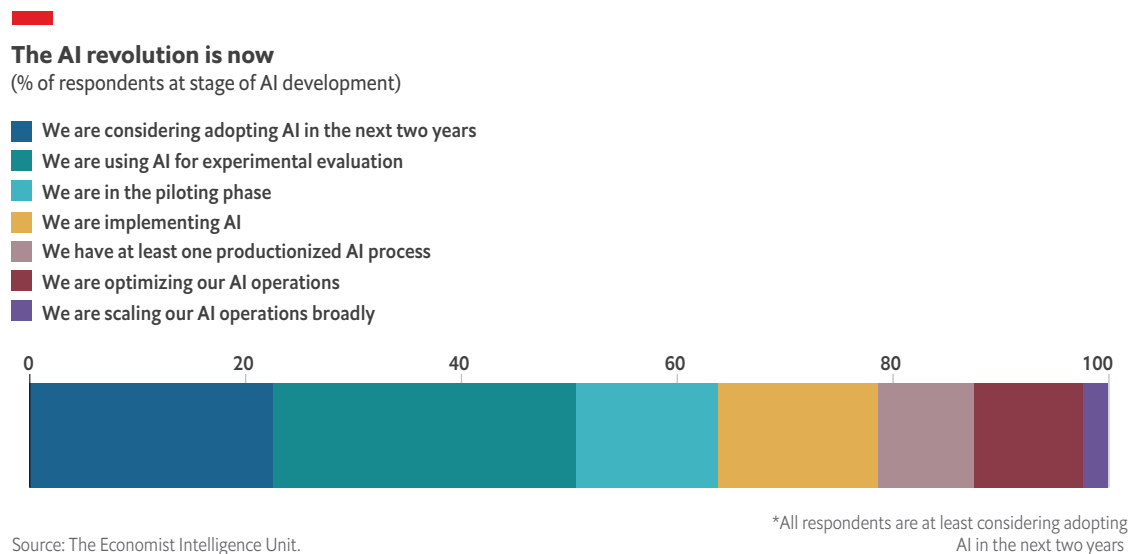
Societal belief in the virtue of technology companies remains high, but heightened focus on the sector has increased the trust and branding risks associated with a lack of responsible AI. In the technology industry, the connection between trust and branding (including publicity) has never been stronger. A number of recent scandals have increased external scrutiny of industry practices, and 64% of EIU survey respondents report that these scandals have made them more distrustful of the technology sector. These developments have occurred against the backdrop of the fourth industrial revolution, and amid growing skepticism in many quarters about the overall benefits of new technologies. As a result, firms must realize that decisions made today about AI ethics could have long-lasting implications for how their brands are perceived in the marketplace.

Introduction

Responsible AI can help the industry translate early hype into sustainable growth

Lofty estimates of the future value of artificial intelligence (AI) reflect the growing role it is playing throughout the economy, supporting greater output capacity and productivity improvements. For instance, one leading estimate suggests that AI could boost global GDP by 14% by 2030, or up to US$15.7trn.[6] This bullishness is supported by corporate enthusiasm for AI. Just over three-fourths of US business leaders in key non-technology sectors surveyed by The Economist Intelligence Unit (The EIU) are either using AI for experimental evaluation, piloting, or have already implemented AI technology (see Figure 1). These respondents report that leveraging AI delivers several business benefits, the most significant of which include faster, more data-driven decision-making; improved customer experiences; increased employee productivity and satisfaction; and increased revenue. Furthermore, nearly all of the executives surveyed (95%) consider the successful adoption and implementation of AI to be a strategic priority over the next two years. Society's reliance on technology continues to intensify, particularly as workplace delivery models transform and healthcare practices increasingly leverage technology (including AI) in the face of the ongoing Covid-19 pandemic.[7]

Figure 1.

The AI revolution is now
(% of respondents at stage of AI development)

- ■ We are considering adopting AI in the next two years
- ■ We are using AI for experimental evaluation
- ■ We are in the piloting phase
- ■ We are implementing AI
- ■ We have at least one productionized AI process
- ■ We are optimizing our AI operations
- ■ We are scaling our AI operations broadly

Source: The Economist Intelligence Unit.

*All respondents are at least considering adopting AI in the next two years

In addition to holding great promise for increasing global economic activity, AI has the potential to improve the world for all who inhabit it by facilitating sustainable development and progress towards the 17 United Nations Sustainable Development Goals (SDGs), which include the elimination of poverty and hunger; the provision of quality education; the development of sustainable cities and communities;

Assessing the value of AI

US$3.9 trn	US$13 trn	US$15.7 trn
by 2022	by 2030	by 2030
Source: Gartner.	Source: McKinsey & Company.	Source: PwC.

climate action; and peace, justice and strong institutions.[8] AI is no longer science fiction; uses for the technology that once seemed beyond the realm of possibility have become a reality, and AI has already been integrated into our daily lives. From exploring tailored movie recommendations on Netflix to interacting with digital voice assistants such as Siri, Alexa and Google Assistant, AI has become science fact in an age of irreversible technological advancement.[9] AI research is also advancing rapidly, with computing requirements for the most advanced systems—one measure of progress in AI development—doubling every 3.4 months, much faster than the two-year doubling rate of Moore's law.[10]

What is AI?

There is no universally agreed-upon definition of AI.[11] However, two specific definitions can help to provide a high-level sense of concept. Stanford University's *One Hundred Year Study on Artificial Intelligence* includes the following definition: "Artificial intelligence is that activity devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment."[12] Another frequently cited definition discusses AI systems in terms of goals—namely, to think like humans, think rationally, act like humans or act rationally.[13] Critically, this lack of consensus around how AI should be defined has not stopped developers or users from pushing forward the technical vanguard and ushering in a new era of AI, underscoring the need for ongoing dialogue about how to responsibly create and use these systems.

It remains unclear whether AI can live up to the hype. In 2019 a Boston Consulting Group and Massachusetts Institute of Technology (MIT) survey found that while 90% of firms had made investments in AI, fewer than two in five reported any business gains from AI in the previous three years. Skeptics make several arguments about the limitations of AI.[15] First, based on the lifecycle of other general-purpose technologies (such as electricity), it could be decades before the real functionalities and benefits of AI can diffuse into the established processes of large, traditional organizations. Many established firms will have large amounts of data that can be used by algorithms built by in-house programmers, but few businesses are naturally primed for AI adoption, and firms everywhere are still trying to understand the limits of AI. Second, the availability of good data in a usable format poses a serious challenge, and there are related challenges around privacy and regulations. Finally, there are risks associated with AI, including the potential for unfair bias and ethically dubious use cases, such as the weaponization of AI. According to *The Stanford Encyclopedia of Philosophy*, the main ethical concerns about AI focus on privacy and surveillance, the manipulation of behavior (e.g. deception, the manipulation of behavior biases,

purposefully addictive systems), opacity, bias, human–robot interaction, automation and employment, and automated systems (like autonomous vehicles and weapons).[16]

While AI's potential to change how we live and work is widely accepted, these challenges mean that it is considerably less clear just how quickly this change will come, and what this change might look like. In this early stage of AI's development, the concept of responsible AI has gained importance, in part reflecting concerns about bias and other ethical breaches. Debates about the merits and risks of AI are not confined to academia; they extend to firms developing or implementing AI technologies, which must navigate a complex web of stakeholders while balancing financial, legal and social responsibilities.

What is responsible AI?

Just as there is no agreed-upon definition of AI, there is no universally accepted definition of what responsible or ethical AI looks like.[17] The Turing Institute defines AI ethics as a set of values, principles and techniques that employ widely accepted standards of right and wrong to guide moral conduct in the development and use of AI technologies.[18]

Among the many published ethical frameworks, common principles include transparency and explainability; justice, fairness and non-discrimination; doing social good and the promotion of human values; avoiding harm; freedom, autonomy and human control of technology; responsibility; accountability; and privacy.[19] However, while definitional uncertainty remains, translating these high-level principles into practice is a complex task.[20]

Some researchers stress the limits of these principles, arguing that they lack real meaning until they have been put into practice, and advocating for a focus on the tensions that arise when implementing AI.[21] Others suggest that the responsible use of AI should be built upon existing human rights law.[22] Organizations that are already implementing responsible AI are actively shaping how core principles and norms are applied in practice. However, the development of legal frameworks means that regulating bodies are likely to play a defining role in this effort in the future (see Section 4).

Many ethical AI guidelines have been published globally by a diversity of stakeholders, including individual firms, non-governmental organizations (NGOs), academics, think tanks, industry associations, governments and multilateral organizations.[23] However, there are no universally accepted toolkits defining how these guidelines should be implemented, nor is there consensus about the guidelines themselves. Firms are still in the early stages of defining and incorporating responsible AI, and many governance processes for AI are only just beginning to emerge. Furthermore, understanding and robustly evaluating AI's capabilities from a responsibility standpoint has historically required a high level of expertise, creating additional barriers to building consensus.

Some firms are implementing responsible AI in name but not in practice. This approach may bring short-term reputational benefits, but firms need to meaningfully implement these guidelines in order to extend their efforts beyond "ethics washing" and realize the full benefits of AI.[24] The successful scaling of AI initiatives is directly linked to responsible AI practices. According to an Accenture survey of 1,500

C-suite executives in 12 countries around the world, firms that implemented responsible AI practices were 1.7 times more likely to successfully scale up their AI (or perhaps those who scaled up were more likely to understand the importance of implementing responsible AI).[25] This trend was reflected in EIU executive survey data.

Debates over "ethics washing" and the extent to which firms translate AI guidelines into practice can obscure essential questions about who should be setting norms around AI, what those norms should entail, the socio-cultural value of AI technologies, and the extent to which society should adopt a deterministic stance towards AI development.[26] As a recent paper on technology ethics explains, ethics in AI are not simply a matter of "procedural fairness and fixable tweaks"; they are also about "structural injustice or disruptive change".[27] In order to pioneer responsible AI that moves beyond AI ethics in name or procedure alone—beginning with dialogue about the role of AI systems in society[28]—engagement and buy-in within firms and across those companies developing or implementing AI technologies will be critical.

The core purpose of this study is to assess the short- and long-term benefits of responsible AI for firms developing or implementing AI technologies, and to outline the necessary investments. The report explores the necessary investments for responsible AI development, the costs savings that can be realized and the far-reaching benefits of these investments, organized into seven interconnected themes: (1) product design, development and deployment; (2) talent management; (3) data security and privacy; (4) regulatory compliance and preparedness; (5) building revenue; (6) stakeholder relations and partnerships; and (7) trust and branding.

This report shows that the benefits of responsible AI extend far beyond merely assuaging ethical concerns. Improved data security and privacy can boost the availability and use of reliable data, and clearer "interpretability" can promote the widespread adoption and use of AI. As a result, responsible AI should not be viewed only as a defensive measure to allay concerns, but as a potential source of competitive advantage for firms.

Responsible AI: Investigating the business case

1. A smart investment in product development

Ethical debates around AI are nascent and still evolving. However, there are several common imperatives for ensuring that firms' AI systems operate responsibly, including the need to improve system interpretability, recognize and reduce unfair bias, and establish robust privacy measures. Importantly, there is growing recognition that responsible AI is not the exclusive preserve of retrospective product evaluation processes; rather, it is a value that must be embedded throughout the product development lifecycle (i.e. from the moment of problem definition). Firms that integrate responsible AI practices from the outset of product development will be able to build competitive advantage in the marketplace in several ways.

Responsible AI will improve product quality and inclusion

Responsible AI establishes practices that will lead to substantial improvements in the quality of AI systems, facilitating product enhancement. By developing technology in a socially responsible manner—including efforts to reduce unfair bias against marginalized groups—companies are far more likely to build software that performs well across all user profiles, which in turn will boost product value (in addition to delivering the broader societal benefits of inclusion).[29] Among EIU executive survey respondents, an overwhelming 97% agree that ethical AI reviews are important for product and service innovation.

"Rigor drives the cost, but the rigor gives you an economic benefit."

Anurag Banerjee, Quilt AI

Other benefits include improved security and increased transparency. Responsible AI requires accountability to end users, including careful consideration of data usage, data protection and privacy issues, all of which will help to improve the security of AI systems. In addition, better transparency can provide companies with enhanced insights into their own products, facilitating higher quality through an improved understanding of product functioning, and enabling continuous improvement through efficient feedback loops.[30] Transparent systems also enable different stakeholders, with diverse ideas, to more effectively participate in the development process.[31] As the Brookings Institution notes, interpretability has immediate benefits—for instance, improving how AI products can be used by customers, for public education on AI and for improved public discourse—but it also brings long-term benefits that may only become apparent once AI is more widely used and the value in understanding our AI systems has become clearer.[32]

If responsible practices bring developers and users closer, both groups will benefit. Indeed, some developers are already exploring how incorporating explicit user feedback into ongoing AI training can enhance outcomes—for instance, in a system that uses human suggestions to improve its performance at playing Mario Bros, a video game.[33] AI medical diagnosis tools have also exhibited improvements when paired with human expertise.[34]
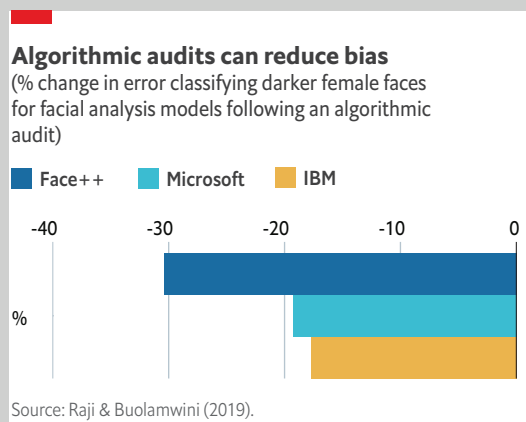
Overall, improvements in the performance of an AI system—brought about through responsible AI practices—will benefit firms in a number of ways (while also creating social benefit), whether through more effective internal operations; improved user or customer inclusion and experience; or improved reliability and trust for end users, which is particularly important for those in heavily regulated sectors such as healthcare and financial services. Each of these outcomes ultimately leads to a larger, more dedicated and more loyal user and client base.

Examples of how responsible AI improves product quality

The following examples, which primarily pertain to bias, illustrate the ways in which responsible AI and product quality are linked.

Example 1: After a public algorithmic audit of commercial facial recognition systems using a benchmark designed to test biases, each of the audited systems saw error decreases, particularly in classifying darker skin tones and female faces (see Figure 2).[35] While it is hard to untangle the specific causes of performance gains, each of the three audited systems performed better on the benchmark than two other commercial systems that had not been audited.

Figure 2.

Algorithmic audits can reduce bias
(% change in error classifying darker female faces for facial analysis models following an algorithmic audit)

Source: Raji & Buolamwini (2019).

Example 2: In natural language processing (NLP; where computer systems process and generate human language), gender bias persists across the development process—including training data, prepared data and algorithms—with many NLP models performing worse for younger individuals and ethnic minorities as well.[36] Systems that are less "pale, male and stale" will perform better. A growing number of methods are designed to address these biases, primarily by improving language corpa (the set of text used as the basis for models), the way corpa are translated into numerical representations for processing or the prediction algorithms used. Many of these methods require model retraining; others "modify existing models' predictions or representations", according to a recent literature review.[37] Reducing biases in NLP models could enable systems built on these models to serve more users (and serve them better), including automatic text generation and completion systems, text-to-speech systems and systems analyzing word associations or sentiments.

Example 3: In the image classification realm, a study found that six publicly available object-recognition systems (a field with a rich literature on bias)[38] performed comparatively poorly when identifying objects that are more commonly found in households in low-income countries. Specifically, there was a 10% gap, on average, in the accuracy of the systems when identifying objects associated with the highest- and lowest-income contexts. The authors of the study attributed this gap to differences in the appearance of household objects and the backgrounds against which they appeared. Their findings suggest that data sets are not representative of global population distribution

10%

Difference in average accuracy between objects associated with highest- and lowest-income contexts for six object recognition systems

Source: DeVries, Misra, Wang, & van der Maaten (2019).

or income distribution—in addition to being over reliant on English as a "base language"—and should be improved. The authors note that new training algorithms will likely be needed as well. More inclusive object-recognition systems would perform better across a range of geographic and socio-economic contexts, improving a firm's ability to operate and compete in these settings.

In each of these three examples, product improvements delivered through responsible AI practices would drive user satisfaction and expand the potential customer base by making products more applicable to a wider range of users. Moreover, these product improvements would prevent the marginalization of minoritized populations, and enable firms to cater to the needs of a broader user base that extends beyond those initially identified as target users. As these examples demonstrate, responsible AI can drive product improvements that simultaneously improve business outcomes while reducing harm and doing social good.

Finally, responsible AI will drive company-wide improvements, not only to products, but also to firms' ability to scale their AI infrastructure, driving a wide range of benefits that are discussed in more detail throughout this report.

Upfront investments in responsible AI will reduce downstream risks

By incorporating responsible AI practices across each stage of the product lifecycle (as opposed to just retroactively), firms will likely reduce development costs through both time and labor savings. This is because the upfront investment in responsible AI will reduce the downstream risks associated with possible ethical breaches.

Beginning the responsible AI review process during the earliest stages of the product lifecycle can mitigate the possibility that systems cause harm. Concerns can be identified and rectified early; and if necessary, systems can be decommissioned, with fewer sunk costs than would be incurred later in the product lifecycle (e.g. if a post-launch recall was required, potentially after harm had already been done). Potential cost savings (discussed in other sections of this report) relate to the need to restructure, reputational damage, lost sales and cancelled contracts, and additional expenditures in areas such as regulatory compliance (e.g. the incremental cost burden of non-compliance). There are also efficiencies associated with the early and intentional incorporation of responsible AI practices. Review processes, for example, can be particularly time-consuming if they add new steps to the product lifecycle, and are not concurrent. Working concurrent ethical reviews into product design all the way through launch will build responsible practice into employee thinking.[41]

When firms are not working to incorporate responsible AI practices, they expose themselves to a number of risks, including delayed product launches, halted work, and fewer launches for a similar amount of effort.[42] Responsible AI requires firms to ask critical questions early in the development process, such as "Should we do this?" and "Does it work well?" If these questions are not asked early, entire systems may need to be decommissioned during development or recalled after launch. Decommissioning or product recall can result in significant write-offs for AI developers and potentially harm employees' career progression (see Section 2). These risks are not hypothetical: 41% of senior executives report that they have abandoned an AI system altogether in light of ethical concerns.[43] Indeed, there are several high-profile examples of abandoned systems, including the Amazon recruiting tool that was decommissioned after it was found to exhibit gender bias.[44] More recently, a number of technology firms have rolled back sales of facial recognition software to law enforcement,[45] including IBM, which announced that it will no longer research, develop or sell facial recognition technology.[46] (The bias in one open-source NLP data set, which has been widely in use since 2003, was only formally investigated early in 2020.)[47] These risks are especially prevalent when first rolling out new and untested tools and technology. However, firms that act early and intentionally incorporate responsible AI governance structures (to ensure AI is used responsibly)[48] can identify risks quickly, and can often mitigate these risks to ensure product development timelines remain on track.

Commitment from senior leadership is mission-critical

Commitment to responsible AI practices can be enhanced by strong corporate leadership.[49] Leadership is also valuable for prioritizing responsible AI, and building alignment on its importance across a variety of internal and external stakeholders. EIU executive survey data shows that 92% of respondents believe that responsible AI is a priority for senior leadership within their organization, illustrating that responsible AI practices are already being actively contemplated at the highest levels of leadership.[50]

For instance, depending on existing corporate governance structures, broader company culture and the methods used to implement responsible practices, firms may need to restructure teams or business units.[51] Many companies are also investing in creating new senior leadership functions, such as chief ethics officers, in order to drive their organization's long-term operational, commercial, cultural and financial objectives around responsible AI practices.[52]

Senior leadership will play an essential role in strategic planning, and aligning interests to promote the firmwide integration of responsible AI.[53] However, an approach that is purely authoritative, with little employee input, risks stifling process innovation within and across business units. To reap its full benefits, employees must understand the purpose and value of responsible AI practices.[54]

92%
of EIU survey respondents believe that responsible AI is a priority for senior leadership within their organization.

Source: The Economist Intelligence Unit.

Concerns around the cost of a holistic approach to responsible AI are understandable. However, some interviewees from multi-national technology companies suggest that these costs are not particularly significant, and that additional hiring and new processes for responsible AI only amount to a small fraction of total capacity development costs.[55] This is particularly the case when responsible practices can be easily incorporated into existing processes—for instance, current engineering, testing or user experience (UX) research workflows. While there is little published evidence on the specific product development costs associated with responsible AI, it is clear that each firm's journey to incorporate responsible AI practices will vary based on its prioritized processes, the manner in which these processes are implemented, the number of products requiring evaluation, and the number and quality of AI products or tools available to support evaluation. Internal responsible AI governance structures will also differ across companies developing or implementing AI technologies. Regardless, responsible AI is essential for reducing downstream risks.

Responsible AI drives reputational benefits and greater industry-wide adoption

Given the nascence of responsible AI, reputational benefits are available for early adopters. These firms will have a head start on building expertise, establishing efficient processes and positioning themselves as leaders in the responsible AI space. This can enhance a firm's brand equity and allow it to grow its market share.

Of course, one drawback of early adoption is the lack of pre-existing best practices to draw upon. Later adopters—especially smaller companies, which may face less pressure to adopt responsible practices immediately—can learn how to incorporate responsible AI based on the experience of industry leaders. With sizable resource bases, cross-functional expertise and operational sophistication, however, larger firms in the technology sector are well placed to lead the charge in transitioning to responsible AI practices. Importantly, all firms need to evaluate the additional time and financial costs associated with responsible AI, not just against the positive value responsible AI can generate, but also against the harm prevented and the value saved.

Ultimately, each firm's journey in incorporating responsible AI practices will differ significantly, depending on existing company culture and the vastly different needs of firms. For instance, firms that are building their own AI, or are partnering with other companies to build AI, will have different needs around responsible AI than potential adopters who are evaluating vendor and technology options through a more public request-for-proposal (RFP) process (discussed further in Section 5).

Investments in product development will be required in order to realize the benefits of responsible AI. However, as firms at the vanguard of responsible AI offer a variety of tools, frameworks, resources and services to promote the accessibility of responsible AI, the input costs associated with these investments are likely to reduce significantly. Furthermore, as firms increasingly adopt responsible AI practices, they in turn can improve the overall accessibility of AI technologies. Once responsible AI has become commonplace and an ecosystem of responsible AI solutions has developed, the investments associated with incorporating responsible AI will decline for most firms. This ecosystem will not only allow more firms to invest in responsible AI, but will also support industry more broadly to adopt and recognize the business value of AI, driven by their growing comfort with managing the associated risks. For instance, through improved management of explainability, potential enterprise implementers of AI will better understand AI systems and the best use cases for their firms.

"What is the true cost of developing AI? It has to include cross-disciplinary ethical design built in – that's part of the labor. There is no free lunch here."

Joel Branch, Lucd AI

At the individual firm level, the benefits of incorporating responsible AI practices across the product lifecycle are clear. At the industry level, the incorporation of responsible practices will drive greater accessibility and increased adoption rates.

2. Trailblazers attract and retain top talent

Perhaps the most important trend in technology workplaces in recent years has been employees' growing scrutiny of their employer's ethics, beliefs and practices. The world's top technology workers now seek much more than a dynamic job and handsome remuneration; they are increasingly driven by a belief in "tech for good" and a desire for their work to serve a higher societal purpose. Dissatisfaction with technology workplaces has manifested in rising employee activism, which in turn has affected management–worker relations.
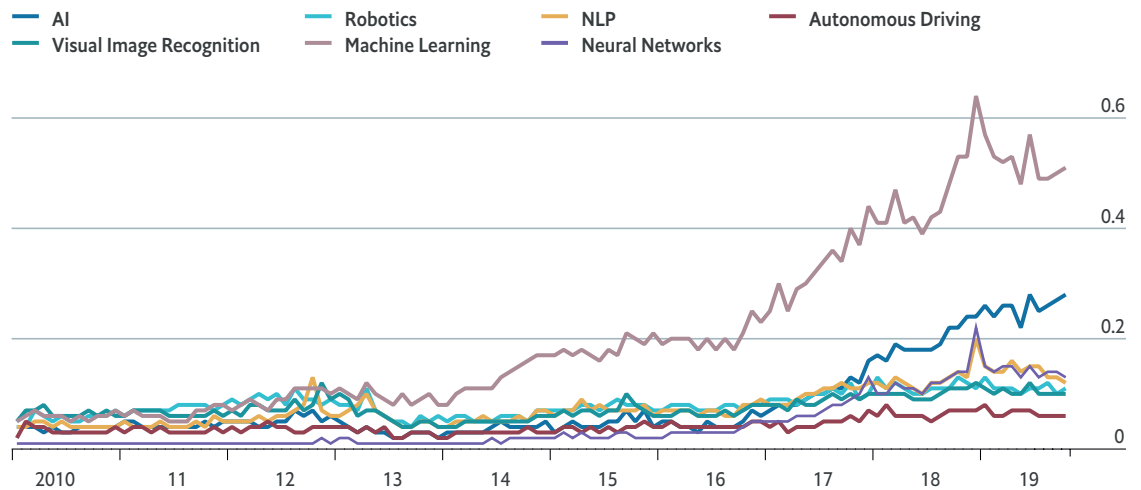
At first glance, this may appear to be a cause for concern, especially for human resources (HR) managers. However, firms must realize that this provides a strategic opportunity to establish themselves as employers of choice—not least by promulgating the values of responsible AI. Doing so will help to increase employee retention, lead to more diverse workplaces, and ultimately boost the firm's competitiveness and financial performance.

Technology workers care

Recent ethics-related public relations (PR) scandals have undermined stakeholder and consumer trust in leading firms (see Sections 5 and 7 of this report). While the demand for technology and AI talent is growing (see Figure 3),[56] the sector may be losing some of its luster in the eyes of graduates.[57]

Figure 3.

US labor demand in the technology sector by cluster
(% of total online job postings, 2010-2019 monthly)

| — AI | — Robotics | — NLP | — Autonomous Driving |
| — Visual Image Recognition | — Machine Learning | — Neural Networks | |

Source: Stanford University; BurningGlass.

For example, following the 2018 Facebook–Cambridge Analytica scandal, only 35% to 55% of graduates from the top universities in the United States, such as Stanford, Carnegie Mellon and the Ivy League schools, were accepting full-time positions at Facebook by May 2019, down from 85% just six months earlier.[58] Software engineers—the most in-demand technology workers in 2020 —were even less inclined to accept job offers from Facebook than other applicants,[60] putting pressure on the company's ability to innovate, compete and fill its backlog of open job positions.

Ethically questionable practices are not only discouraging prospective employees and graduates from applying for jobs; they are also prompting existing employees to lose faith in the sector, contributing to the so-called techlash.[61] Research by Edelman shows that 85% of Bay Area technology employees believe that their employers are obligated to "improve societal issues and fix local problems".[62] More and more employees—and not just in technology—are recognizing and calling out ethical issues related to AI and big tech in general.

Anecdotal evidence suggests that there is a growing divergence between employees' preferences and employers' actions. In a 2019 survey of 1,010 technology employees in the United Kingdom, almost 30% of respondents reported that they had witnessed potentially harmful decisions being made in business strategy, design or marketing.[63] These decisions related to potential unemployment due to automation, failures in safety and security, and inadequate testing before product releases.[64] Looking more specifically at AI, 59% of employees reported that they had worked on AI products that they felt might be harmful to society. 16% of all AI/machine learning (ML) engineers resigned from their jobs as a result of these concerns over products they had worked on, compared with 5% from the technology sector overall. This rising ethical awareness is not limited to the technology sector; 90% of EIU survey respondents from non-technology sectors report that it is important to them that their company operates ethically. LinkedIn research shows that over 70% of surveyed professionals would be willing to take a pay cut to work for a company that aligns with their own values, and nearly two in five respondents would leave their job if they were asked to do something they deemed morally or ethically conflicting.[65]

These sentiments have been sparking employee activism within top-tier technology companies, as employees call them out on broader corporate practices, as well as more AI-specific issues.[66] In 2019, 25 prominent AI researchers from multiple companies, including Amazon, penned a letter requesting that Amazon refrain from selling Amazon Web Services' facial recognition software to law enforcement, due to flaws and biases in the software leading to disproportionately adverse outcomes for people of color and women.[67] Similarly, in 2018, hundreds of Microsoft employees penned an open letter heavily opposing the company's bid for the Joint Enterprise Defense Infrastructure (JEDI) contract, which would see the weaponization of AI by the US Department of Defense.[68]

More recently, Facebook's Mark Zuckerberg has come under fire for his company's lack of action regarding US President Donald Trump's controversial social media posts about the widespread protests against police brutality and the death of George Floyd.[69] Although not explicitly related to AI, this example demonstrates the impact a company's stance can have on employee satisfaction. While social media rivals Twitter and Snap Inc. responded by flagging Mr Trump's tweets and halting promotion of his Snapchat account,[70] Facebook left the posts untouched, citing free speech. Mr Zuckerberg's lack of action led to an employee-written open letter to the chief executive officer (CEO),[71] an employee walkout and even a handful of resignations, which were widely covered in the media.[72] This individual and collective employee activism sparked further action against Facebook by civil rights activists and the firm's corporate partners and advertisers.[73]

Responsible AI can mitigate rising HR costs, fuel workplace diversity and boost productivity

Within firms, "techlash" can hurt the bottom line by raising numerous operating costs. At the product level, employee backlash can slow product development, compromise product quality and reduce

a company's competitive advantage (see Section 1 of this report).[74] It can also worsen staff attrition, which is already relatively high and costly in the technology sector (see Figures 4 and 5).[75] Replacing a technology employee can cost over GBP£30,000 (US$38,000) in logistics, lost capital income and unproductive wages;[76] and in the United States, the replacement process can take almost a month or even longer.[77] Other estimates show that the cost of attrition ranges from US$30,000 for replacing an entry-level employee (50% of an average salary) to US$312,500 for a technical expert or leader within a company (250% of salary).[78]

Figure 4.

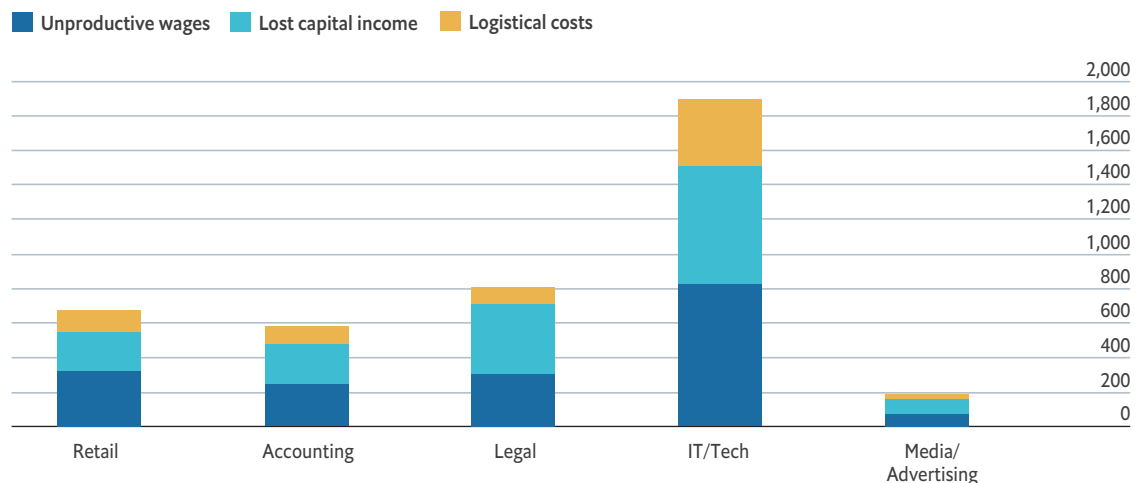**Technology turnover falls short**
(%; average employee turnover rate by industry)
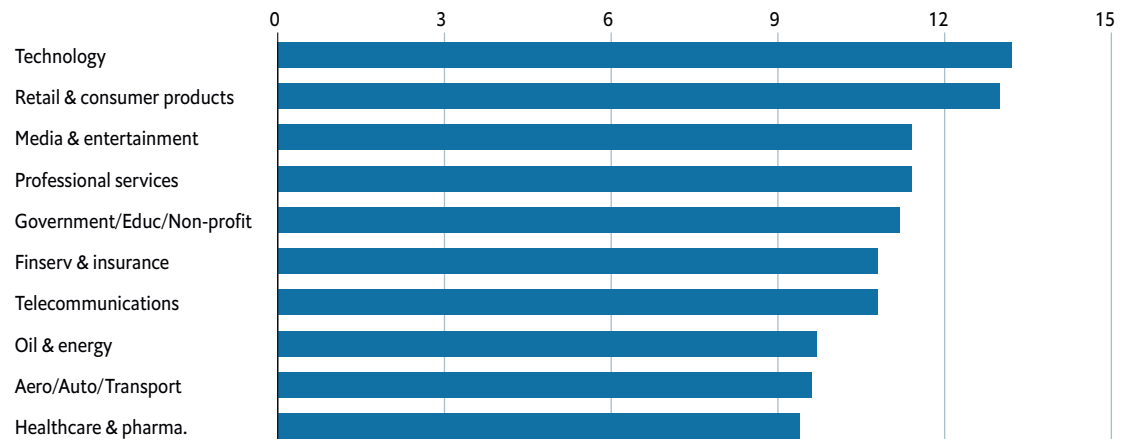
Source: Linkedin.

Figure 5.

The total cost of labour turnover by sector
(GBP£ millions)

Source: Oxford Economics.

For firms that are eager to improve employee engagement and retention, while also increasing their attractiveness to prospective applicants, there is a growing body of evidence highlighting the importance of aligning organizational values and ethics with those of an increasingly socially conscious workforce. According to the 2019 iteration of Deloitte's Global Millennial Survey of 13,416 millennials and 3,009 Gen Zs, these two groups—the typical targets for technology recruiters—show stronger loyalty to employers who boldly tackle the issues that resonate with them, especially ethical issues.[79] EIU executive survey data suggests that firms are already aware of this: nearly 80% of businesses believe that implementing ethical reviews in AI development or use is very important or critically important to talent acquisition, and over 75% feel the same about talent retention (see Figure 6).

Figure 6.

Talent matters to AI adopters
(% of responses to "How important is the implementation of ethical reviews in the development and/or use of AI technologies to the following aspects of your organization?')
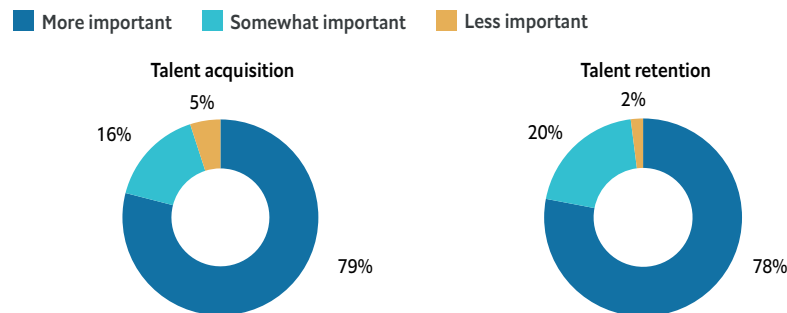
Source: The Economist Intelligence Unit.

Firms can mitigate the potential costs associated with this "techlash" through responsible AI practices. A study by the Hay Group, a consulting firm, shows that firms with high levels of employee engagement have employee turnover rates that are 40% lower than the rates of companies with low levels of engagement.[80] This translates into savings of over US$30m annually.[81] By working to implement responsible AI, firms can also position themselves as more attractive options for top-tier talent, and experience a surge in productivity as a result.[82] A 2017 McKinsey & Company survey of over 600,000 researchers, entertainers, politicians and athletes shows that, on average, top talent (i.e. high performers who are highly skilled) are 400% more productive than average, less-skilled individuals, and 800% more productive in highly complex occupations, such as software development (see Figure 7).[83] Productivity gains are likely to have a knock-on effect on workflow efficiency, firms' ability to bring products to market and ultimately their bottom lines. These gains can also boost morale among employees if they see that their roles are valued.[84]

Figure 7.

The relationship between quality of talent and business performance is dramatic
(%; productivity gap between average and high performers, by job complexity)
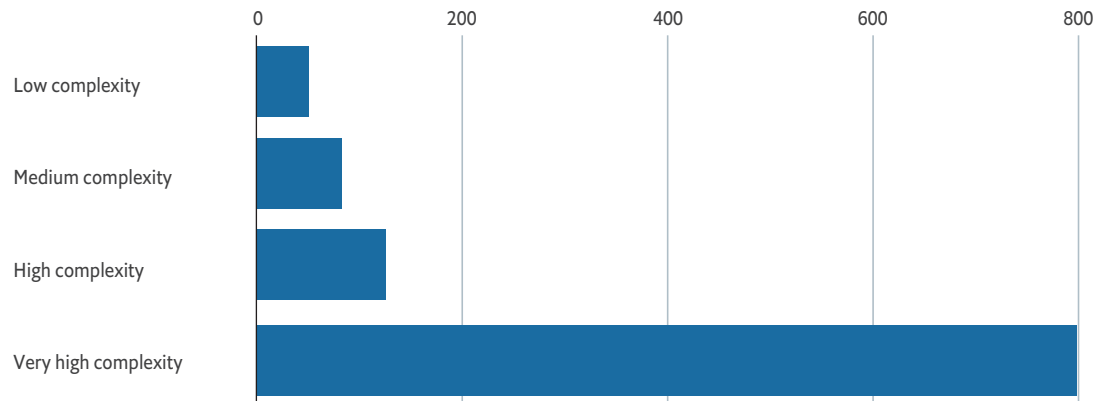
Source: McKinsey & Company.

> "Adding ethical reviews to AI does not have to be a costly or time-consuming process in terms of recruitment or retention. It is a matter of tweaking what is already there and activating already engaged employees."
>
> *Kathy Baxter, Salesforce*

The pursuit of responsible AI also fosters workplace diversity. Responsible AI requires talent beyond computer engineers and scientists, including multi-disciplinary experts such as ethicists, social scientists, attorneys, workflow/operations managers and consultants. According to EIU survey data, executives believe that one of the most effectives strategies for preventing potential risks associated with AI is to hire employees with diverse skills and backgrounds. Almost all respondents are already acting on this priority, with 94% of the surveyed organizations reporting that they have started hiring employees with diverse skills and backgrounds, or that they plan to do so in the next two years. While this could add to the headcount of companies developing or implementing AI technologies and augment recruitment costs (although less so for larger industry players)[85, 86] industry norms will develop around the types of teams needed to support responsible AI. This is likely to reduce the costs associated with strategizing about hiring and will make it easier for smaller players to replicate the hiring best practices of industry leaders.

With greater diversity, AI teams will be better equipped to understand, anticipate and mitigate potential sources of bias, and to engage with affected groups. This will not only make the resulting product more aligned with societal values, but will also have a positive impact on a firm's customer base and revenue generation (see Section 5).[87] Additionally, this increase in diversity can boost employee satisfaction and mental health due to increased alignment between corporate and employee values, particularly for women and minoritized groups who are historically marginalized in the technology sector.[88] Greater diversity also has the potential to bring together different perspectives, which can spur creativity and innovation, enhance problem-solving efficiencies, and result in better quality products suited to a wider customer base.[89]

While refocusing on responsible AI can boost productivity and reduce employee churn, it may also extend product development cycles, delay launches, and result in the decommissioning of certain products or projects deemed unethical or irresponsible (see Section 1). As a result, employees may be involved in fewer product launches each year, potentially affecting their career progression and variable earnings potential (depending on incentive structures).[90] However, it is important to note that these are

short-term bottlenecks; as practices aimed at developing responsible AI become mainstreamed, any backlog or losses are likely to be more than compensated by stronger capacity development and process innovation.
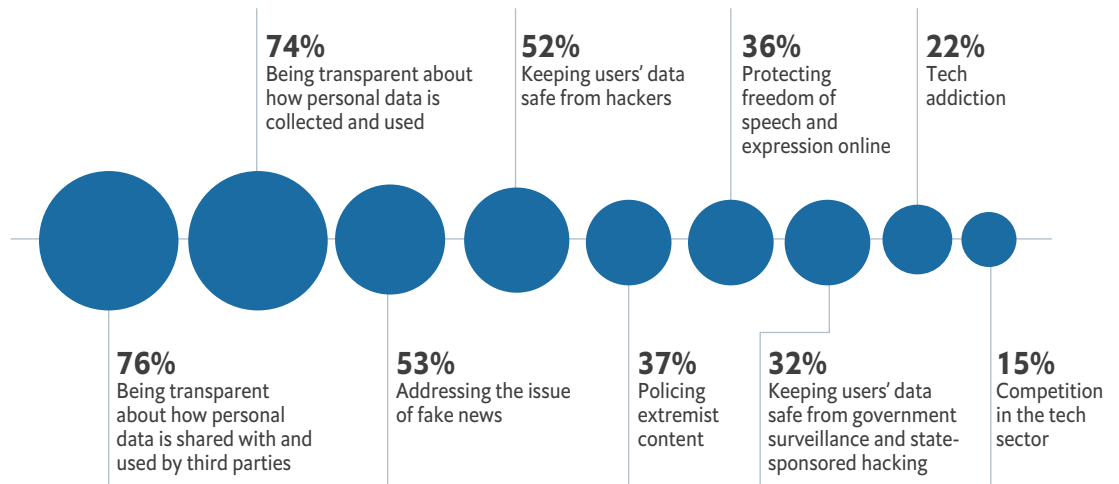
Despite the "techlash" discussed in this section, it is important to note that technology workers still believe in technology's potential to have a profoundly positive impact on society. Over four-fifths of UK technology workers say that their work will benefit society, and what most excites them are the socially impactful developments in their line of work, such as using AI and the Internet of Things to deliver assistive technology to people with disability, or to the elderly.[91] Moving towards responsible AI development will allow firms to send a crucial signal to existing or prospective employees, as well as the broader society, that their concerns are being heard, that their interests are being protected, and that the firm's values align with theirs.

Many business leaders are becoming more aware of the issues they need to address to allay employee concerns (see Figure 8),[92] but action is needed to keep employees engaged. Firms working on responsible AI can develop a broader culture of responsibility and fairness across the entire organization, leading to improved workplace environments and enhanced employee satisfaction.

Figure 8.

Employee concerns are of growing importance
(% of responses to "Which, if any, of the following issues do you think have become more important since techlash started in 2018?")

74% Being transparent about how personal data is collected and used

52% Keeping users' data safe from hackers

36% Protecting freedom of speech and expression online

22% Tech addiction

76% Being transparent about how personal data is shared with and used by third parties

53% Addressing the issue of fake news

37% Policing extremist content

32% Keeping users' data safe from government surveillance and state-sponsored hacking

15% Competition in the tech sector

Source: Ipsos Corporate Reputation.

3. Safeguarding the promise of data

With the world producing about 2.5 quintillion bytes of data per day,[93] data has become a dominant part of daily life. Indeed, roughly 60% of American adults do not believe that it is possible to go through daily life without companies or the government collecting their data.[94]

Research shows that data and analytics are important to the business growth and digital transformation of 94% of surveyed companies, with 66% planning to significantly increase their analytics spending in 2020 (see Figures 9 and 10).[95] Although companies are placing higher value on the data they collect, it is unlikely that the average person is aware of their data's value—for example, many people do not see the other side of the equation when they are able to access social media platforms free of cost.

Given the centrality of data to the business models of firms working on AI,[96] data security and privacy practices have become critically important for both firms and users. As AI adoption and dependence increase across a wide spectrum of sectors, incentives for attackers to target algorithms are expected to grow, particularly as the systems that rely on these algorithms pull together more and more granular and valuable data.[97] As a result, data security and privacy have become fundamental pillars of responsible AI.

Figure 9.

Data analytics are becoming essential to business
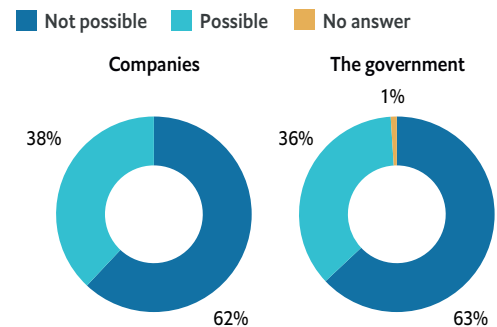(% of responses to "Over the next year, will your organisation invest more, less or about the same in data analytics?")
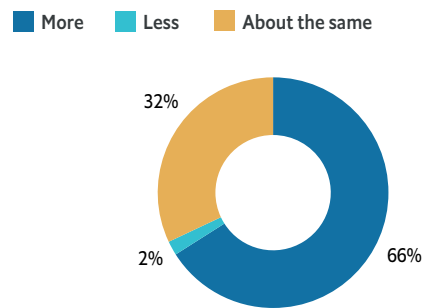
Sources: MicroStrategy; Hall & Partners.

Figure 10.

Impossible to avoid
(% of US adults who say if it is possible or not to go through daily life without have data collected about them by companies and the government)
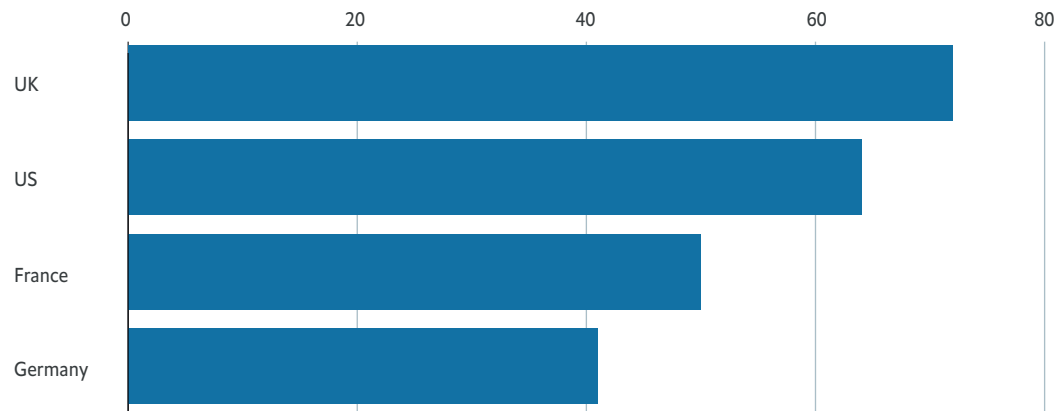
Source: Pew Research Center.

Consumers, customers and regulators are less and less forgiving of data breaches

Figure 11.

The blame game
(% of respondents that believe that "if a company loses my personal data/information I feel inclined to blame them above anyone else, even the hacker")

Source: RSA Security.

> "When you are not a good steward of user data, you will lose those users. Loss of users is a great cost and particular concern for companies that rely on data as a key resource"
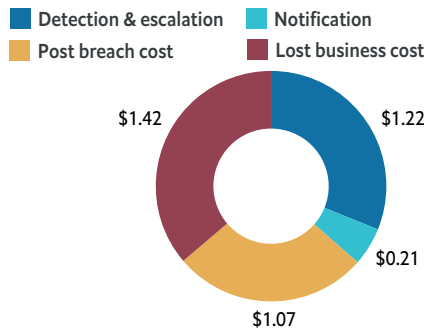>
> *Ben Roome, Ethical Resolve*

In 2017 only 25% of PwC survey respondents believed that most companies handled their sensitive personal data responsibly, and almost 90% of consumers said that they would take their business elsewhere if they did not believe a company was handling their data responsibly.[98] Today, over 90% of consumers will not buy from a company if they have concerns about how their data will be used.[99] Consumers are also more likely to blame companies for data breaches, rather than the hackers themselves, highlighting the impact that safeguarding data can have on customer or consumer engagement with firms (see Figure 11).[100]

Enterprise customers are also reluctant to engage with firms that are not committed to protecting their data.[101] EIU survey data shows that 30% of executives consider the transparency of data sources to be most important for an AI technology service provider or developer when evaluating a potential AI vendor or partner. Almost 45% of respondents rank data privacy in their top five considerations when developing or implementing a new AI system.

Figure 12.

The cost of a data breach
(Data breach total cost broken down into four categories; US$ million) (Total average cost of breach = US$3.92m)

- Detection & escalation
- Notification
- Post breach cost
- Lost business cost

$1.42 $1.22

$0.21

$1.07

Sources: IBM; Ponemon Institute.

Research shows that there are many costs associated with a data breach. These include direct costs, such as detection and notification processes, impact on company share price and post-breach responses; indirect costs due to reputational damage, such as lack of investor interest; and hidden costs, such as loss of business and lost business hours as employees shift attention to the breach.[102] In 2019 IBM and the Ponemon Institute reported that globally, the average data breach involved 25,575 records and cost an average of US$3.92m. The United States had the highest country average cost, at US$8.19m.[103] The research also found that lost business was the most financially harmful aspect of a data breach, accounting for 36% of the total average cost (see Figure 12).
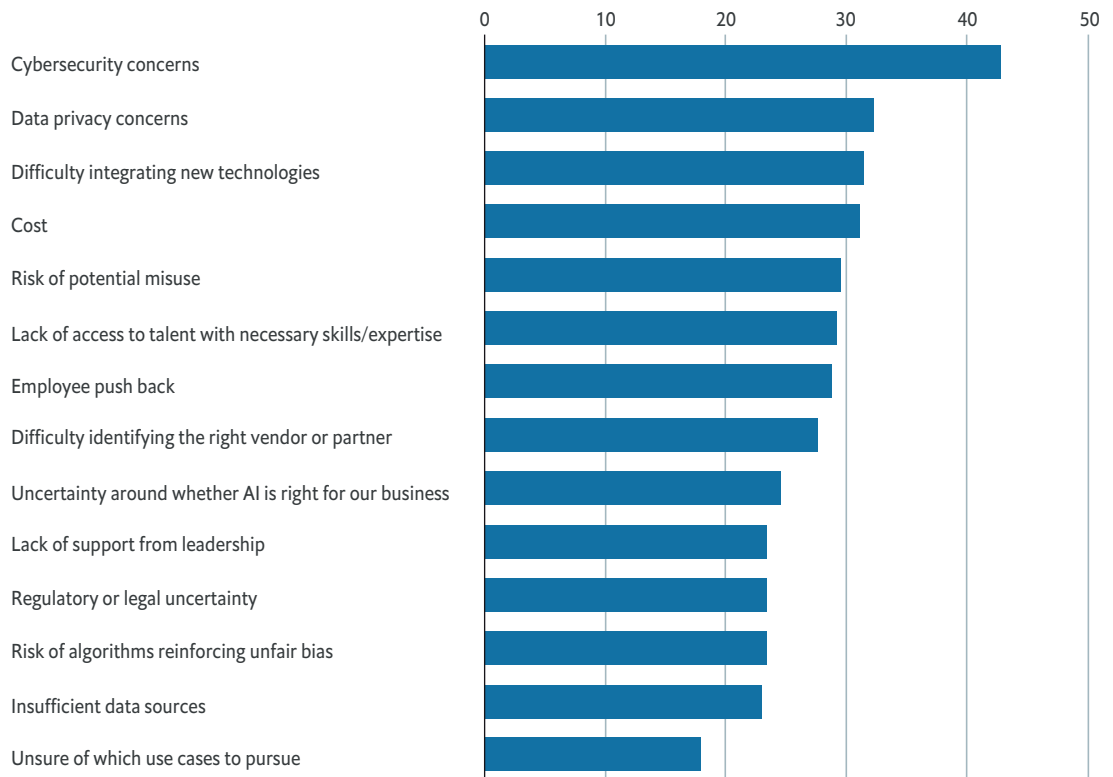
With data privacy regulation on the rise across the globe, such as the General Data Protection Regulation (GDPR; see Case Study 1) and the California Consumer Privacy Act (CCPA), the risk of non-compliance and related costs are a top concern for companies developing and using AI.[104]

Figure 13.

Cybersecurity and data privacy are top of mind
(% of responses to "Which of the following present the biggest obstacles to your organisation's adoption or implementation of AI technologies? (Select up to five)")

Category	Value
Cybersecurity concerns	43
Data privacy concerns	32
Difficulty integrating new technologies	31
Cost	31
Risk of potential misuse	30
Lack of access to talent with necessary skills/expertise	29
Employee push back	29
Difficulty identifying the right vendor or partner	28
Uncertainty around whether AI is right for our business	25
Lack of support from leadership	24
Regulatory or legal uncertainty	24
Risk of algorithms reinforcing unfair bias	24
Insufficient data sources	23
Unsure of which use cases to pursue	18

Source: The Economist Intelligence Unit.

According to The EIU's executive survey, cybersecurity and data privacy concerns represent the biggest obstacles to AI adoption or implementation by an organization, cited by 43% of respondents and 32% of respondents, respectively (see Figure 13). PwC reports that in its Top Policy Trends survey of 400 chief experience officers (CXOs), over 50% of technology, media and telecommunications respondents ranked data privacy among the top three government policies that have the greatest impact on their business.[105] These policies and regulations have specific provisions for firms developing AI, stipulating the need for firms to (a) have a clear understanding of information-gathering processes, (b) conduct thorough data protection impact assessments, and (c) restrict automated decision-making (ADM) and profiling[106] in cases that result in "legal" or "similarly significant" effects on individuals (e.g. the right to vote).[107] The need to address and ensure data protection is paramount within the current regulatory landscape (see Section 4).

As a result, firms will need to think very carefully about how they collect data, including making individuals aware of the type of data collected, and the purpose for which it is being collected; giving individuals the ability to opt in or out of data collection; and ensuring that only necessary data is

gathered. In the European Union (EU), this is bolstered by the GDPR, which stipulates that firms building AI systems must "only collect the minimum amount of data needed and have a clear retention policy for the profiles they create"; must "explain how people can access details of the information they used to create their profile"; and must "tell people who provide them with their personal data how they can object to profiling, including profiling for marketing purposes".[108] While the United States may never implement anything as stringent as the GDPR (the CCPA is known colloquially as GDPR-lite), observers believe that more explicit federal regulations on data privacy are inevitable.[109]

For a firm developing or implementing AI technologies, a crucial misstep is failing to clearly explain what data is being used for, and why. Facebook's breach of user data in the headline-grabbing 2018 Cambridge Analytica scandal is a cardinal example of how this misstep can hurt a company. With the aim of influencing the outcome of the US 2016 presidential election (as well as the UK Brexit referendum), Cambridge Analytica scraped data from Facebook users by asking them to take a personality survey and download an app. Nearly 300,000 Facebook users took part in the survey and consented to share their data, but data was also harvested from over 86m of these participating users' friends without their consent. In addition, participating users were falsely told that the data was being collected for academic purposes.[110] The company then employed an AI-based system to automatically test hundreds of advertising variations and determine which one would have the greatest impact on swaying voter decisions.[111] In the wake of this scandal, 41.9% of survey respondents report that they have changed their behavior on Facebook, mostly by being more careful about what they post (see Section 7 for further details).[112] Moreover, a majority of Facebook users were concerned about the use of their personal data and invasion of their privacy (see Figure 14).[113]

Figure 14.

Facebook users' privacy concerns
(% of US adults surveyed)
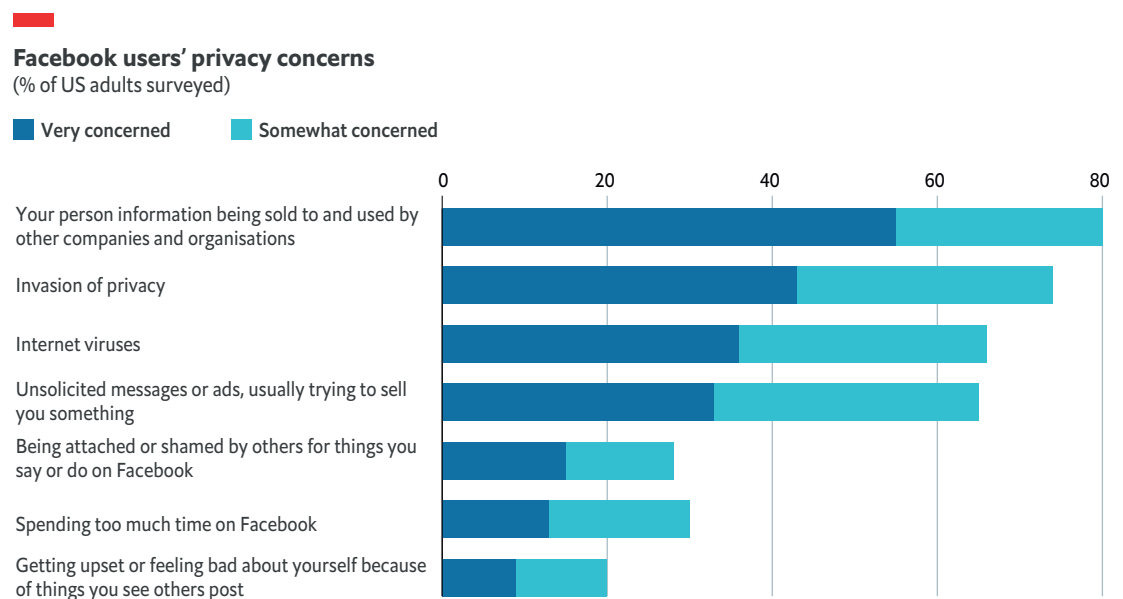
Source: Gallup.

A more recent example is the 2020 client list data breach at Clearview AI, a facial recognition company that offers clients access to its database of over 3bn images scraped from the Internet.[114] Clearview had claimed that it only worked with law enforcement agencies, but the breach showed that it was also working with hundreds of companies and individuals. Since the scandal, Apple, Google, Microsoft, Twitter and YouTube have sent cease-and-desist letters to Clearview for the misuse of their services.[115] The company has also faced multiple unrelated lawsuits due to other data privacy mishaps,[116] all of which have chipped away at stakeholder trust. The company's response to the breach—in which it claimed that "data breaches are a part of life in the 21st century"—further demonstrated the overall lack of importance placed on data privacy within Clearview's corporate culture.

Data security and privacy investments are essential to fuel growth in the AI industry

Companies have developed and released a number of AI principles in recent years, with a focus on data ethics, privacy, transparency, explainability, trust and security. As a result, it is difficult to imagine responsible AI products that do not embrace data ethics. Firms working on responsible AI are already addressing vital aspects of data management, from quality to safeguarding. The development of responsible AI involves the creation of efficient, formal processes to secure consent from users, in addition to a focus on data protection, intellectual property (IP) ownership and cybersecurity. A key facet of responsible AI is developing systems that are transparent. Part of this transparency includes disclosing what data is collected, used and protected, and how.[117] Firms that are currently working on these areas of responsible AI will be able to improve their systems' safety and accountability, avoiding the costs and risks discussed above.

However, while data security and privacy investments can be portrayed as pre-emptive, defensive measures, it is important to articulate how they can underpin growth in the industry. Building responsible AI through improvements to security can lead to better quality training data and product improvements. When provided with data protection assurances and increased data privacy rights, consumers are more likely to be comfortable sharing their data. Following the introduction of the GDPR, for example, 62% of consumers had greater confidence in sharing data with companies.[118] This can result in larger, more diverse data sets, which will in turn improve AI outcomes.

Firms that are working on incorporating ethical reviews into AI design processes will also benefit from smoother internal processes. Expert interviewees suggest that ensuring adequate and systematic monitoring and reporting lines, which employees can use to flag any data concerns, can streamline these processes. By paying attention to the ethics of AI, firms can simultaneously mitigate the chance of overlooking data breach risks, respond to such breaches efficiently and ensure compliance with existing (and incoming) data regulations (see Section 4).

However, firms developing or implementing AI technologies must keep the "transparency paradox" in mind. While responsible AI can mitigate a number of data-related risks, there is scope for new risks to arise in relation to user data and corporate data (or trade secrets). For example, firms that boost the transparency of an AI/ML system and release information about their algorithms may increase their vulnerability to cyberattacks.[119] Organizations have long confronted this paradox in other areas and must now apply the relevant mitigation practices specifically to AI.[120]

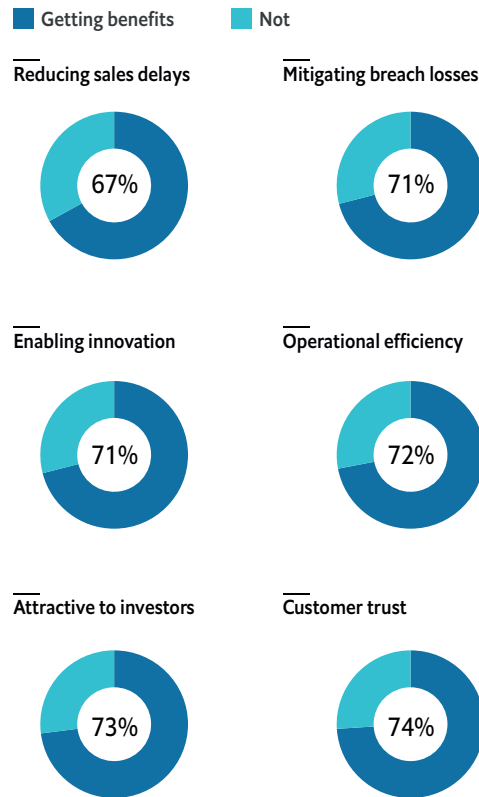"Companies have been looking at AI models and the data feeding these models through the lens of PR issues and regulatory violations, and laws like GDPR and CCPA help with this. But companies are also realizing that they need to be good corporate citizens, and that's increasingly becoming a strong incentive for them to do the right thing with data and AI models built with this data."

Krishna Gade, Fiddler AI

Figure 15.

Data privacy brings added benefits
(% of companies getting benefits from investing in data privacy)

■ Getting benefits   ■ Not

Reducing sales delays

67%

Mitigating breach losses

71%

Enabling innovation

71%

Operational efficiency

72%

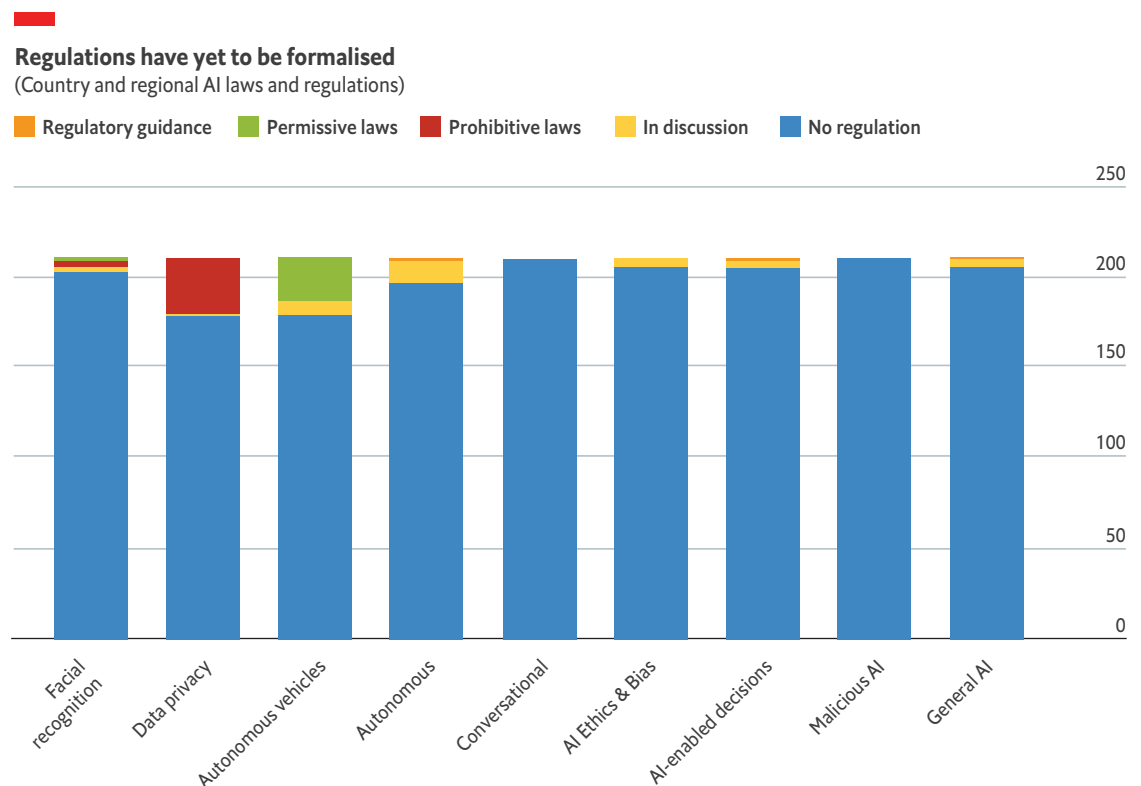Attractive to investors

73%

Customer trust

74%

Source: Cisco 2020 Data Privacy Benchmark Study.

According to a survey conducted by FTI Consulting, around 97% of companies plan to increase their data privacy budgets this year. While this will have an upfront cost,[122] companies can expect to minimize the financial and reputational damage associated with data breaches and other data-handling mishaps in the future. Research by Cisco (2020) reports that for every US$1 of investment into data privacy strengthening, the average company can receive US$2.70 of benefit.[123] Firms that invest in data protection will position themselves to benefit in multiple ways, including reducing sales delays, enabling innovation and improving operational efficiency (see Figure 15).

4. AI regulation: Preparing in advance

As AI technology advances, so do global calls for its regulation both from broader society and the business community, and from within the technology sector itself.[124] Regulation should be seen as a means of encouraging responsible AI design, development and implementation practices, which in turn will support the widespread adoption and realization of the promise of AI. Countries and regulators across the world are already working to adapt existing regulations and are exploring new regulations explicitly focused on AI technology.[125]

Figure 16.

Regulations have yet to be formalised
(Country and regional AI laws and regulations)

■ Regulatory guidance ■ Permissive laws ■ Prohibitive laws ■ In discussion ■ No regulation

Source: Cognilytica.

Although explicit AI regulations are not yet codified in legislation (see Figure 16), existing regulations are already shaping AI practices across areas such as data protection and IP. The EU is leading the push for distinct AI regulations, having published a white paper in early 2020 that outlined policy options for achieving a co-ordinated legislative approach to AI and specific areas of AI application.[126] Across the globe, countries are also looking to expand their AI regulatory toolkits.[127] In the United States, for example, over 20 states have passed legislation related to the safety, liability and accountability of autonomous vehicles; the National Institute of Standards and Technology has developed a plan facilitating federal agency engagement in the development of standards for AI;[128] and in early 2020 the Office of Management and Budget at the White House launched a significant process for federal
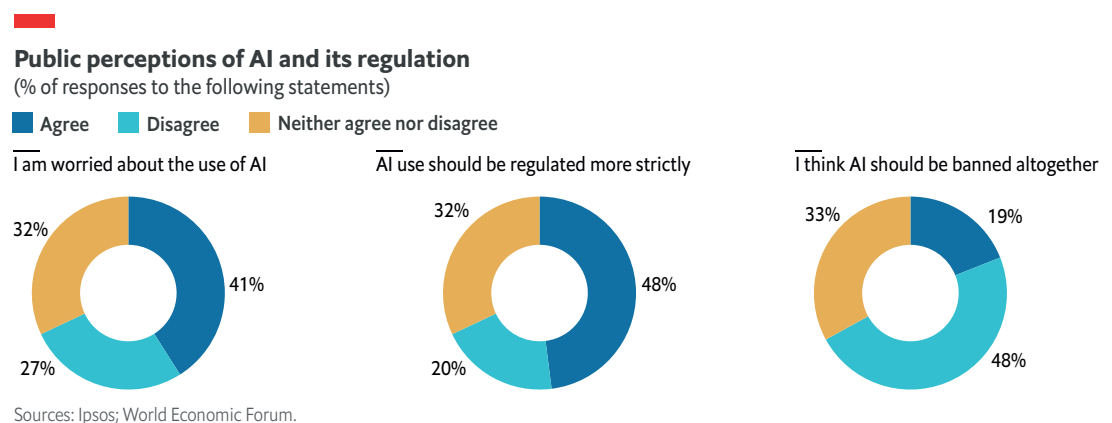
agencies around the "development of regulatory and non-regulatory approaches" for AI.[129] Other countries—including Australia, India, Japan, Singapore and a number of EU member states—have developed national guidelines, strategies, reports and other essential tools to approach AI and address the ethical risks associated with its development and use.[130]

While sweeping regulatory requirements that forego nuance and context risk harming innovation and positive applications of AI, many stakeholders in the broader AI ecosystem believe that the current lack of regulatory clarity may be holding the sector back by feeding uncertainty, undermining public acceptance of the technology and stalling investment. Regulation is coming, and it is incumbent on market leaders to invest in the process so that they can help to promote a responsible and balanced approach, rooted in the realities of AI technology and its applications.

A growing consensus for better regulation, even as the risk of over-regulation looms large
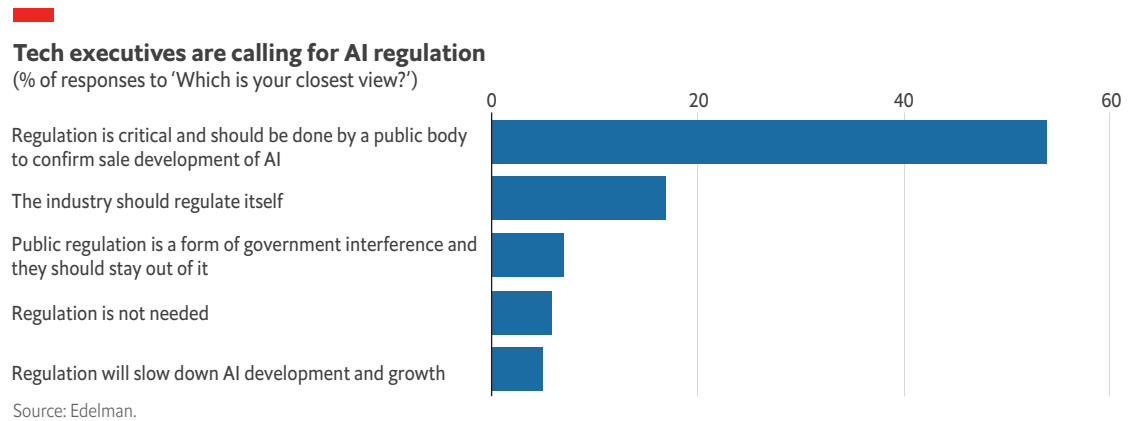
As concerns about the use of AI grow, the public is turning to governments to introduce comprehensive regulation to better manage the risks of the technology. According to a 2020 survey by Ipsos, 50% of adults across 27 countries believe that companies' use of AI should be regulated more strictly.[131] Perhaps reflecting concern about the current lack of regulation, almost one-fifth of respondents believe that AI should be banned altogether (see Figure 17).

Figure 17.

Public perceptions of AI and its regulation
(% of responses to the following statements)

■ Agree   ■ Disagree   ■ Neither agree nor disagree

I am worried about the use of AI

32% 41% 27%

AI use should be regulated more strictly

32% 48% 20%

I think AI should be banned altogether

33% 19% 48%

Sources: Ipsos; World Economic Forum.

Interviews with experts from notable technology firms indicate a growing consensus on the need for AI regulation, with many technology firms already mobilizing their legal teams to assess related implications.[132] According to a 2019 Edelman survey, over half (55%) of US technology executives believe that regulation of AI technology is critical and should be prioritized to ensure the safe development of AI (see Figure 18).[133] In recent years, the CEOs of top technology companies have shown support for thoughtfully developed and sensible regulation of technology, as well as AI specifically, particularly in areas such as facial recognition and autonomous vehicles.[134] EIU executive survey data shows that 86% of US business executives from the five surveyed sectors believe that AI regulation is long overdue, and 92% believe that technology companies must be proactive to ensure responsible AI practices in the absence of such regulation (see the text box below).[135]

Figure 18.

Tech executives are calling for AI regulation
(% of responses to 'Which is your closest view?')

| | 0 | 20 | 40 | 60 |

Regulation is critical and should be done by a public body to confirm sale development of AI

The industry should regulate itself

Public regulation is a form of government interference and they should stay out of it

Regulation is not needed

Regulation will slow down AI development and growth

Source: Edelman.

EIU Executive survey respondents believe in regulations

92% agree that incorporating ethical reviews into the AI design and implementation process today will help reduce risk for regulatory non-compliance in the future

90% agree that the potential long-term benefits of implementing ethical AI guidelines outweigh the initial costs of implementation.

92% agree that until there is formal regulation, tech companies should take the initiative to ensure their AI products are responsibly designed and used.
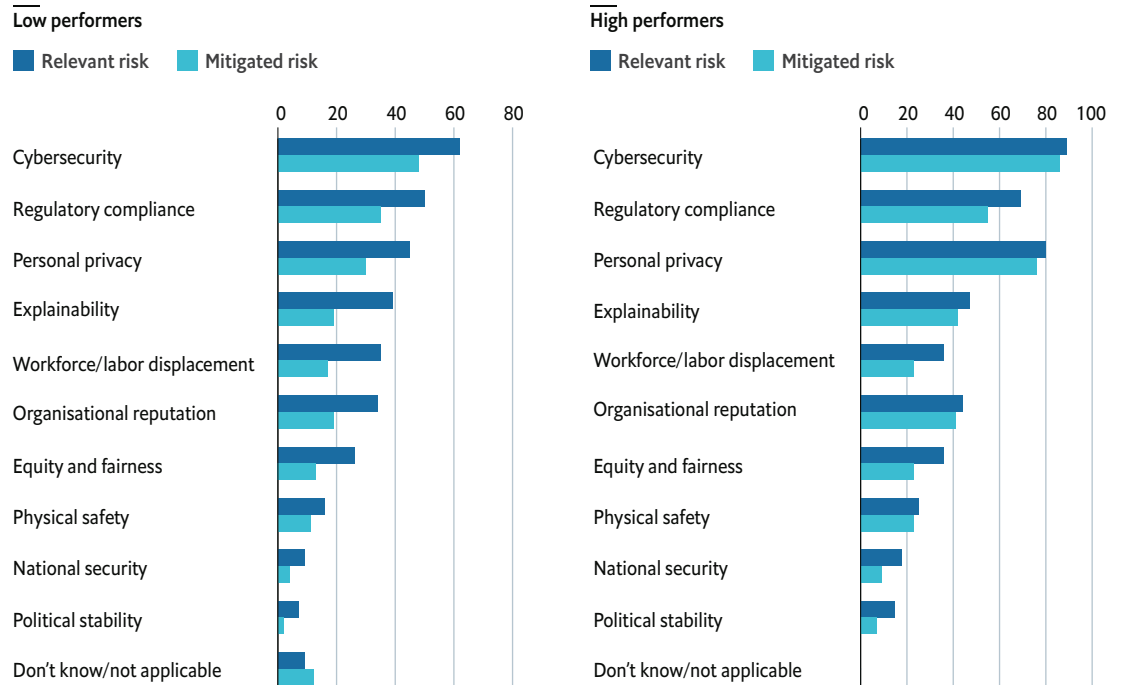
Source: The Economist Intelligence Unit.

As the world gears itself for AI regulation, both developers and users of AI will need to remain cautious about the associated compliance requirements. Growing acceptance of AI regulation is accompanied by the looming threat of over-regulation, which is already seen as a major concern across the AI ecosystem. EIU survey data shows that 69% of respondents believe that regulation will slow innovation. Similarly, a 2019 survey of companies that are AI adopters, conducted by McKinsey & Company, found that regulatory compliance is the second most commonly cited AI-related risk that firms are concerned about.[136] Companies that are more likely to benefit from adopting AI (dubbed high performers) are more likely to identify regulatory compliance as a risk.

Figure 19.

Regulation remains a top risk for AI adopters
(% of respondents that believe the following risks are relevant and whose organisations are working to mitigate them)

Low performers
■ Relevant risk   ■ Mitigated risk

High performers
■ Relevant risk   ■ Mitigated risk

Cybersecurity
Regulatory compliance
Personal privacy
Explainability
Workforce/labor displacement
Organisational reputation
Equity and fairness
Physical safety
National security
Political stability
Don't know/not applicable

Source: McKinsey & Company.

> "The lack of governance and regulation at the moment leaves some customers, particularly in heavily-regulated industries like financial services and health care, wary of attempting to use AI because they just aren't sure what to expect if regulation comes rolling down later."
>
> *Kathy Baxter, Salesforce*

It is therefore crucial that companies developing and implementing AI technologies work to mitigate the risks of AI early. Without such efforts, the industry as a whole could face sweeping, overly restrictive regulatory action, which could have a limiting effect on innovation and weaken public acceptance and adoption of AI technology.[137]

Early compliance poses upfront costs but will pay off in the long term, both financially and reputationally

Companies are closely monitoring AI regulation, whether in the form of legislative proposals or policy guidelines and directives. When the EU adopted the GDPR (see Case Study 1), only 31% of businesses believed that their organization was GDPR-ready before the law came into force, according to a 2017 Veritas survey of 900 business decision-makers.[138] That experience has prompted firms to begin pre-empting, planning for and investing in preparedness measures ahead of upcoming AI regulations.[139] Companies that are considering or have already started working on developing responsible AI and governance structures can expect to experience a significant, tangible advantage when new regulations come into force. This is supported by EIU executive survey data, which shows that 90% of respondents believe that the potential long-term benefits of implementing responsible AI guidelines outweigh the initial costs of implementation.

Figure 20.

Costs of compliance
(Breakdown across six activity centres, US$ million)

Sources: Globalscape; Ponemon Institute.

> "AI regulations are coming. Many technology companies have been preparing for it. These kinds of restrictions push companies to think about data analytics, machine learning and AI in a more careful and responsible manner."
>
> *Krishna Gade, Fiddler AI*
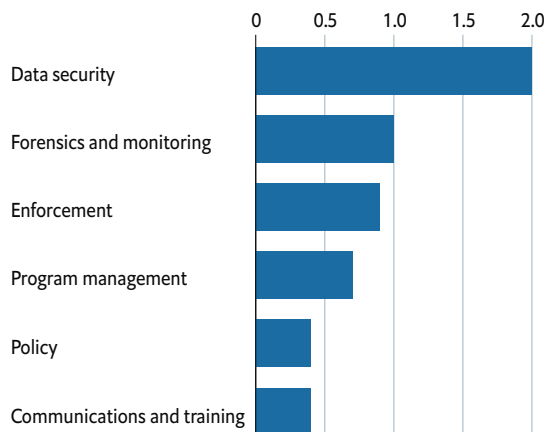
However, compliance costs are not insignificant. Research from the Ponemon Institute (2017) suggests that the average cost of regulatory compliance ranges from US$5.5m to almost US$22m per company.[140] The largest component of this is data security compliance (ranging from around US$290,000 to around US$6.6m), the cost of which has increased dramatically in recent years as a result of growing data protection regulations. This is followed by costs allocated to forensics and monitoring, enforcement, program management, policy, and communications and training (see Figure 20).

Another significant cost is associated with the need to grow headcount in compliance functions. Keeping this function in house has obvious benefits, including clear lines of accountability, reduced reliance on external parties and reduced risk of data security breaches (see Section 3).[141] However, many firms are turning to third-party "compliance as a service" solutions to help minimize the cost of training compliance teams, while also keeping up with the latest regulatory landscape changes and reducing the associated potential loss of institutional knowledge. Outsourcing allows companies to demonstrate external accountability—in addition to internal systems of accountability and transparency—while potentially driving down compliance costs.[142] As firms work to proactively invest in preparedness for upcoming AI regulations, these third-party solutions can become a valuable resource.

As the maturity and complexity of AI technologies continue to increase, many firms appear eager to proactively invest in preparedness. According to EIU survey data, 92.2% of executives believe that incorporating ethical reviews into the AI design and implementation process today will help to reduce the risk of regulatory non-compliance in the future. This is crucial, as research suggests that the costs associated with non-compliance—both financial and non-financial—are far more significant than those associated with compliance. For example, in the case of data privacy regulations (see Case Study 1), the costs of non-compliance outweigh the costs of compliance by a factor of 2.71 (i.e. if the cost of compliance is US$100, the cost of non-compliance will be US$271).[143] While regulatory penalties are a well-known risk of non-compliance, they account for just 13% of total non-compliance costs. In fact, the largest driver of non-compliance costs is the disruption to business operations (34%), followed by productivity loss and revenue loss (see Figure 21).

Figure 21.

Costs of non-compliance
(%)

- Business disruption
- Productivity loss
- Revenue loss
- Fines, penalites & other

13%

34%

27%

25%
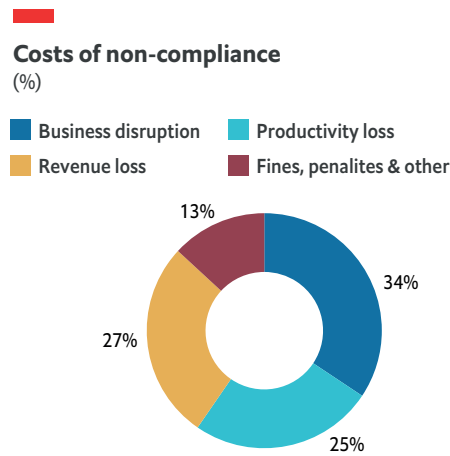
Sources: Globalscape; Ponemon Institute.

While firms may be tempted to delay compliance investments until absolutely necessary, this may come at the expense of meeting crucial, longer-term key performance indicators (KPIs). Amid the broader industry regulatory awakening, companies developing and implementing AI should seize the opportunity to make their voices and concerns heard. Anticipating regulators' actions, self-regulating early, and demonstrating responsible and ethical practices around AI are some of the most meaningful ways of influencing regulators' perspectives, possibly facilitating AI regulation that is relevant, actionable and not overly prescriptive.[144] In this way, firms may red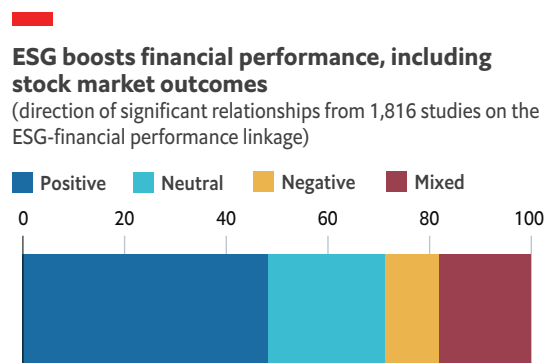uce the risk of sweeping, overly restrictive regulations and establish their reputations as leaders in this space, which in turn will improve their credibility with the public.[145]

Although the precise contours of AI regulation remain far from settled, it is clear that some form of regulation is inevitable, and in some cases is already here.[146] With governments and regulators paying close attention, early actors stand to benefit considerably when AI regulations do come into force, thanks to smoother compliance processes, minimized costs, reduced risk of reputational damage and the introduction of regulations conducive to innovation.

5. It's a numbers game: Building revenue

There is mounting evidence of a positive relationship between a firm's ethical behavior and its core financial performance, including top- and bottom-line growth. In 2015 a second-order meta-analysis examined nearly 2,000 studies that explored the relationship between environmental, social and corporate governance (ESG) measures and corporate financial performance. This meta-analysis found that 90% of these studies demonstrated a non-negative relationship (see Figure 22). Companies that invest in ESG initiatives also perform better on the stock market, according to academic research and analysis conducted by firms such as Morningstar and Blackrock.[147] Analysis in 2019 by Ethisphere shows that the World's Most Ethical Companies[148] outperformed Large Cap Index companies over five years by 14.4%, and over three years by 10.5%.[149]

Figure 22.

ESG boosts financial performance, including stock market outcomes
(direction of significant relationships from 1,816 studies on the ESG-financial performance linkage)

Source: Friede, Busch & Bassen (2015).

Customers are increasingly calling for responsible technology

The positive relationship between ethical behavior and financial performance may be driven by many factors, which together make a compelling business case for investing in responsible AI now. First, consumers' and customers' growing social consciousness, attendant scrutiny of firms' ethics and interest in voting with their wallets are increasingly apparent. As a result, significant weight is being placed on responsible technology development, from consumers purchasing smartphones through to B2B clients looking to develop products using a technology firm's AI building blocks.[150]

Second, public perceptions of technology companies (while still fairly positive, compared with businesses across sectors) appear to have plateaued in recent years. Customers are becoming wary that companies may be prioritizing near-term financial performance over customer welfare and broader societal good.[151] This is especially true among millennial and Gen Z end users, who are statistically the most technologically savvy and socially conscious generations.[152] In the 2019 edition of Deloitte's annual Global Millennial Survey, 37% of millennials reported that they had stopped or reduced their relationship with a business because of a lack of ethical practices, and 38% had done so because a company's products or services negatively affected the environment or broader society.[153]
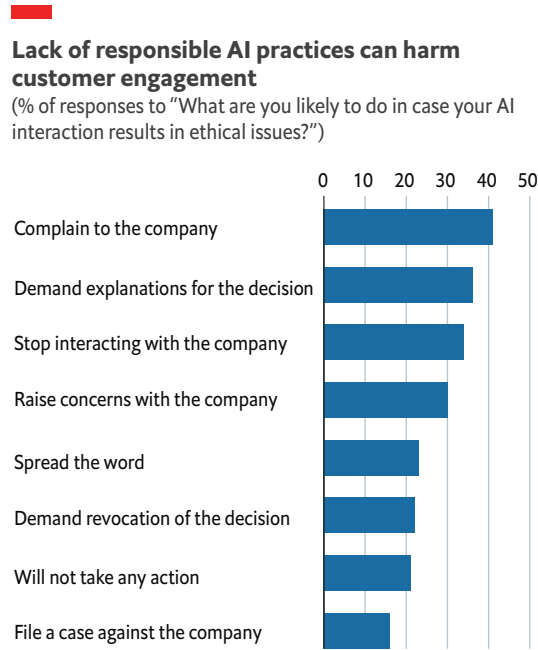
Specific issues associated with technology products can also deter consumers. For example, a 2018 consumer survey conducted by Frost & Sullivan found that almost 50% of consumers across ten countries stopped using the online services of companies that had experienced data breaches (see Section 3).[154] Corporate advertisers are also taking a hard line when it comes to perceived ethical breaches, with notable examples of large firms (e.g. L'Oreal, McDonalds, Audi, Disney, At&T and Sonos) temporarily removing advertising from YouTube or Facebook.[155]

Focusing specifically on AI, Capgemini reports that 55% of surveyed consumers would purchase more products if a company's AI was perceived to be ethical, while 34% would stop interacting with a company altogether if its AI interactions resulted in ethical issues (see Figures 23 and 24).[156]

Figure 23.

Lack of responsible AI practices can harm customer engagement
(% of responses to "What are you likely to do in case your AI interaction results in ethical issues?")

Complain to the company	
Demand explanations for the decision	
Stop interacting with the company	
Raise concerns with the company	
Spread the word	
Demand revocation of the decision	
Will not take any action	
File a case against the company	

Source: Capgemini Research Institute.

Figure 24.

Responsible AI can positively impact customer interactions
(% of responses to "What would you do if you perceive the AI-enabled interaction to be ethical?")

Place higher trust in the company	
Share your positive experiences with friends and family	
Have higher loyalty towards the company	
Purchase more products from the company	
Provide high ratings and share positive feedback	

Source: Capgemini Research Institute.

Responsible AI practices can also help to maintain strong B2B relationships (see Section 6). The EIU's executive survey found that over 75% of respondents believe that the business risk is too high to justify working with an AI service provider that cannot prove responsible design in its products (see Figure 25). In the same survey, 60% of respondents reported that their organizations had decided against working with an AI service provider due to ethical or responsibility-related concerns.

Figure 25.

Responsible AI is critical for revenue
(% of respondents)

■ Agree ■ Disagree ■ Don't know

Source: The Economist Intelligence Unit.

Responsible AI practices can build competitive advantage and broaden revenue-generating opportunities

As discussed throughout this report, individual firms' engagement with responsible AI will lead to positive outcomes such as improved products, talent attraction and retention, reputation and regulatory preparedness. These outcomes will help to build competitive advantage and ultimately deliver improved financial performance, as evidenced by the broader business performance literature.[157] Firms that act early to implement responsible AI practices will have a significant advantage in terms of product or service differentiation, offering an opportunity to grow their market share. They will also develop expertise in—and a reputation for—responsible AI, which competitors may struggle to replicate.

Responsible AI can result in an expanded addressable target market and improved engagement with existing customers

Responsible AI presents an opportunity for companies to cultivate trust and loyalty among their customers, enabling them to broaden and deepen these relationships. According to Capgemini's 2019 consumer survey, almost 60% of the approximately 4,500 consumers surveyed would be more loyal to a company if they perceived its AI-enabled interactions to be ethical (see Figure 24).

Improvements in company–customer relationships as a result of responsible AI can be driven by various mechanisms. First, AI that has been made more responsible—for instance, by using inclusive data sets and incorporating bias detection—will typically serve a wider range of customers more effectively, helping to attract and retain new and existing customers and users.[158] Second, evidence suggests that companies will be able to gain a tangible advantage in terms of their core value proposition, even for products or platforms that are accessible for free and rely on the value of customer data. In Europe and

"Responsible innovation can give you a competitive advantage."
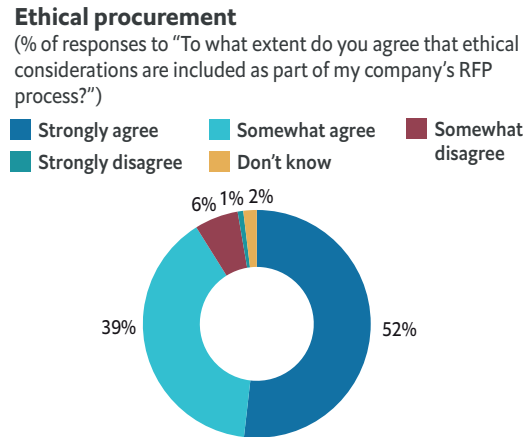
Arathi Sethumadhavan, Microsoft

North America, for example, 73% of consumers are willing to share more personal information if brands are transparent about how it is being used.[159] By sharing more data, users contribute towards higher quality training data, enabling more accurate and tailored outcomes, such as recommendations; and creating a virtuous cycle of positive outcomes for both the firm and the end user.

Finally, firms will gain new customers as a result of improved trust and branding associated with responsible AI.[160] It is well established that strong and positive branding—developed through good press and strong customer relations—can translate into increased revenue generation,[161] with one study finding a "direct linkage between brand preference and market share across 120 brands".[162]

Building responsible AI will support business opportunities and lead to business procurement advantages for AI vendors

Corporate customers are placing greater weight on quality assurance in their AI tools.[163] According to EIU executive survey data, over 90% of executives believe that responsible AI is a priority for senior leadership within their organizations. Moreover, when evaluating a potential AI technology service provider or partner, 40% of EIU respondents say that information, reviews or opinions from the technology service provider under evaluation exert the greatest influence over their decision-making process. These reviews or opinions from the technology service provider ranked higher in terms of importance than information, reviews or opinions from technology analyst firms and third-party consultants (both 38%), as well as news media sources (25%). This means that vendors who wish to preserve and enhance relationships with their clients will want to implement responsible AI and demonstrate that they are doing so directly to their clients. At the same time, new and repeat customers can be acquired through responsible AI, which allows firms to better cater to clients or prospects. This is particularly relevant to clients from government bodies and heavily regulated industries (e.g. healthcare and financial services), which tend to have stringent needs around system capabilities and security (see Section 3). According to the EIU executive survey, over 90% of respondents would be more willing to work with a technology vendor if they offered guidance around the responsible use of AI. Working on responsible AI can also result in contract procurement advantages in competitive bidding processes, as over 90% of EIU survey respondents' companies include ethical considerations in their RFP or product/ service procurement processes (see Figure 26).[164]

Figure 26.

Ethical procurement
(% of responses to "To what extent do you agree that ethical considerations are included as part of my company's RFP process?")

- Strongly agree
- Somewhat agree
- Somewhat disagree
- Strongly disagree
- Don't know

6% 1% 2%

39%

52%

Source: The Economist Intelligence Unit.

Given the lack of consensus on how responsible AI manifests in practice, different technology firms will target or attract different customers with their responsible AI—even within a stricter regulatory environment—possibly leveraging specific competencies and building their own niches by targeting certain sectors or key customers.[165] In this way, diverging norms could lead to a degree of market segmentation as firms take on different sets of clients based on their in-house ethical standards and differing perceptions of what responsible technology means in practice. Examples of this are already emerging, especially around US government and defense contracting;[166] for instance, while some firms are avoiding military contracts, others are actively targeting the defense contracting and research and development (R&D) market.[167] For global companies, these decisions will need to be tailored to multiple geographic contexts, which may offer competing expectations, norms and regulatory requirements for the use of AI. This will lead to difficult choices that need to be navigated with care, even as AI vendors strive to mainstream responsible technology practices.

In some cases, this may result in limited sales. For example, prior to selling certain AI-based tools to its clients, one expert noted that their firm typically assesses whether or not the data intended to be used will result in significantly biased or discriminatory outcomes.[168] These practices may restrict sales for certain AI use cases that are considered harmful, potentially dissuading some customers who are specifically interested in those use cases. This may create opportunities for less responsible competitors to attract such customers in the short term.[169] In the long term, however, there are a number of serious risks for firms that overlook responsible practices, in addition to the social harm that may be caused. These risks are discussed throughout this report and include risks to business performance, growth in sunk costs (e.g. as a result of decommissioning product development or recalling products in the market) and risks to reputation.

Increasing consumer propensity to pay for responsible technology will drive long-term success

Responsible AI can increase a firm's pricing power in the marketplace. First, improvements to trust and branding (see Section 7) can generate this outcome. One study found that superior brand preference or reputation led to price premiums of 26%, on average.[170] Research has also demonstrated that customers are willing to pay significantly more for responsible products. A 2015 Nielsen survey of 30,000 consumers across 60 countries found that 66% of respondents were willing to pay more for sustainable, socially responsible and ethically designed goods.[171] Academic evidence confirms this; one meta-analysis estimated an average price premium of nearly 17% for responsible products across a variety of product

"Everybody will have their own version of what 'correct' looks like, and global companies are going to have to evaluate how they responsibly create AI across everywhere they do business"

Adam Cutler & Milena Prebic, IBM

categories, and found that 60% of customers were willing to pay that premium, especially for products that prevent harm to other people—a key principle of responsible AI.[172] When the regulatory, safety and reputational advantages of responsible AI are taken into account, the proportion of customers who are willing to pay more is likely to increase even further, and even more so for large corporate/enterprise customers that must consider implications for their own brand and key stakeholder relationships.

6. Powering up partnerships

Firms' relationships with stakeholders—including shareholders and investors, competitors, industry associations, academia and governments—can significantly influence corporate strategy, operations and financial performance. EIU survey data shows that companies across sectors recognize the importance of developing or implementing responsible AI for these relationships (see Figure 27). In all cases, implementing responsible AI practices can allow firms to strengthen these relationships.

Figure 27.

AI users know that responsible AI is important for stakeholder relations
(% of responses to "How important is the implementation of ethical reviews in the development and/or use of AI technologies to the following aspects of your organisation?")
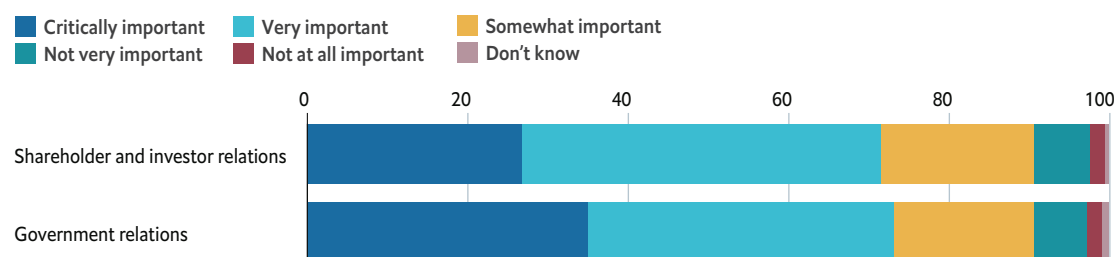

Source: The Economist Intelligence Unit.

Responsible AI is poised to ride the wave of sustainable investing

Investors are increasingly looking to align their portfolios with their personal values, reflected in the continued growth in interest in sustainable, long-term investing. The broadest definition of sustainable investing includes any investment that screens out unsavory investees or explicitly takes ESG factors and risks into account,[173] such as greenhouse gas emissions, diversity initiatives and pay structures. Using this broad definition, the Global Sustainable Investment Alliance estimates that there were US$30.7trn in assets under management in sustainable funds across the United States, Canada, Japan, Australia and New Zealand in 2018, an increase of nearly 35% since 2016.[174] Between 2018 and 2019 the number of funds considering ESG measures also increased significantly, from 81 to 564.[175] Using a stricter definition of sustainable investing that only includes funds with explicit ESG, impact or sustainable-sector mandates, Morningstar estimates a fourfold increase in inflows (in the United States) between 2018 and 2019, to the value of US$21.4bn (see Figure 28).[176] Investment in these funds is increasing not only because of growing public awareness of ESG risks, but also because companies that adhere to strict ESG standards outperform those that do not, as do funds that invest in those firms (see Section 5). This trend held during the first quarter of 2020, amid global economic downturn. All trends point towards even faster adoption of ESG investment standards in the post-Covid-19 world, due to the improved investment potential, as well as recognition that this moment could serve as a global inflection point signaling a move towards a more responsible and sustainable society.[177]

Figure 28.

Sustainable funds estimated annual flows
(US$ billions)

● AUM (US$ bn)   ■ Flows (US$ bn)
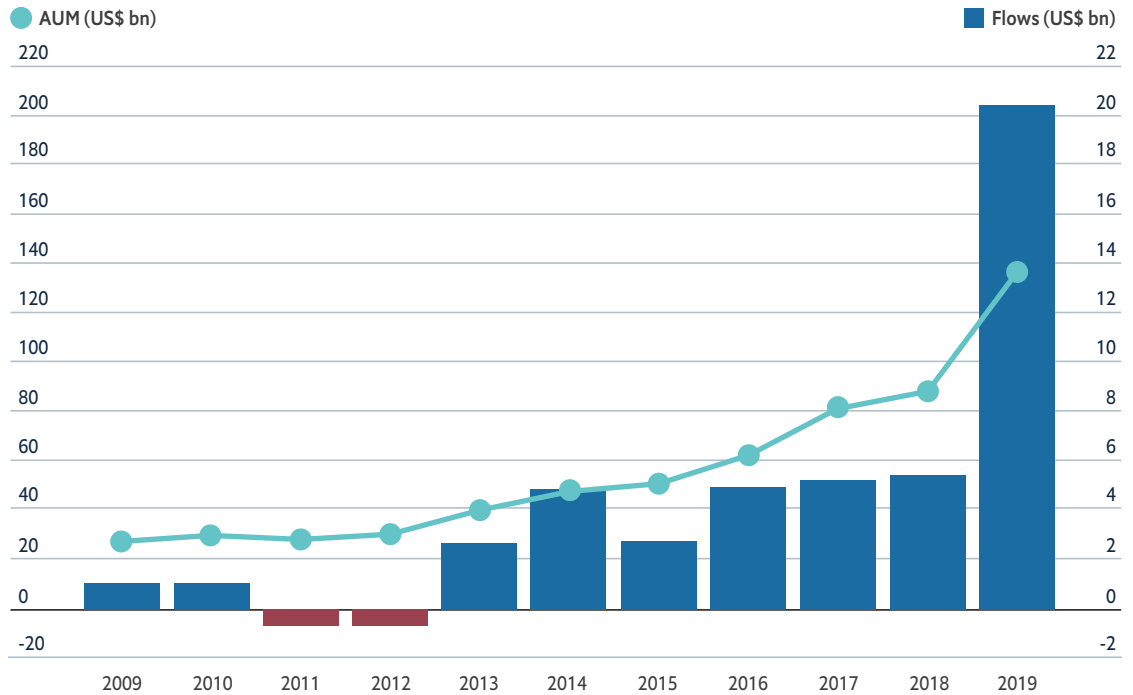
Sources: Morningstar Research; Morningstar Direct.

Note: Data as of 12/31/2019

> "As data ethics becomes more visible, investors are starting to realize that there is a bottom line cost to not getting this right."
>
> *Ben Roome, Ethical Resolve*

This secular trend suggests that investment funds will gradually be reallocated towards firms that prioritize responsible AI practices. Investors are already starting to align sustainable investment expectations around responsible AI, as the UK firm Hermes Investment Management made apparent in its report, *Investors' Expectations on Responsible Artificial Intelligence and Data Governance*, which evaluates investees against a set of responsible AI principles.[178] Executives are generally aware of investors' focus on this area, with roughly 72% of EIU survey respondents reporting that ethical reviews in the development or use of AI are very important or critically important for shareholder and investor relations (see the Figure 27).

While investor activism specifically focused on responsible AI remains nascent, ESG-conscious investors have already advocated for governance reforms at Facebook, and for free-speech reforms at Apple.[179] In another case, the NZ Super Fund (New Zealand's sovereign wealth fund) brought together a coalition representing over US$7.5trn in assets under management to incentivize technology companies to "strengthen controls to prevent the live streaming and dissemination of objectionable content", following the 2019 Christchurch terrorist attack.[180] That attack was live-streamed through Facebook, and was then disseminated by platform users through Facebook, Alphabet and Twitter. Facebook, for instance, removed 1.5m videos of the attack in the 24 hours after it happened, 1.2m of which were blocked at upload; and YouTube took a number of steps in the immediate aftermath to try and block the rapid spread of the video.[181]

There is already growing scrutiny around responsible AI practices at start-ups, reflecting shareholder and investor concern.[182] In general, investors hold real power to be changemakers on responsible AI: almost 40% of EIU executive survey respondents list shareholders and investors among the top stakeholders whose opinion would most influence their organization to implement ethical review processes in the development and use of AI technologies, second only to senior management. As a result, companies are increasingly highlighting the ethical risks of AI in their annual reports and long-term growth strategies; in 2019 at least 55 US companies did so, showcasing both the need for responsible AI practices and firms' desire to pre-empt market concerns.[183] Investor and shareholder concern around responsible AI is likely to grow stronger as issues relating to data usage become more publicly visible, regulatory momentum around responsible AI increases (see Section 4), and investors continue to realize the financial risks associated with their exposure to firms that are not building responsible technology.[184] Some 94% of EIU survey respondents also believe that responsible AI will produce greater return on investment (ROI) for shareholders (see Figure 29), reflecting the clear symbiosis between responsible AI and sustainable investing.

Figure 29.

Investors benefit from responsible AI
(% of respondents who agree that AI products that are responsibly designed will provide greater long-term ROI for investors and shareholders)

■ Agree   ■ Disagree   ■ Don't know
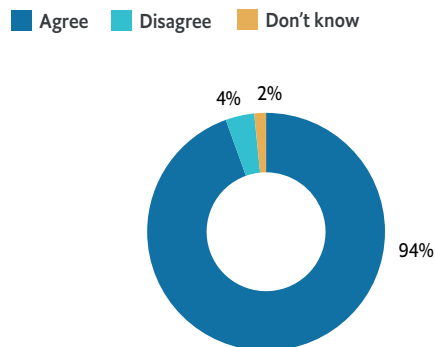
Source: The Economist Intelligence Unit.

With emergent multi-stakeholder collaboration around responsible AI, firms have an opportunity to position themselves as thought leaders

As different stakeholder groups nurture consortiums focused on responsible AI, firms that are already working on responsible AI processes will be able to more effectively participate in or even lead these collaborative efforts. Through this collaboration, firms can expect to build relationships with other companies both within and beyond their industry, as well as with other stakeholders, on the issue of responsible AI. These relationships will create new opportunities for collaborative learning around AI best practices, and will help firms to demonstrate the safety and reliability of their AI products to better establish footholds in markets.

Industry and trade groups are already active participants in the global dialogue around responsible AI, and in some cases are leading the drive towards AI standards.[186] The Institute of Electrical and Electronics Engineers Standards Association (IEEE SA), for instance, is developing a range of standards around autonomous and intelligence systems, including standards addressing ethical concerns related to system design,[187] transparency,[188] bias and data privacy.[189] By collaborating with industry associations and trade groups on this work, firms that are implementing their own responsible AI efforts will have more say in industry dialogue around AI, including the drafting of standards.

Companies across industries such as financial services, healthcare, retail and media, and consulting are also joining consortia such as the Partnership on AI (PAI) to collaborate with other responsible AI stakeholders—including technology vendors, academic groups and government bodies—to build expertise and promote new AI standards and solutions.[190] Multi-lateral groups such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the EU, the Organization for Economic Co-operation and Development (OECD) and the Inter-American Development Bank also have programs focused on ethical and responsible AI, many of which already include representation from firms that are developing or implementing AI technologies.[191] In June 2020 the EU's 27 member states and 14 other countries announced that they are partnering to form a multi-stakeholder initiative called the Global Partnership on Artificial Intelligence (GPAI), which will focus on the development of responsible AI and will include industry representation.[192] Firms with robust practices around responsible AI will be well positioned for leadership within such groups; will have stronger cases for joining existing groups; and most importantly, will have access to new multi-stakeholder platforms through which they can discuss their experiences and the importance of responsible AI practices, while also profiling their business.

Through initiatives such as these, technology companies will be able to engage with existing and potential users of their products, including those from heavily regulated sectors, which are arguably the most cautious about AI adoption. This will allow technology companies to better understand the concerns of these potential customer segments—and to address those concerns through their internal efforts to support responsible AI—while also providing channels through which they can demonstrate their understanding of and progress on these issues. Responsible AI practices will likely encourage firms from these sectors to participate in the AI revolution and reap the benefits of developing or implementing the technology. Moreover, because representatives from government and academia are involved in these collaborative efforts, there will likely be positive spillovers associated with these relationships (discussed in more detail below).

Firms that employ responsible AI can influence academia, and those that ignore AI ethics risk getting left behind

As academia begins to pay greater attention to the issue of responsible AI, companies that use responsible AI practices will be able to improve their access to academic collaboration and talent. These firms will also be able to promote social good by reinforcing responsible practices among researchers. Technology firms are already key contributors to academic publishing on AI. In the United States, for instance, 85% of AI research papers are institutionally affiliated with academia, but corporations are responsible for roughly half of the remaining published research papers.[193] Among US technology firms in particular, it is increasingly common to collaborate with academics to conduct research, and the results of these US academic–corporate collaborations have much larger impacts on the field than the average AI paper.[194] For example, five of the ten most impactful papers of 2019 involve at least one co-author from a technology company,[195] and just under 25% of accepted papers at the 2019 NeurIPS conference (one of the most prestigious AI conferences) included key contributions from Amazon, Facebook, IBM, Google and DeepMind, or Microsoft.[196]

Thanks to technology firms' central roles in cutting-edge AI research (particularly the larger firms), their efforts around responsible AI can drive an increased focus on responsible practices across academic

"Some companies will actually require their researchers to publish an impact assessment when they publish a new model. That's standard practice in academia."

Susan Etlinger, Altimeter Group

research on AI. By reinforcing academia's focus on responsible AI, firms can help to build out a research pipeline that considers key issues around AI, benefiting society as well as firms' own responsible AI efforts. Given academic researchers' growing acknowledgement of the need for responsible AI[197] companies that incorporate responsible AI will be able to position themselves to maintain strong working relationships with academia. Promoting responsible AI can also help firms in terms of access to top-tier research and engineering talent, who will increasingly expect their employers to use responsible AI.

Firms that promote responsible AI can foster better ties with government, yielding benefits in terms of contracts, grants and influence

The relationship between government and firms that are developing or implementing AI technologies is an important one, both because it helps to foster innovation, and because it encourages the wider use of responsible technology across industry and society. Implementing responsible AI will allow firms to build this relationship with the government, which can lead to other mutually beneficial outcomes, including public-sector work. For start-ups and small businesses, it can also unlock new funding sources.

In the United States, government agencies, institutions and the public sector are placing greater importance on the use of responsible AI. The US Department of Defense, for example, has adopted a set of ethical AI principles prepared by the Defense Innovation Board, which emphasize the importance of responsible AI practices, as well as systems that are equitable, traceable, reliable and governable.[198] As responsible AI becomes the norm across the US government, these values will likely be reflected in public tenders and grants.

> "A lot of different government bodies are now exploring the use of AI in an ethical manner."
>
> *Alexander Wong, University of Waterloo & Darwin AI*

Strong relationships with the government also bring opportunities in R&D funding. Although corporate R&D funding has skyrocketed and the government's share of R&D spending has declined in the United States,[199] the government still accounts for the largest share of R&D funding for basic research (i.e. research conducted without any particular application or use in mind).[200] This funding has enabled the initial development of underlying technology used by companies such as Google, which relies on technology borne out of National Science Foundation (NSF) funding.[201] The White House is currently proposing to double non-defense R&D funding for AI to nearly US$2bn by 2022—an important expansion to existing government funding streams.[202] For researchers who are looking to start businesses, as well as smaller firms that have more to gain from new sources of investment, incorporating responsible AI will increase the likelihood of winning government grants and investments, as entities across the US government continue to recognize the importance of responsible AI practices. The NSF, for example, funds a variety of AI research initiatives,[203] including a number of projects specifically focused on responsible AI, such as the Fairness in AI program with Amazon.[204] Sources like America's Seed Fund (the Small Business Innovation Research program and the Small Business Technology Transfer program) also provide funding specifically for AI-focused small businesses, in addition to encouraging applications from companies leveraging AI technologies across a variety of categories.[205]

Finally, by implementing responsible AI practices, firms will have the opportunity to participate in and shape the conversation around AI regulation (see Section 4). This will allow firms to better prepare themselves for regulation, and to offer their expertise and perspective, discussing implications that government actors may not be aware of, and helping to strike a balance between innovation and public interest (see Case Study 2 for an example of how this can look in practice).
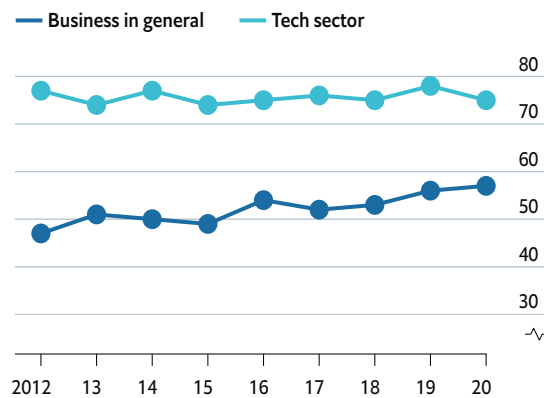
7. Maintaining strong trust and branding

For firms in the technology industry, the connection between trust and branding has never been stronger. Historically high levels of trust in the sector appear to be wavering, and a number of recent scandals have increased external scrutiny of industry practices. These developments have occurred against the backdrop of the fourth industrial revolution, and amid growing skepticism in many quarters about the overall benefits of new technologies. Firms must realize that decisions made today about AI ethics could have long-lasting implications for how their brands are perceived in the marketplace in the future.

Societal belief in the virtue of technology companies is declining from high levels

"Building trust with the public and your users should be the primary relationship that every company is concerned with."

Ben Roome, Ethical Resolve

Figure 30.

Global trust in the tech sector remains high
(% of global respondents who trust tech sector and business in general to do what is right)

Source: Edelman.

Public perception of technology firms remains relatively rosy. According to Edelman's survey of over 34,000 respondents in 28 countries, global trust in the technology sector to do what is right sits at around 75%. This is the highest percentage globally across all sectors, and is significantly higher than trust in business in general (see Figure 30).[206] However, despite this robust global trust, technology is no longer the most trusted sector in Europe or Canada (as of 2020).[207] There are also signs that faith in the technology industry is wavering in the United States. According to Pew Research, in the four years between 2015 and 2019—a period that has seen scandals and growing public concern about technology company overreach—the share of Americans who viewed technology companies as having a positive impact on the United States declined from 71% to 50% (see Figure 31).[208] During the same period, the percentage who viewed technology companies as having a negative impact increased from 17% to 33%.

This trend dovetails with increased media scrutiny of the technology sector, in the wake of data breaches, scandals and debates over regulation.[209] According to a sentiment analysis of over 250,000 English-language news articles conducted by the University of New South Wales (using an open-source sentiment analysis tool),

Figure 31.

Americans have a less rosy view of tech companies
(% of Americans who view tech companies as having a positive or negative impact on the US)
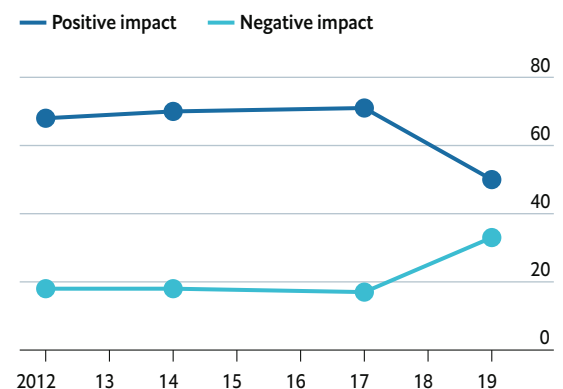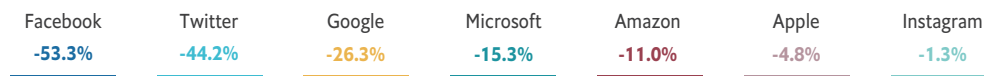
Source: Pew Research Center.

average positive news sentiment for every major American technology company dropped between 2015 and 2019 (see Figure 32).[210]

Some pundits argue that concern about a possible "techlash" (growing animus towards large technology companies) is overblown, and that media scrutiny is not representative of public opinion or practices. This is an increasingly popular point of view, particularly as near-term public opinion in the Covid-19 era looks more positive for technology firms, at least in the United States. While some smaller technology firms are struggling, large technology firms are seeing soaring share prices, despite unease over declining advertising revenues. Between its March low and August high this year, Apple's share price doubled, and Amazon's nearly did the same.

However, even with the potential for short-term gains, the outlook remains unclear beyond the Covid-19 crisis. Many of the drivers of anti-technology sentiment persist within English-speaking and Western European countries—such as concerns about privacy, misinformation and overreach—and could easily spread to other markets. Upcoming regulation is likely to address a number of these concerns, but they will still pose risks to reputational integrity for technology firms.[214]

Figure 32.

Percentage change in compound news sentiment
(between 2015 and 2019, by mentioned company)

Facebook	Twitter	Google	Microsoft	Amazon	Apple	Instagram
-53.3%	**-44.2%**	**-26.3%**	**-15.3%**	**-11.0%**	**-4.8%**	**-1.3%**

Source: University of New South Wales.

Heightened focus on the technology sector increases trust and branding risks associated with the lack of responsible AI

Any perceived shortcomings in responsible AI practices threaten to further damage the long-held goodwill towards technology companies. According to an Ipsos poll published by the World Economic Forum, 41% of adults in 27 countries around the world are concerned about the use of AI, and just 27% are not concerned.[215] A separate poll published by Amnesty International found that almost 70% of respondents were worried about the personal data gathered by big tech companies and how it is used, particularly in light of data privacy violations and users' lack of control over their own data.[216] In Europe and North America—the markets where confidence in technology has declined slightly—consumers do not trust companies involved with AI to do what is right (see Figure 33). They also lack confidence in most actors, including technology firms, to develop and manage AI.[217]

Public sentiment has real impacts on corporate performance. The path to recovery from a scandal is riddled with challenges and uncertainty, and gaining consumer loyalty—for example, through early incorporation of responsible AI practices—is far easier than rebuilding or re-gaining lost loyalty. According to Accenture, almost half of the consumers who are disappointed in a brand's words or actions on social issues will walk away from that brand, at least in the short term;[218] these decisions can lead to ripple effects as negative word of mouth spreads.[219] While decisions around purchasing can differ between end-consumer and enterprise-customer contexts, subjective elements and personal views
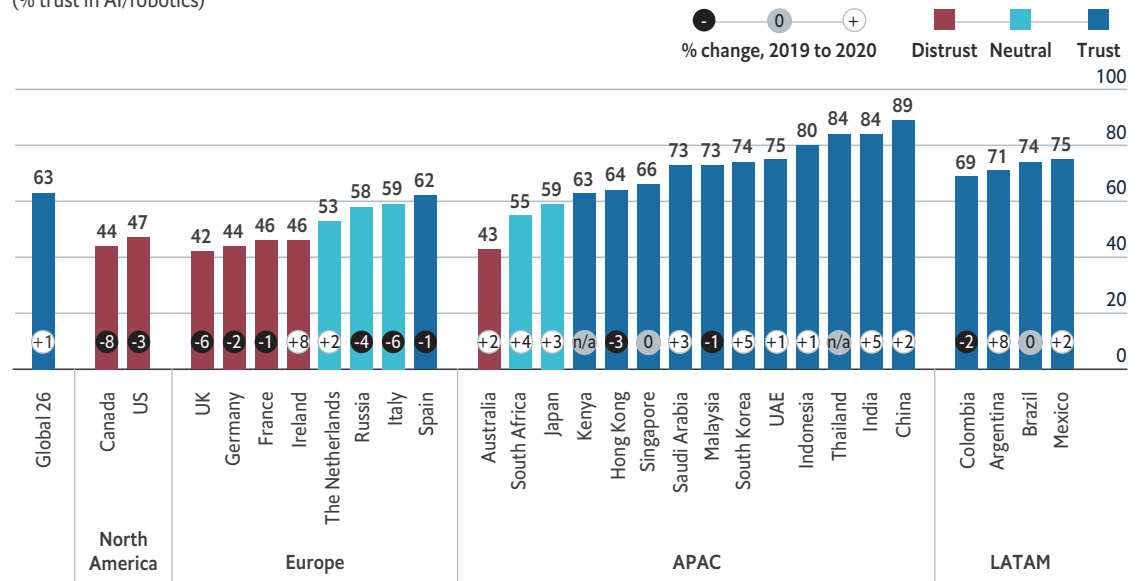
still play key roles in B2B purchases, and may become increasingly important. Public sentiment remains relevant when analyzing enterprise customer decision-making around the purchase or implementation of AI products or solutions.[220]

Figure 33.

Wavering trust in AI across key markets
(% trust in AI/robotics)

Source: Edelman.

A variety of academic studies have also demonstrated that media coverage can affect firm performance across the board, including sales, stock prices and government relations.[221] On the issue of market capitalization, for example, research has found that an increased volume of press can lead to more stock price volatility,[222] and that media coverage can amplify investor biases and drive share-price momentum (in either direction).[223] Irrespective of firm size, new negative information,[224] or information exposing corporate misdeeds, can have long-lasting adverse impacts on share prices.[225] Experts interviewed for this study highlighted these impacts, noting that without strong oversight of AI, companies that are developing or implementing AI are opening themselves up to risks, including unfavorable public opinion, brand erosion and negative press cycles.[226] This demonstrates that firms are right to be concerned about negative attention related to a lack of responsible AI practices.

Figure 34.

Trust of Americans in various actors to develop and manage AI in the interest of the public
(perceived trust; 0 = no confidence at all; 3 = a great deal of confidence)

■ Trust in various actors to develop AI in the interest of the public
■ Trust in various actors to manage AI in the interest of the public
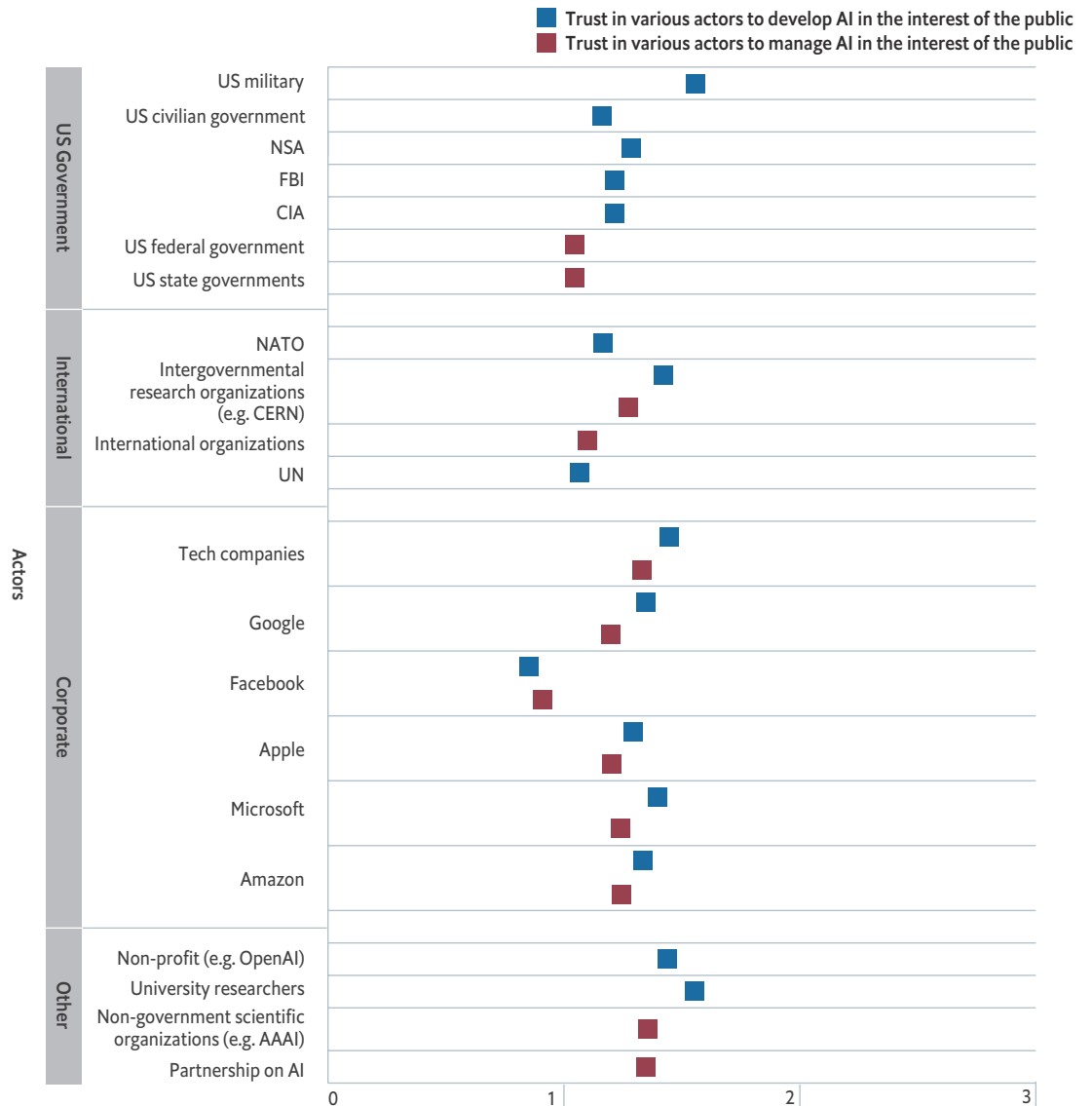
Source: Center for the Governance of AI.

The consequences of a scandal, for instance, can be felt immediately and can cause irreparable damage to a company's performance. Following the revelation that millions of Facebook users' data had been harvested without their consent by Cambridge Analytica, Facebook lost US$36bn in market value during the next day of trading—a loss of nearly 7% of market capitalization.[227] It was not just Facebook whose stock lost value (a 15% drop in two weeks); other large technology companies like Amazon, Alphabet and Netflix also suffered, each dropping 12% to 13% of their value (see Figure 35).[228] The Nasdaq

(of which all these companies are a part) lost 8%, and Apple and Microsoft lost 6% to 7% of their value.[229] After the scandal, the American public viewed Facebook as the least trusted source to develop and manage AI among a series of public, private, multi-lateral, non-profit and academic actors (see Figure 34). Reputational risks and customer losses associated with such scandals affect the entire sector: nearly 64% of EIU executive survey respondents agree that recent scandals have made them more distrustful of the technology sector.

Figure 35.

Industry-wide impact
(% change in value between March 15 and April 2, 2018 following the Cambridge Analytica scandal)
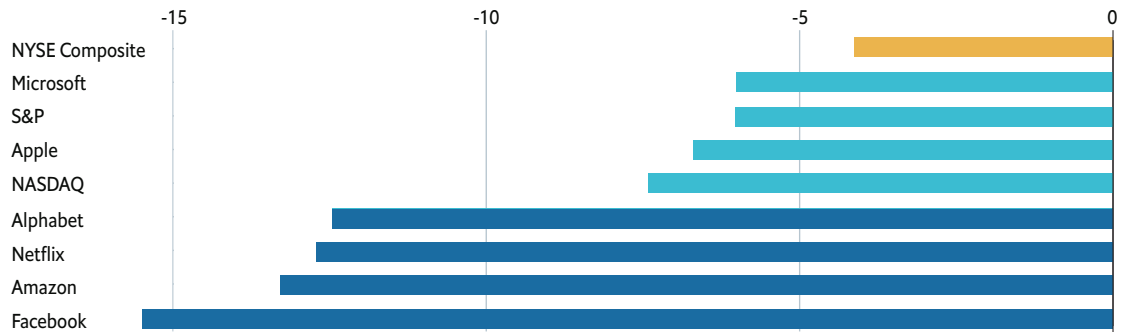
Source: Damodaran (2018); Yahoo Finance.   * NYSE Composite comprises fewer technology companies and is included for comparison.

There are some important caveats, however. First, different audiences have different reactions to scandals. With the Cambridge Analytica scandal, for example, there is evidence that the English-language public focused more on corporate culpability than the Spanish-language public.[231] Second, not every AI-related misstep will necessarily become a scandal.[232] Regardless, it is clear that companies have good reason to implement responsible AI practices in order to preserve and improve public trust and avoid damaging scandals.

Firms can strengthen brand awareness and public trust through responsible AI

Figure 36.

Explainable AI will build trust in the technology sector

(% of respondents who agree that developing explainable AI systems will help build consumer trust in the technology sector)

■ Agree ■ Disagree ■ Don't know

6% 2%

92%
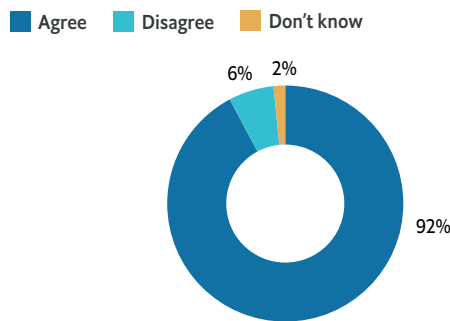
Source: The Economist Intelligence Unit.

Just as a lack of responsible AI practices can weaken customer trust and loyalty, evidence confirms that firms that take the lead on responsible AI can expect to reap rewards in terms of public opinion, trust and branding.[233] Among EIU survey respondents, 92% believe that developing explainable AI systems will help to build consumer trust in the technology sector (see Figure 36). Within this group of survey respondents, almost 95% believe that incorporating ethical reviews into the development and use of AI technologies is important for their organization's brand reputation (see Figure 37). As Section 5 of this report discussed, public buy-in can lead to improved user relations and sales, both because customers will be more inclined to use services they trust, and because B2B clients are more likely to buy from firms that they and the public trust. Firm leadership already recognizes that public opinion can be improved by responsible AI. In a survey of CEOs, 84% agree that AI-based decisions need to be explainable in order to gain and maintain consumer trust. This illustrates the growing consensus around the relationship between responsible AI and brand management within firms.[234]

By taking the lead on responsible AI practices, firms can create new opportunities for positive PR.

62% of consumers will place more trust to companies with ethical AI services.

Source: Capgemini.

95% of customers are more likely to be loyal to companies and industries they trust.

Source: Salesforce.

84% of CEOs agree AI-based decisions need to be explicable for customer trust

Source: PwC.

Beyond just implementing AI, firms will likely want to publicize their responsible AI efforts in order to establish public trust. However, given that different firms and customers tend to have different ideas about what responsible AI looks like in practice, there may be challenges as firms work to operate responsibly while aligning with the values of a wide customer base (see Section 5 for more information).[235] For this reason, opportunities for branding and PR may differ from firm to firm, based on the manner in which responsible AI is interpreted and operationalized, as well as corporate positioning.

Figure 37.

Responsible AI supports brand reputation
(% of responses to "How important is the implementation of ethical reviews in the development and/or use of AI technologies to the following aspects of your organisation–Brand reputation")

- Critically important
- Very important
- Somewhat important
- Not very important
- Not at all important
- Don't know

0   20   40   60   80   100

Source: The Economist Intelligence Unit.

> "A lot of companies right now are taking ethics into consideration not just purely because of the regulatory issues, but also public perception—it affects their bottom line."
>
> *Alexander Wong, University of Waterloo & Darwin AI*

Of course, the market will be on the look-out for any "ethics washing". A PR exercise may garner reputational benefits, but the gains will be tenuous in the long term as firms with lax approaches see scandals emerge, and as consumers and enterprise customers become better equipped to discern company-to-company differences in responsible AI practices. Building positive brand sentiment and trust will require coordination between product teams, marketing teams and management around responsible AI efforts, and could further benefit from open relationships with media organizations. In an era where the integrity of firms' business practices is increasingly scrutinized, companies that implement responsible AI will reduce their risk of public scandal and distrust, and will be well positioned to capitalize on opportunities for strong brand development and public relations.

Conclusion

AI has the potential to dramatically change the world in the coming decade, and the industry's long-term importance is already apparent. For all the valid concern about bias and ethical breaches, many AI practitioners can be proud of their capacity for introspection and renewal. Indeed, as regulators across the world attempt to formulate frameworks and legislation to govern data and AI, it is clear that a wide variety of AI practitioners genuinely support both the societal need for regulation and the importance of engaging in the process in service of the greater good.

The report focuses on seven interconnected themes that cover a broad corporate strategic space, and its key messages are summarized below.

- **Firms that design, develop and implement responsible AI stand to reap significant long-term benefits in a number of areas, including product quality, employee satisfaction, talent acquisition and regulatory preparedness.** By prioritizing responsible AI practices, firms can serve as socially responsible corporate citizens, attract new customers, improve relations with key stakeholders, bolster their competitive advantage and ultimately enhance business performance. The long-term return on investment for responsible AI is clear.

- **Firms must embed responsible AI practices from the earliest stages of product design and development through to product launch and aftersales.** Relying on retrospective assessments to determine whether AI products and services are responsible may result in the need to decommission product development or even recall revenue-generating products that have already been made available to users.

- **Knowledge sharing and transparency are essential to the evolution of responsible AI, which is still nascent.** This report represents an important step towards building an evidence base on responsible AI for firms that are developing or implementing AI technologies, contributing critical information on the benefits associated with timely action, and the investments needed to make responsible AI a reality. More action is needed to establish best practices around responsible AI; and to create frameworks to evaluate tangible returns associated with responsible AI, enabling data-driven decision-making. While a great deal has been written about AI ethics and responsibility, key stakeholders—including firms, investors, policymakers and academics—need to focus on producing tools, frameworks and services that provide actionable guidance on designing, developing and deploying responsible AI. Companies that have already established internal best practices in AI responsibility and governance should actively engage with other industry participants to facilitate norm setting. These efforts can also feed into ongoing regulatory conversations.

- **Systematic data collection is critical for future research efforts.** In addition to understanding how firms are translating responsible AI guidelines and principles into practice, and evaluating their success in doing so, investigative research is needed to better understand how a firm's journey towards responsible AI may differ across regions, countries or cultural contexts. Grounding this work in basic human rights principles, while recognizing that different ideas about ethics and social

responsibility exist across contexts, can enable meaningful evaluation of differing approaches to responsible AI.

Responsible AI brings undeniable value to firms, but there is also a clear moral imperative to embrace it. It is impossible to identify the full spectrum of negative societal outcomes that could result from irresponsible AI practices, but companies have a unique opportunity to make decisions today that will forestall these outcomes in the future. While this study has focused on the material and reputational costs and benefits of responsible AI for firms, the societal benefits—and the societal costs of inaction—must not be ignored.

In a world where responsible AI technology is the norm, we all reap the rewards.

Case study 1: A new wave of data privacy regulations

The first national data protection law was introduced in Sweden in 1973. The EU announced its Data Protection Directive over two decades later, in 1995 (implemented in 1998), and the United Kingdom implemented its Data Protection Act in 1998. In the United States, there have been a number of state-specific and sector-related data protection regulations, such as the 1996 Health Insurance Portability and Accountability Act (HIPAA), which regulates health insurance and includes data protection elements; and the 1999 Gramm-Leach-Bliley Act (GLBA), which is specific to the financial sector. There is currently no national data privacy law in the United States.[236]

No new laws were put forward between the late 1990s and late 2000s. However, in 2012 the EU published proposals for a new regulation, indicating a need to update its 1995 Data Protection Directive to align with the pace of technological advancement, specifically the use of smart devices and the emergence of social media.[237] This set the precedent for the General Data Protection Regulation, which was approved in 2014, adopted in 2016, and came into force in 2018, with the aim of giving EU citizens more control over their personal data. Following the implementation of the GDPR, the state of California signed the California Consumer Privacy Act into law in 2018, which came into effect in 2020. The CCPA gives consumers in the state additional rights around the provision, collection and use of their personal data.

Figure 38.

Real gross output index
(1997-2017; Index level, 1997=100)
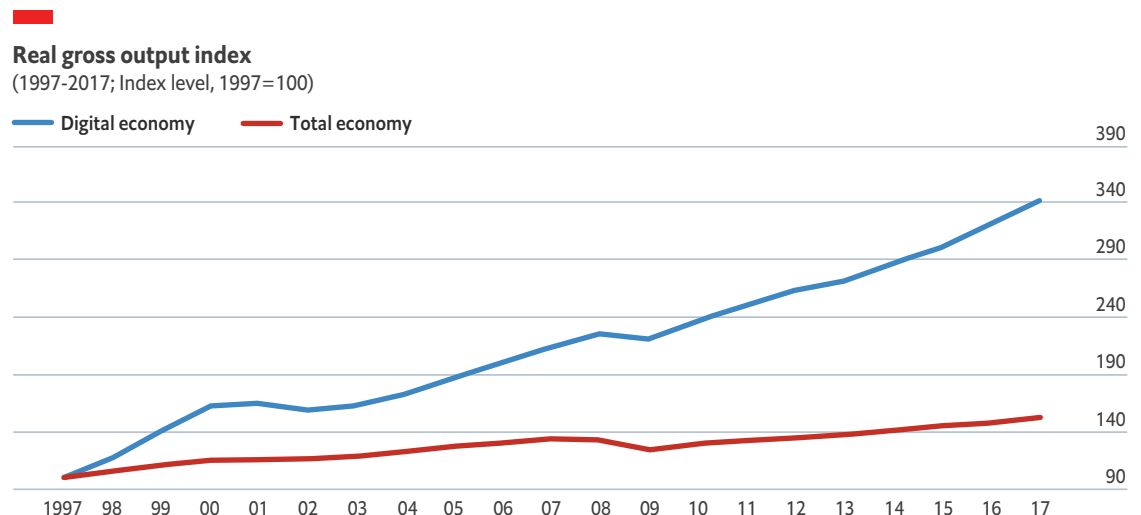
Source: US Bureau of Economic Analysis.

This increased focus on data protection and privacy can be explained, at least in part, by the rapid pace of technological advancement in recent years. Today, the digital economy accounts for as much as 16% of global GDP.[238] In the United States, US real gross output from the digital economy grew by 6.3% a year between 1998 and 2017—three times the pace of the US economy, which grew at 2.1% annually (see Figure 38).[239]

Data is at the center of many cutting-edge technologies, including AI systems and ML algorithms. However, while data has become integral to the technology sector—and across most non-technology sectors—there are significant risks attached to the proliferation of data, raising important questions about privacy, security, discrimination, liability and ownership. Recent high-profile data privacy scandals highlight these risks (see Section 3) and reflect the growing need for data protection regulation.
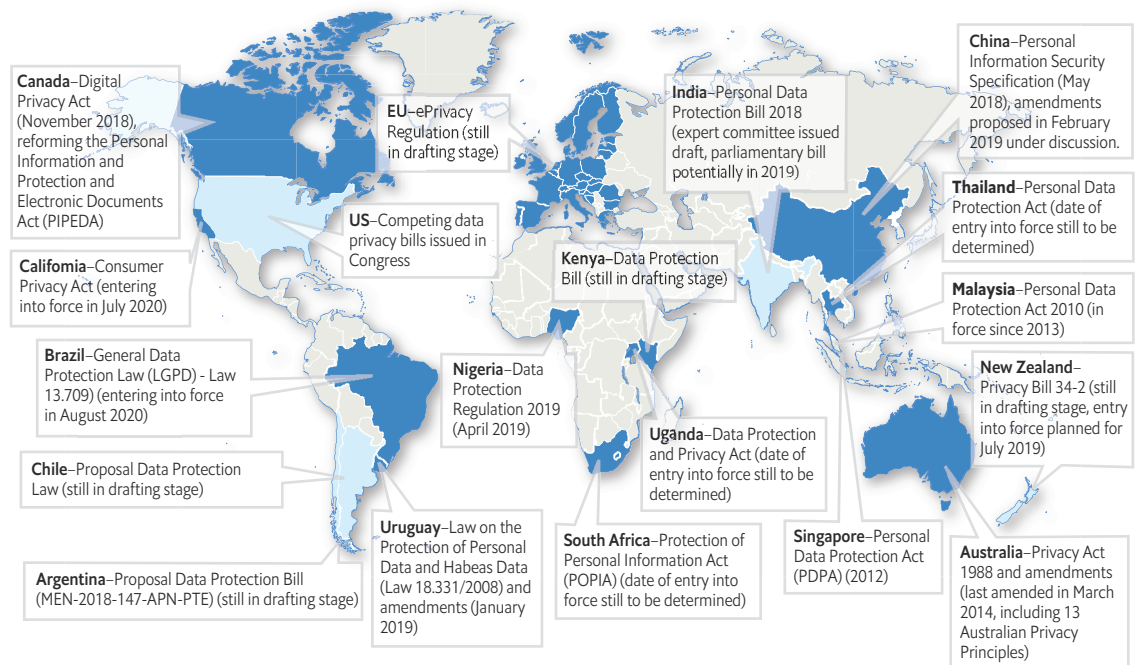
The response

Recent data protection regulations have had wide-ranging impacts on a number of stakeholders, particularly the businesses that have to comply with the regulations, and governments that have chosen to follow in the EU's footsteps. In the case of the GDPR, businesses had approximately two years between adoption and enforcement in which to prepare for compliance. Although the GDPR threatens significant fines of up to 4% of global annual revenue (or EUR€20m), a GDPR Small Business Survey indicates that almost 50% of small businesses in the EU are failing to fully comply.[240] There are a number of reasons for this, including a lack of understanding around the scope of the regulation, uncertainty around the interpretation of the legal requirements, and a lack of financial capacity or other capacities to fulfil the obligations.[241] The same survey found that small businesses that had invested heavily in GDPR compliance—spending between EUR€1,000 and EUR€50,000—did not expect it to hamper business growth.

Figure 39.

The Brussels effect
Recent data privacy legislative developments in key markets

Canada–Digital Privacy Act (November 2018), reforming the Personal Information and Protection and Electronic Documents Act (PIPEDA)

California–Consumer Privacy Act (entering into force in July 2020)

Brazil–General Data Protection Law (LGPD) - Law 13.709) (entering into force in August 2020)

Chile–Proposal Data Protection Law (still in drafting stage)

Argentina–Proposal Data Protection Bill (MEN-2018-147-APN-PTE) (still in drafting stage)

EU–ePrivacy Regulation (still in drafting stage)

US–Competing data privacy bills issued in Congress

Nigeria–Data Protection Regulation 2019 (April 2019)

Uruguay–Law on the Protection of Personal Data and Habeas Data (Law 18.331/2008) and amendments (January 2019)

India–Personal Data Protection Bill 2018 (expert committee issued draft, parliamentary bill potentially in 2019)

Kenya–Data Protection Bill (still in drafting stage)

Uganda–Data Protection and Privacy Act (date of entry into force still to be determined)

South Africa–Protection of Personal Information Act (POPIA) (date of entry into force still to be determined)

China–Personal Information Security Specification (May 2018), amendments proposed in February 2019 under discussion.

Thailand–Personal Data Protection Act (date of entry into force still to be determined)

Malaysia–Personal Data Protection Act 2010 (in force since 2013)

New Zealand–Privacy Bill 34-2 (still in drafting stage, entry into force planned for July 2019)

Singapore–Personal Data Protection Act (PDPA) (2012)

Australia–Privacy Act 1988 and amendments (last amended in March 2014, including 13 Australian Privacy Principles)

Source: World Federation of Advertisers.

Meanwhile, governments across the world are taking inspiration from the EU's GDPR and are making progress on building regulatory mechanisms to protect customers' data. This is an example of the regulatory globalization or "bandwagon" phenomenon, popularly known as the "Brussels effect", where European regulation is being used as a global benchmark for good practice. Notable regulations that have been developed in the wake of the GDPR include the state of California's CCPA, the Brazilian General Data Protection Law (LGPD) and Bahrain's Personal Data Protection Law (PDPL) (see Figure 39).

As a stakeholder class, consumers are significantly affected by these new data privacy laws, which are explicitly aimed at giving consumers control over their personal data and have generally been well received by the public. A 2018 enterprise survey conducted by Deloitte found that almost half of the respondents (44%) believed that organizations cared more about their customers' privacy following the introduction of the GDPR, and almost 70% felt that an organization's reputation as an ethical operator was a key factor supporting trust in a firm and its commercial offerings.[242] In another 2018 customer perceptions survey, 66% of respondents felt that more governments should pass laws like the GDPR to ensure that companies allowed consumers greater privacy, security and control over their personal data.[243] These statistics reflect the importance of data privacy rules to consumers, and illustrate how they can positively affect consumers' and users' perceptions of companies.

The link to developing responsible AI

The global technology sector is at a critical juncture, particularly with respect to the design, development and deployment of ML and AI technologies. As discussed in this report, there is growing concern about issues of responsibility related to AI, and as a result many stakeholders expect regulatory action in the near future (see Section 4). Based on the impact of the GDPR and its "Brussels effect", the introduction of one national or regional AI-specific regulation could have a global regulatory ripple effect.

Figure 40.

The cost of GDPR compliance
(US$ billion)

■ Fortune 500 companies   ■ FTSE 100 companies

1.1

7.8
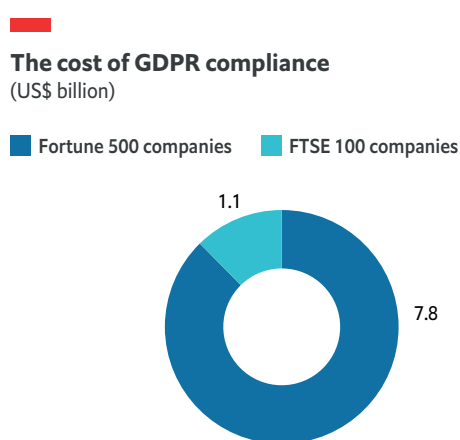
Sources: Forbes; International Association of Privacy Professionals; EY.

The introduction of data protection regulations has affected companies in a number of ways, through direct and knock-on effects, both positive and negative. It has provided companies with a unique opportunity to gain consumer trust, but the financial costs of compliance have been significant. For example, Fortune 500 companies spent US$7.8bn on GDPR preparation costs, and FTSE 350 companies spent US$1.1bn (see Figure 40).[244] Given the broad consensus that AI regulations are likely to come into effect in the near term, firms should learn from the GDPR experience and proactively invest in developing and incorporating responsible AI guidelines and processes, streamlining company values and instituting audit processes, in preparation for future compliance.

Early investment is worthwhile; one study has shown that the costs of being non-compliant with data protection regulations are 2.71 times the costs of investing in compliant processes (US$14.82bn versus US$5.47bn; see Section 4).[245] As expected, global technology giants are already looking to embed responsible practices in their culture and operations, and to leverage investments in preparedness, in order to strengthen their reputations as ethical operators and industry leaders.

Investments related to regulatory compliance are associated with many positive externalities for companies. Firms that are in full compliance, and are able to demonstrate their compliance, can build trust and improve their relationships with customers.[246] For example, according to a 2019 survey, 74% of organizations believe that the GDPR has had a positive effect on building trust with consumers.[247] Regulatory compliance and preparedness can also have positive impacts on brand loyalty and reputation.

With data governance increasingly embedded in the regulatory landscape, there is broad consensus that AI governance regulation is coming. The UK House of Lords published its report on AI in 2017, *AI in the UK: Ready, Willing and Able*?;[248] the EU published its *Ethics Guidelines for Trustworthy AI* in 2019;[249] and in early 2020 the US Department of Defense adopted a series of ethical principles for the use of AI.[250] These documents illustrate the growing importance attached to responsible AI in the policymaking arena. Companies should pay close attention to these efforts and invest in preparedness accordingly, as they are likely to drive binding regulations and early action through responsible AI will likely pay off.

Case study 2: Adapting EU autonomous vehicle regulations

Recent technological advances have shifted autonomous vehicles (AVs) from science fiction to science fact. While fully autonomous vehicles are still undergoing testing and have yet to hit the roads, automotive manufacturers are increasingly incorporating elements of autonomous technology into their vehicles. For example, the Tesla S model's autopilot feature allows the car to operate without any driver assistance (although the driver must take control of the vehicle in the event of a problem). The broader deployment of AVs in society is expected to have numerous positive impacts, including positive economic and environmental impacts (see Figure 41).

Figure 41.

Benefits of Autonomous Vehicles in the EU
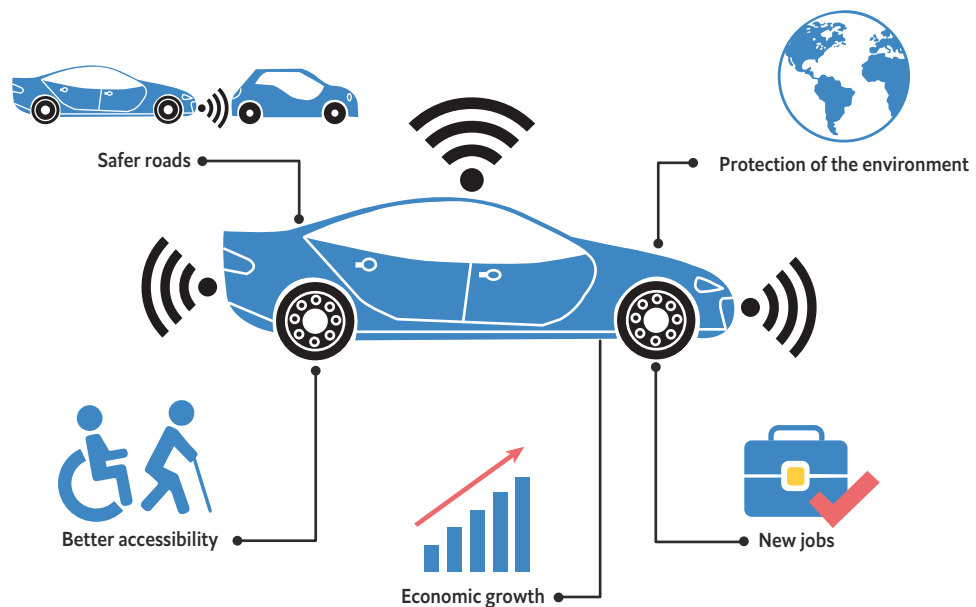
Sources: EPRS; European Commission.

While automotive manufacturers and technology companies around the world are making considerable investments and significant strides in AV development, the EU's progress in this industry remains limited relative to countries such as the United States and China.[251] The value of the global AV market is forecast to increase tenfold by 2026 to US$556.67bn, up from US$54.23bn in 2019 (see Figure 42).[252] Research shows that North America will lead this increase in value, followed by Europe. In terms of AV sales, China is expected to overtake both North America and Europe to become the largest seller of AVs worldwide by 2025.[253]

Figure 42.

Global AV market value forecast
(US$ billion)

Year	Value
2019	54.23
2026	556.67
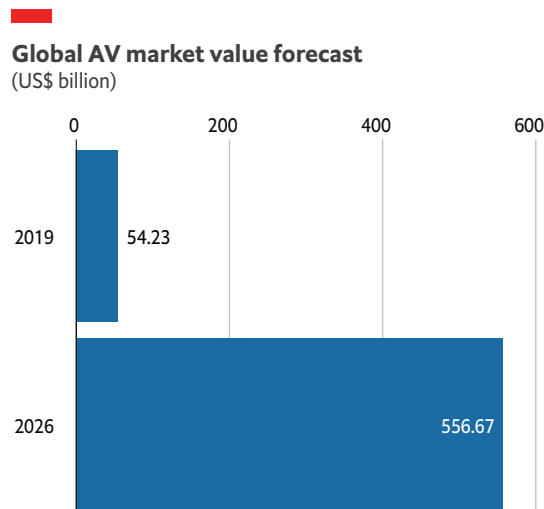
Source: Global News Wire.

Research suggests that there are sizable economic gains to be realized from the deployment of AVs. According to analysis conducted by McKinsey & Company and Bosch, almost EUR€1bn in additional income can be created in the EU if half of all driving time can be used to complete more productive tasks.[254] This potential productivity dividend is effectively an estimate of the opportunity cost of not encouraging or supporting timely investments in the development of AVs.

The EU's relatively slow progress on this front is primarily attributable to previously restrictive regulations that were not conducive to investing in AV development. Two regulations in particular created significant challenges and limited investment in the development of the AV industry in the region: Regulation No. 79 of the Economic Commission for Europe of the United Nations (UNECE)[255] and the 1968 Vienna Convention on Road Traffic (VC).[256] UNECE Regulation No. 79 is primarily EU-focused legislation that regulates vehicle steering equipment. Initially, this regulation stated that when a vehicle switched to autonomous steering functions, its speed had to be limited to below 10 km/h. This was staggeringly low, given that general speed limits in EU member states are around 120-130 km/h.[257] The 10 km/h limit increased the time to destination for AV commuters by 12 or 13 times, restricting the application of autonomous driving to assisted parking and other low-speed functions.[258]

The 1968 VC is an international treaty that established standardized traffic rules among contracting countries with the aim of increasing road safety. Prior to its amendment in 2016, Article 8 of the VC stated that "every moving vehicle or combination of vehicles shall have a driver," and that "every driver shall at all times be able to control his vehicle." These statements explicitly prohibited the use of fully automated, driverless vehicles. The VC applies to some countries outside of the EU (e.g. Mexico, Chile, Brazil and Russia), but in combination with UNECE Regulation No. 79 it had a greater impact on the EU AV market.

The response

Recognizing the pace of technological advancement and innovation in the global AV industry, and the underlying promise of economic gains through increased productive capacity, various stakeholders from contracting parties of the VC began working on amending both the VC and UNECE Regulation No. 79 in order to drive growth and innovation.[259] In 2015, for example, Germany established an Automated Driving Round Table which brought together stakeholders from industry, academia and government to explore different areas of action to support the introduction of automated driving in Germany, including amending the VC.[260]

Following multi-stakeholder dialogue and collaboration, the United Nations amended the VC in 2016 to allow automated driving technologies that transfer driving tasks to the vehicle in traffic, provided

these vehicles can be overridden or switched off by the driver, thereby ensuring accountability in exceptional circumstances.[261] Germany, Italy, France, Belgium and Austria spearheaded this amendment, highlighting the size of the potential prize for EU member states if progress can be made in AV technology development. Regulation No. 79 was amended in the same year, removing the restrictive 10 km/h limitation for AV systems.

While these amendments facilitated a certain degree of autonomy in vehicles, allowing EU companies to further their reach in the AV industry, the regulations still limit the use of fully autonomous systems. Erik Jonnaert, former secretary general of the European Automobile Manufacturers Association (*Association des Constructeurs Européens d'Automobiles*, ACEA), believes that further updates to the VC are needed to accommodate driverless vehicles.[262]

Nonetheless, the amendments to the VC and Regulation No. 79 represent positive steps in the right direction. The Government of the Netherlands built on this progress by leading the development of the Declaration of Amsterdam in 2016, which brings EU countries together to increase the momentum of AV development in the EU. The declaration states that "a more co-ordinated approach is called for between Member States and at the European level to remove barriers and to promote a step-by-step learning-by-experience approach".[263] By taking the lead in establishing this declaration, the Netherlands has been able to position itself as the world leader in the space, further validated by KPMG's Autonomous Vehicles Readiness Index (AVRI),[264] which ranks countries based on policy and legislation, technology and innovation, infrastructure and consumer acceptance.[265] Between 2018 and 2019 the number of European countries in the top ten AV-ready countries increased from four to six, indicating a significant improvement in the region's AV industry, driven in no small part by these revised regulations (see Figure 43).[266]

Figure 43.

Top ten countries best prepared for autonomous vehicles
(2019)

Rank 2019	2018		Country	2019 score
1	1		The Netherlands	25.05
2	2		Singapore	24.32
3	n/a		Norway	23.75
4	3		US	22.58
5	4		Sweden	22.48
6	n/a		Finland	22.28
7	5		UK	21.58
8	6		Germany	21.15
9	8		United Arab Emirates	20.69
10	11		Japan	20.53

Source: KPMG.

In 2018 the UNECE Global Forum on Road Traffic Safety[267] adopted a non-binding legal resolution to adapt the guiding principles of the VC to today's environment—another positive step towards improving the EU's global AV market position. The resolution provides a guide for VC contracting countries on the safe deployment of highly and fully automated vehicles in road traffic. Specifically, the guide explains how to ensure the "safe interaction between automated vehicles, other vehicles and more generally all road users, and stresses the key role of human beings, be they drivers, occupants or other road users".[268]

While these regulatory changes at the regional and country level are promising, regulatory bottlenecks remain. In 2018 restrictive regulation led Volkswagen to launch SEDRIC (short for "self-driving car") in the United States, rather than in its home market of Germany, highlighting the difficulties that EU-based companies still face as they work to develop AVs.[269] Other European industry leaders have similar stories, such as Audi, whose autonomous system (Traffic Jam Pilot) has yet to be approved for sale by EU regulators; and BMW, which is aiming to debut its iNEXT concept car in 2021 but faces legislative limitations.[270]

The link to developing responsible AI

The global technology industry is facing growing pressure to develop explainable, transparent AI products that align with responsibility and governance standards. Companies that are developing or implementing AI technologies, investors and other stakeholders expect regulatory action in the near future (as discussed in Section 4), with a focus on regulating responsible AI product design, development and use. However, the rapid pace of technological progress means that policymaking action often lags behind technological advancement, as the case of AV regulations in the EU demonstrates.[271]

Analysis undertaken for this case study suggests that regulators recognized that existing regulations were not conducive to innovation and investment in the EU AV industry. Driven by dialogue between national governments, academia and industry stakeholders, the United Nations undertook a form of regulatory recourse (by amending previously restrictive regulations), which led to the establishment of new guidelines such as the Declaration of Amsterdam and the UNECE Global Forum on Road Traffic Safety resolution. This regulatory dynamism in AV governance provides strong reassurance that regulations can evolve to support the needs of a rapidly changing technological landscape.

When developing legislation, it is critical that regulators take into consideration the potential economic benefits that AV and AI/ML technology can generate. Research conducted by the European Parliament shows that the AV market is expected to deliver up to EUR€620bn in profits by 2025 for the EU automotive industry.[272] Similarly, research conducted by McKinsey & Company estimates that AI technologies can generate additional economic output of around US$13trn by 2030, increasing global GDP by about 1.2% annually.[273] In times of crisis and with looming fears of a global depression, regulators must refocus their efforts towards developing dynamic policy responses that can unlock (or fully realize) growth from these promising, non-traditional avenues. Growth projections emphasize the need for stakeholder collaboration in order to maximize the economic potential of new technologies, and ensuring that regulations are designed to foster innovation and encourage investment will be key to enabling this collaboration.

Of course, the perceived risks of mainstreaming AV and AI/ML technology cannot be ignored, and issues of both accountability and liability must be explored. Both industries face a similar dilemma: unless clear lines of accountability and liability for decisions taken by AV technologies or AI/ML tools

are established, key stakeholders such as policymakers, consumers and end users are likely to lack trust in the technology and express concern about investment and deployment. Both of these sentiments are broadly attributable to the complexity of the technologies and the lack of explainability. Consumer apprehension around AV and AI/ML technologies is already considerable and well documented. A 2019 Deloitte study found that 56% of surveyed consumers wanted significant regulatory oversight of AV technology,[274] and a 2018 Capgemini survey found that 76% of consumers wanted regulations on the use of AI.[275] This highlights that while regulations can be restrictive, they can also function as useful tools for allaying stakeholder concerns.

Systematic regulations around the responsible design and use of AI/ML technologies are expected in the near term, and are seen by various stakeholder groups—including academics and firms—as essential. Dynamic and timely regulatory action can introduce much-needed safeguards, while also supporting growth and innovation, and offering new opportunities to unlock broader macroeconomic and productivity-related gains through thoughtful policy responses.

Appendix

A. Industry value of responsible AI by design: An initial framework

To support investigative research and the subsequent development of this report, The Economist Intelligence Unit (The EIU) completed an extensive evidence review (of high-credibility literature, reports and data auditing) and an expert interview program, with the aim of developing a conceptual framework that would illustrate considerations associated with designing, developing and deploying responsible artificial intelligence (AI). Considerations linked to financial performance, stakeholder engagement, company operations and the regulatory environment were broadly categorized into the following three groups:

Direct costs: These are the near-term financial and non-financial investments that firms will need to make in order to incorporate responsible AI practices across the product lifecycle—for example, the necessary investments to factor responsibility and governance into AI and machine learning (ML) product design, development and deployment processes.

Costs of inaction: These are the near- to medium-term financial and non-financial opportunity costs that companies and other key stakeholders will potentially incur if responsible AI practices are not incorporated across product design, development and deployment.

Opportunities: These are the medium- to long-term potential benefits that companies and other key stakeholders can realize as a result of incorporating responsible AI practices across product design, development and deployment.

The framework was developed as part of an initial fact-finding activity to support the development of our knowledge base for this study. The conceptual framework found over 100 direct costs, costs of inaction and opportunities across four core areas and 14 sub-areas, as outlined in the table below. Using these individual considerations, The EIU was able to identify key trends in the literature and complete investigative research on the drivers of and obstacles to responsible AI development and implementation, which are explored in Sections 1 to 7 of this report.

Conceptual framework design

Financial performance	Business costs
	Revenue
	Enterprise value
Stakeholder engagement	Shareholders and investors
	Employees
	Customers
	Media relations
	Vendors

Conceptual framework design

Company operations		Talent management
		Products and solutions
		Company structure
		Quality assurance
Regulatory environment		Compliance
		Privacy and safety

Industry value of responsible AI by design

Core considerations for firms in the US technology sector around mainstreaming responsibility and governance across design, development and deployment of AI/ML technologies
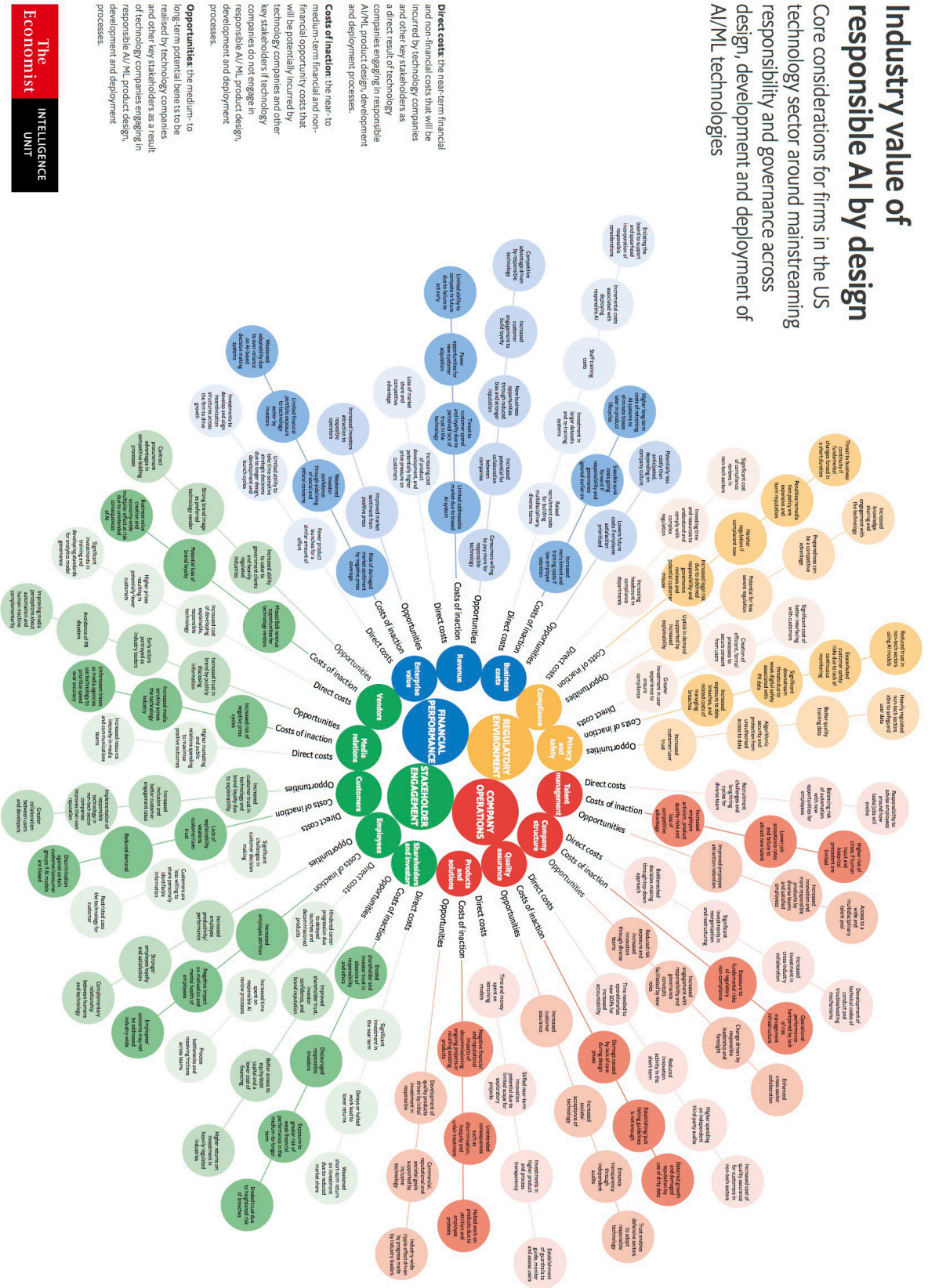
Direct costs: the near-term financial and non-financial costs that will be incurred by technology companies and other key stakeholders as a direct result of technology companies engaging in responsible AI/ML product design, development and deployment processes.

Costs of inaction: the near- to medium-term financial and non-financial opportunity costs that will be potentially incurred by technology companies and other key stakeholders if technology companies do not engage in responsible AI/ML product design, development and deployment processes.

Opportunities: the medium- to long-term potential benefits to be realised by technology companies and other key stakeholders as a result of technology companies engaging in responsible AI/ML product design, development and deployment processes.

The Economist
INTELLIGENCE UNIT

Core branches of the diagram:
- FINANCIAL PERFORMANCE — Revenue, Business costs, Enterprise value, Vendor, Media relations, Customers, Employees, Shareholders and investors (Direct costs, Costs of inaction, Opportunities)
- REGULATORY ENVIRONMENT — Compliance, Privacy and safety, Talent and management (Direct costs, Costs of inaction, Opportunities)
- COMPANY OPERATIONS — Company structure, Quality assurance, Products and solutions (Direct costs, Costs of inaction, Opportunities)
- STAKEHOLDER ENGAGEMENT

B. Interview program

The EIU conducted interviews with 12 technology industry experts between January and March 2020. The aim of the interview program was to work with experts in the field to validate our initial hypotheses, draft the conceptual framework and guide the overall research. The interview program consisted of discussions around the following topics:

- The primary incentives and disincentives for companies to invest in incorporating responsibility and governance into AI design, development and deployment practices

- The financial implications of incorporating additional reviews into responsible AI product design and development for a company in the US technology industry

- The impact of responsible AI design on relationships with different stakeholders, such as investors, shareholders, employees, customers, vendors and the media

- The relationship between responsible AI practices and the broader operations of a company—for example, the impacts on talent acquisition and retention, the company's quality assurance practices and the broader corporate governance/team structure

- The impact of a shift to responsible AI on key economic sectors, and how they would respond to technology companies shifting to responsible design

- The approaches of non-technology sectors that are working in the ethics, responsibility and governance space, and the potential lessons and best practices that have emerged from their efforts

C. The EIU executive survey

Survey configuration methodology

Google Cloud commissioned The EIU to conduct a survey of US senior executives and information technology (IT) decision-makers across five non-technology sectors: financial services, healthcare, media and entertainment, manufacturing/industrials and retail. Through this survey program, we have developed a unique data set capturing the responsible AI–related perspectives of non-technology sector enterprises, including their business' needs and priorities when it comes to the design, development and use of AI technologies.

The 15-minute survey was conducted using a mixed methodology (online and computer-assisted telephone interviews [CATI]) in June and July 2020, with 257 US executives participating across the five sectors listed above. The survey sample included even representation across three company size brackets, based on annual revenue: less than US$50m, US$50m to US$1bn, and over US$1bn.

In terms of seniority, 29% of respondents were from the C-suite, 37% were at the director level or above (managing director, executive vice president, senior vice president, vice president, director), and 34% were business unit or department heads.

Within each industry, half of the respondents were from the IT/technology, data and analytics, software engineering and product development functions, and the remaining half represented a mix of senior management, strategy and corporate functions, as well as operations, procurement, marketing and customer experience.

In order to participate in the survey, respondents were screened for IT purchasing decision-making responsibility or familiarity with their organization's development and use of AI technologies.

Survey questionnaire

First, we just want to learn a little about you professionally.

1. In which state are you personally located? Select one.

    [Standard state drop down list and code back to US regions: Northeast, Midwest, South, West]

2. What is your organization's primary industry? Select one.
    - Financial services (incl. banking and insurance)
    - Healthcare
    - Media & entertainment
    - Manufacturing/Industrials (incl. machinery, chemicals, aerospace, agribusiness)
    - Retail (incl. e-commerce and consumer goods)
    - Other [TERMINATE]

3. What is your organization's annual global revenue in US dollars? Select one.
    - Less than US$50m
    - US$50m to less than US$250m
    - US$250m to less than US$500m
    - US$500m to less than US$1bn
    - US$1bn to less than US$5bn
    - US$5bn or more
    - Do not care to respond [TERMINATE]

4. Which of the following best describes your title? Select one.
   - CEO/President or equivalent
   - COO/Head of operations or equivalent
   - CIO/CTO/Head of IT/technology or equivalent
   - CDO/Head of data analytics or equivalent
   - Other C-level executive (please specify)
   - MD
   - EVP/SVP/VP
   - Director
   - Head of business unit
   - Head of department
   - Other [TERMINATE]

5. [ASK IF Q4=NON C-SUITE] What is your main functional role? Select one.
   a. Customer experience
   b. Data & analytics
   c. Finance
   d. General management
   e. IT/technology
   f. Operations
   g. Marketing
   h. Procurement
   i. Product development
   j. Research & development
   k. Software engineering
   l. Strategy/business development
   m. Other [TERMINATE]

[SCREENERS]

6. To what extent are you involved in or have influence over IT/technology purchasing decision-making within your organization? Select one.
   - Not at all [TERMINATE]
   - Not much [TERMINATE IF IT/TECH FUNCTION]
   - Somewhat
   - Very much
   - Entirely

7. To what extent are you familiar with your organization's development and/ or use of artificial intelligence (AI) technologies? Select one.
   - My organization is not currently considering, developing or using AI technologies [TERMINATE]
   - Not at all familiar [TERMINATE]
   - Not very familiar [TERMINATE]
   - Somewhat familiar [TERMINATE IF IT/TECH FUNCTION]

- Very familiar
- Entirely familiar

[OVERALL BUSINESS]

The next few questions will ask about your organization's overall business strategy.

8. Over the next two years, which of the following will be your organization's most important strategic priorities? Select up to four. [RANDOMIZE]
    - Business continuity plans in case of future business crises
    - Cost savings
    - Developing/investing in our technology infrastructure
    - Improving customer experience
    - Improving speed to market
    - Increasing brand awareness
    - Increasing employee productivity and satisfaction
    - Increasing our digital offerings
    - More effective sharing of data and information across functions
    - Product/service innovation
    - Providing greater ROI for stakeholders
    - Reducing supply chain risk
    - Revenue growth
    - Talent acquisition
    - Other, specify
    - Don't know

9. Over the next two years, to what extent will the successful adoption and implementation of the following technologies be a strategic priority for your organization? Select one for each row.

[RANDOMIZE]	Not at all a priority	Low priority	Medium priority	High priority	Essential priority
AI					
Blockchain					
5G					
IoT (Internet of Things)					
Robotics/ Automation					
Biometrics					
Virtual reality (VR)/ Augmented reality (AR)					

[USE OF AI]

The next few questions relate specifically to your organization's development and/or use of AI technologies.

10. Where is your organization in the overall adoption life cycle of AI technologies? Select one.
    - We are considering adopting AI in the next two years

- We are using AI for experimental evaluation
- We are in the piloting phase
- We are implementing AI
- We have at least one productionized AI process
- We are optimizing our AI operations
- We are scaling our AI operations broadly
- Other, specify
- Don't know

11. Which of the following best describes your organization's approach to developing and/ or acquiring its AI technologies? Select one. [RANDOMIZE]
    - Developing AI systems mostly in-house
    - Outsourcing development to an external partner
    - Accessing AI systems via partnerships with an AIaaS (artificial intelligence-as-a-service) provider
    - Purchasing externally-developed solutions, requiring minimal customization
    - Purchasing end-to-end solutions, ready-to-use
    - Other, specify
    - Don't know

12. What are the most significant business benefits your organization could realize from leveraging AI technologies? Select up to four. [RANDOMIZE]
    - Cost savings
    - Faster, data-driven decision-making
    - Greater access to funding
    - Greater brand differentiation
    - Greater ROI for stakeholders
    - Improved customer experience
    - Improved security and privacy
    - Increased employee productivity and satisfaction
    - Increased revenue
    - Increased talent attraction
    - Product/service innovation
    - Reduced risk of human error
    - Other, specify
    - Don't know

13. How do you expect your organization's investment in AI technologies will change over the next two years? Select one.
    - Decrease significantly
    - Decrease somewhat
    - No change
    - Increase somewhat
    - Increase significantly
    - Don't know

14. Which of the following present the biggest obstacles to your organization's adoption or implementation of AI technologies? Select up to five. [RANDOMIZE]
- Cost
- Cybersecurity concerns
- Data privacy concerns
- Difficulty identifying the right vendor or partner
- Difficulty integrating new technologies
- Employee push back
- Insufficient data sources
- Lack of access to talent with necessary skills/expertise
- Lack of support from leadership
- Regulatory or legal uncertainty
- Risk of algorithms reinforcing unfair bias
- Risk of potential misuse
- Uncertainty around whether AI is right for our business
- Unsure of which use cases to pursue
- Other, specify
- Don't know

[ETHICAL AI DESIGN & DEVELOPMENT]

15. Please rank the following considerations in order of priority when developing or implementing a new AI system? Rank up to five, with 1 being the top priority. [RANDOMIZE]
- Complying with future regulation(s)
- Data privacy
- Ease of integration with current technology infrastructure
- Ease of use
- Explainability (ie, technology's inner workings and capabilities are explainable, accountable, and understandable)
- Inclusivity (ie, algorithms do not reinforce unfair bias)
- Increasing customer satisfaction
- Meeting customer demand
- Product/service innovation
- Product functionality
- Profitability
- Quality assurance
- Sourcing reliable, diverse and quality data
- Speed to market
- Suitability for purposes
- Other, specify
- Don't know

16. To what extent are the following groups within your organization concerned about the responsibilities and risks associated with leveraging AI technologies? Select one for each row.

	Not at all concerned	Not very concerned	Somewhat concerned	Very concerned	Don't know
Board of directors					
C-suite					
Legal department					
Technical staff					
Non-technical staff (eg, sales, marketing, etc.)					

17. In your opinion, which of the following practices would be most effective in preventing any of the potential risks associated with leveraging AI technologies? Select all that apply. [RANDOMIZE]
    - Embedding ethical reviews into AI development and implementation processes
    - Encouraging multidisciplinary collaboration
    - Establishing an ethical oversight committee accountable for ensuring AI systems are designed/used responsibly
    - Hiring employees with diverse skills and backgrounds
    - Hiring senior leadership with a background in ethics
    - Incentivizing employees to prioritize responsible AI design and use
    - Leveraging external auditing governance
    - Providing ethics training or guidelines to enable employees to identify potential risks during development (eg, unfair bias, data privacy concerns, etc.)
    - Seeking out external technical consulting, expertise or guidance
    - Sourcing reliable, diverse and representative data sources
    - Other, specify
    - Don't know

18. Has your organization implemented or is it planning to implement any of these practices in the next two years? Select one for each row.

	Have already implemented	Planning to implement in the next 2 years	No plans to implement	Don't know/ Not applicable
[Repeat list from Q17]				

19. How important is the implementation of ethical reviews in the development and/or use of AI technologies to the following aspects of your organization? Select one for each row.

[RANDOMIZE]	Not at all important	Not very important	Somewhat important	Very important	Critically important	Don't know
Product/service innovation						
Customer value proposition						
Brand reputation						
Competitive advantage over industry peers						
Talent acquisition						
Talent retention						
Employee relations						
Government relations						
Shareholder/investor relations						
Revenue growth in the short-term						
Revenue growth in the medium/ long term						

[VENDOR/PARTNER SELECTION]

The next few questions ask about how your organization evaluates the AI technology service providers and partners it works with.

20. Which of the following considerations or offerings are most important for an AI technology service provider or developer to have when your organization is evaluating a potential new vendor/partner? Select up to four. [RANDOMIZE]
    - Ability to easily integrate with our current tools or technology infrastructure
    - Brand reputation
    - Breadth of capabilities
    - Cost
    - Consulting or advisory services for the responsible design/use of AI
    - Customer service
    - Dedicated senior roles responsible for ethical AI oversight
    - Documented or published responsible AI principles
    - Explainability of technology
    - Established governance framework for the responsible design/use of AI
    - Participation in the Data for Good movement or similar initiatives
    - Scalability
    - Transparency of data sources used
    - Other, specify
    - Don't know

21. Information, reviews or opinions from which of the following resources most influences the decision-making process when your organization is evaluating a potential AI technology service provider or partner? Select up to four. [RANDOMIZE]
    - Academic community
    - Customers
    - Government bodies
    - Industry associations
    - News media sources
    - Other technology developers/ service providers
    - Our industry peers
    - Service providers' past clients
    - Social media
    - Technology analyst firms
    - The technology service provider under evaluation
    - Third-party or advisory consultants
    - Other, specify
    - None of the above
    - Don't know

22. To what extent do you agree or disagree with the following statements? Select one for each row.

[RANDOMIZE]	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know
The business risk is too high to justify working with an AI service provider that cannot prove ethical design in its products					
My organization has decided against working with an AI service provider due to ethical concerns					
Companies that demonstrate their AI products are responsibly designed will be at a competitive advantage					
It is business critical that the technology my company uses is explainable, accountable, and inclusive					
It is important to me that my company operates ethically					
It is important to the Board that my company operates ethically					
It is important to my leadership team that the company operates ethically					
Ethical considerations are included as part of my company's RFP process					
I would be more willing to work with a vendor if they offered guidance around the responsible use of AI					

[FUTURE CONSIDERATIONS]

Just a few more questions around considerations for your organization's design and/or use of AI technologies.

23. The opinion of which of the following stakeholders would most influence your organization to implement ethical review processes in its development and use of AI technologies? Select up to four.
    [RANDOMIZE]
    - Academic community
    - Employees
    - Government & regulatory bodies
    - News media
    - Our customers
    - Our customers' customers
    - Peer companies in my industry
    - Senior management
    - Shareholders & investors
    - Technology analyst firms
    - Technology sector
    - Other, specify
    - None of the above
    - Don't know

24. To what extent do you agree or disagree with the following statements? Select one for each row.

[RANDOMIZE]	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know
Developers and buyers of AI technologies are equally responsible for ensuring a product is used ethically					
Responsible AI is a priority for senior leadership within my organization					
AI developers must be empowered and equipped with the proper training/tools to design responsible products					
AI products that are responsibly designed will provide greater long-term ROI for investors/ shareholders					
Recent scandals have made me more distrustful of the technology sector					
Developing explainable AI systems will help build consumer trust of the technology sector					
Leveraging AI technologies is key to my organization's long-term success					

25. To what extent do you agree or disagree with the following statements? Select one for each row.

[RANDOMIZE]	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know
Incorporating ethical reviews into the AI design and implementation process today will help reduce risk of regulatory non-compliance in the future					
The potential long-term benefits of implementing ethical AI guidelines outweigh the initial costs of implementation					
Technology companies need industry-wide standards for the responsible design, development and use of AI					
Formal regulation of AI technologies is long overdue					
Regulation will slow down AI innovation					
Until there is formal regulation, technology companies should take the initiative to ensure their AI products are responsibly designed and used					
Increased partnership between the public sector and technology companies is necessary for the development of effective AI regulation					

26. In your own words, please describe what 'responsible AI' means to you. [OPTIONAL OPEN END]

27. Please describe any guidelines or processes that your organization has put in place to ensure its AI technologies are designed and/or used responsibly. [OPTIONAL OPEN END]

References

1. Financial services includes banking and insurance; manufacturing/industrials includes machinery, chemicals, aerospace and agribusiness; and retail includes e-commerce and consumer goods.

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3. Defined as "A new method of producing and inventing that is important enough to have a protracted aggregate impact." See: https://ideas.repec.org/h/eee/grochp/1-18.html

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Access China

Access China is a unique service that will help your business to succeed in China. It is the only single source of data, analysis and forecasts for all 31 provinces and 292 of China's largest cities, providing you with a comprehensive understanding of China today, but more importantly giving you confidence that you will still understand China in ten and twenty years' time.

What will Access China allow you to do?

● Benchmark in detail provinces and prefectures of China using consistent and comparable data.

● Understand the market potential for your products and services in any location within China.

● Investigate operating costs, infrastructure development and labour markets to help you to make investment decisions.

● Monitor what other businesses are doing in various regions.

● Gain a forward-looking perspective on how fast China's cities and its regions are growing.

● Feed reliable data into your own China business strategy models.

Who should use Access China?

● Organisations that require an understanding of how the Chinese market works, or are already operating in or looking to enter the Chinese market.

● Companies already operating in China that need to benchmark their performance in particular provinces and assess the market potential for products and services in any region or city.

● Government agencies can use Access China to assist trade mission efforts and exporting companies, and as a research tool for understanding China's internal and external dynamics.

● Academic institutions use Access China to help faculty and students conduct detailed political, economic, and business research across China.

To request a demonstration of how Access China could benefit your organisation, please get in touch.

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