

Forbes insights



Human AI Is Here

Adoption of artificial intelligence technologies has advanced extensively in the business world, and the change is supercharging human capabilities

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INTRODUCTION

Artificial intelligence (AI) has been embraced by a vast majority of business leaders as a powerful force for building value—in terms of business returns and social impact. The research at the heart of this report—a survey of 305 global executives across multiple industries conducted by Forbes Insights, in collaboration with Accenture, Avanade and Microsoft—unveils the thinking and actions already firmly rooted around data and AI, and the rewards companies leading the charge are already seeing.

The analysis of the survey data, combined with insights from conversations with top thinkers and executives, reveals an awareness of the potential benefits of AI as well as the complexity of the challenges associated with unlocking them. Executives realize that fulfilling this potential requires the courage to reimagine the business and calls for a new approach to management and decision making.

Harnessing the potential of AI requires a persevering and visionary leadership based on three foundations: the democratization of data and AI, and weaving them into the fabric of the whole organization; striking the right balance of power in machine-human collaboration; and creating a sound ethical framework for the AI-driven enterprise.

A select group of companies—the AI Leaders—are displaying the most courage and foresight when reimagining their businesses, and as a result, are growing significantly more than companies that lag behind in AI adoption. In this report, we'll outline what separates these AI Leaders from the rest of the pack and what steps companies can take now to accelerate their AI efforts.

WHAT IT TAKES TO BE AN AI LEADER



The Forbes Insights survey identified a group of companies at the forefront of AI and data and analytics. These AI Leaders (22% of the survey population) had three characteristics:

- Courageous senior leaders willing to devote resources to transformational change
- View AI technologies as highly important to achieving business objectives
- Have extensive digitization of data and adoption of analytics throughout the organization

KEY FINDINGS

- **AI TECHNOLOGIES ARE GAINING TRACTION IN BUSINESS.** Almost every executive (92%) recognizes and evangelizes the value of a comprehensive AI strategy, but only half have a complete grasp of the technologies and their practical applications.
- **COMPANIES ARE BUILDING THE MUSCLE TO SHAPE SUCCESSFUL AI PROGRAMS AND CULTURE.** Eighty-five percent believe that senior executives are courageous in their willingness to devote resources for transformational change. And almost all (87%) believe that AI technologies are important in achieving their overall business objectives, with 52% saying they are highly important.
- **COMPANIES EMBRACING ANALYTICS AND AI HAVE SIGNIFICANTLY MORE GROWTH THAN THOSE WHO LAG IN ADOPTION.** Almost all companies identified as AI Leaders in the survey experienced more than 10% growth in the past year (81%), compared with 36% of laggards. And just over half (51%) of AI Leaders realized more than 20% growth, something only 13% of laggards accomplished.
- **COMPANIES ARE STRIVING TO CREATE ROBUST CULTURES AROUND DATA AND ANALYTICS.** Thirty-six percent of companies say their digitization of data and adoption of analytics is extensive—and 45% say it is almost at that level. Sixty percent report having a strong culture around accurate and relevant data.
- **COMPANIES ASPIRE TO USE DATA EFFECTIVELY BUT ARE FACING HURDLES.** Only 47% say they have a solid data management process. Among the challenges: 51% have trouble integrating multiple sources of data, 49% struggle with prioritizing data, and 48% are challenged by determining the right data to collect.
- **ESTABLISHING ETHICAL FRAMEWORKS TO ADDRESS ISSUES SUCH AS BIAS AND PRIVACY IS AN EMERGING PRIORITY.** Fifty-two percent say that companies need to make data and analytics transparent and comprehensible to consumers and non-scientists, but only 33% of companies have done so. Forty-seven percent believe that AI systems should be built around humans.
- **NEW JOBS ARE EMERGING TO BUILD AND MANAGE HUMAN-FOCUSED AI SYSTEMS.** Counter to the perception that the labor market will suffer under AI, 45% say transparency analysts and explainability strategists are now needed to judge algorithm outputs. Fifty-eight percent say algorithm training and analysis are also needed to reduce bias, and a quarter believe that companies should hire ethicists.

THE STATE OF AI: THE POWER OF LEADERSHIP

Yes, the robots are here. We read on a daily basis about the impending loss of jobs and a strange world where machines do all the work, yet few in business and academia actually believe such a radical future will soon come to pass. “We’re very far from artificial general intelligence, when machines can do everything that humans can do,” says Erik Brynjolfsson, a professor at the MIT Sloan School of Management and the director of the Initiative on the Digital Economy at MIT. “But we do have superhuman, or at least human-level, capabilities in an increasing number of areas, like vision and speech recognition. They will have profound effects on the economy, but they also require massive redesign and rethinking of almost every part of the economy.”

Dr. Athina Kanioura, chief analytics officer and global lead for Accenture Applied Intelligence, agrees: “There is tremendous potential in humans working collaboratively with machines to develop new forms of intelligence and apply them to business and societal problems. The new jobs that grow from the human-machine partnerships are happening in what we call the missing middle—new ways of working that are largely missing from today’s economic research and reporting on jobs.”

At the organizational level, this new machine-human collaboration needs to translate into what Simon Thomas, global head of data and AI at Avanade, refers to as “AI adopting and becoming the voice of the organization. You want the AI to speak and understand like an employee, emphasize the rules, regulations, business practices and standards espoused by humans in your organization,” he says.

Leadership Courage = Results

Progress never happened without the courage to experiment, and in the business world today, leadership is the prime mover of transformational change within organizations. Results of the Forbes Insights survey show that this key ingredient is already present among

the C-suite. As shown in Figure 1, almost every senior executive surveyed (92%) clearly sees the AI road ahead and evangelizes the value of these technologies, which include machine learning and deep learning, computer vision and natural language processing.

“AI applied in combination with analytics and automation allows organizations to do things differently



Figure 1. Do senior leaders in your organization recognize and evangelize the value of a comprehensive, enterprise-wide AI strategy?

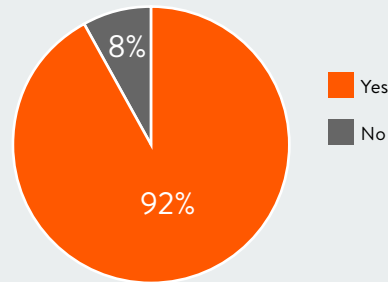
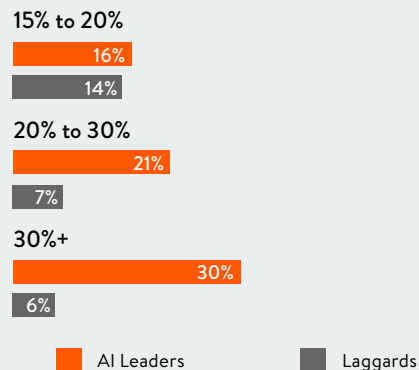


Figure 2. Estimate your annual growth rate in revenue for the most recent fiscal year.



and do different things,” Kanioura says. “They can move from ‘dead,’ rigid rules-based processes to ‘living’ processes that are contextual and predictive, enabling continuous experimentation and learning loops for innovation at speed.”

The combination also enables a cumulative effect as companies achieve increasingly better outcomes from rapid scales across the business. “Generally, with AI, the more users, the better the AI gets and the better ideas you’re going to get out of it,” says Thomas. “Your AI is only as good as how you train it and how you test it to make sure it’s behaving the way you want it to behave. And if you do that with a small group of people, the results will be equally limited.”

Mitra Azizirad, corporate vice president of AI marketing at Microsoft, talks about the organizational strategy needed to fully realize the potential of AI. “While there is a lot of energy around AI, organizations will only harness the full value of AI with a deep strategic approach to their AI transformation. Most application and process can be reimaged with AI, from infusing applications with AI capabilities to taking entirely new approaches to organizational horizontal and vertical processes.”

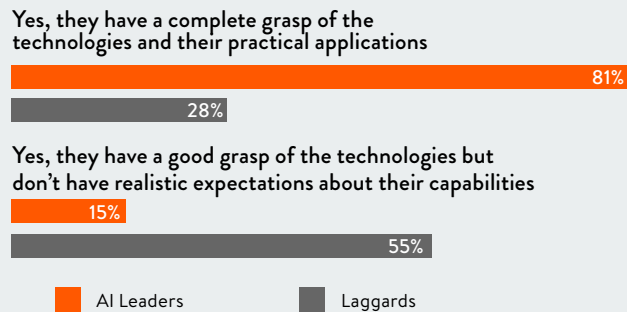
The value appears in a very concrete way on the balance sheet. Survey results show a direct relationship between the adoption of AI with analytics and revenue. While all executives may recognize the need to have an enterprise-wide machine learning strategy, AI Leaders are seeing significantly greater revenue growth than those lagging in their efforts. Just over half (51%) of AI Leaders experienced revenue growth of 20% or more in the most recent fiscal year, compared with only 13% of laggards (Figure 2).

AI Leaders are focused and persevering. “The top leadership focus within an organization for the AI mandate is absolutely critical. There are so many promises of AI that require time and multiple iterations,” says Thomas. “So you need to have unwavering focus for a company to shift, to keep going even if your first step or your second step or your third step accomplished something that was not exactly what you expected.”

“While leaders can carefully define what they want



Figure 3. Do senior leaders in your organization understand AI technologies well enough to make informed and effective decisions?



to achieve from applying AI, their teams need the freedom to experiment and fail,” says Kanioura. “Experimentation is important to allow leaders to make evidence-based decisions about larger investments. The primary goal is to save from investing full-scale into a mistake. More than any technology I have worked with, AI experiments and pilots need that freedom to deliver powerfully successful surprises.”

The AI era leadership is rooted in humility and curiosity, as well as willingness to accept data-driven decision making. “You need to have a humble mindset, where you ask the right question and go where the data leads you,” Brynjolfsson says. “That’s a different approach toward leadership and management—and it’s uncomfortable for a lot of people. But without it, you can’t take advantage of data-driven decision making. We have found through our research that data-driven decision making was being adopted quite rapidly, and the early adopters were getting good returns.”

Asking the right questions and letting yourself be led by data requires a complete understanding of the technologies involved, something that 81% of AI Leaders have and only 28% of the laggards do (Figure 3). Very few of the AI Leaders (15%) suffer from unrealistic expectations, something likely to cause bottlenecks within organizations as technology leaders try to temper the business. That 55% of laggards feel their senior leaders do have unrealistic expectations is telling—those leaders are asking the wrong questions and not following the path led by data.

DATA: THE DNA OF BUSINESS

Data is being compared to oil for good reason—it’s a precious and immensely valuable resource, an essential driver of the economy. But its importance runs even deeper; data is the DNA behind the powerful analytics and insights that are helping modern organizations identify new products, determine how to better serve customers and improve operational efficiencies. If data is inaccurate or corrupted, the machine won’t produce workable insights. That’s why having a strong and diverse culture built around the production and acquisition of data is crucial for success.

“We have a reverence for data,” says Pawan Divakarla, data and analytics business lead at Progressive Insurance. Like any other insurer, the company’s lifeblood is the information it gathers from a variety of sources, including mobile devices, to hone its products and services. “We manufacture data, we take care of it, and we manage it. We use analytical data, for example, to better understand losses and risk behavior of our customers, which enables us to better segment our business. Then we build data products on top of it.”

The senior executives surveyed by Forbes Insights share this viewpoint. Almost 90% believe that data and AI technologies are important in achieving their business objectives—and over half (54% for data, and 52% for AI technologies) say they’re highly important (Figure 4). What’s more, 60% have created a culture around data such that everyone understands the value of relevant and accurate data (Figure 5).

Even more impressive than this buy-in is the extent AI Leaders have laid the foundation of digitization and analytics throughout their organizations (Figure 6). That 36% report having extensive deployment of data and analytics flies in the face of the popular notion that companies are mostly talking the AI talk without any action. Indeed, almost half (45%) say their adoption of digitization and analytics is a notch under extensive. In other words, they’re almost there. They’re plowing ahead.



Figure 4. In your view, how does your organization view the importance of data and AI technologies in achieving its overall business objectives?

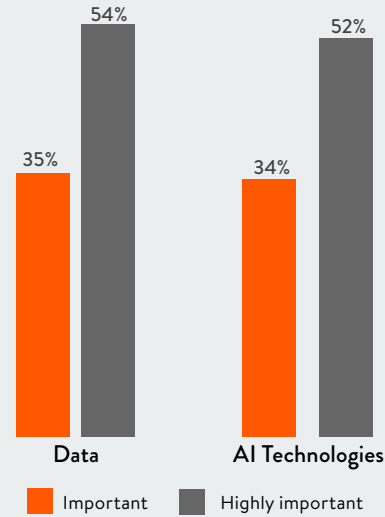
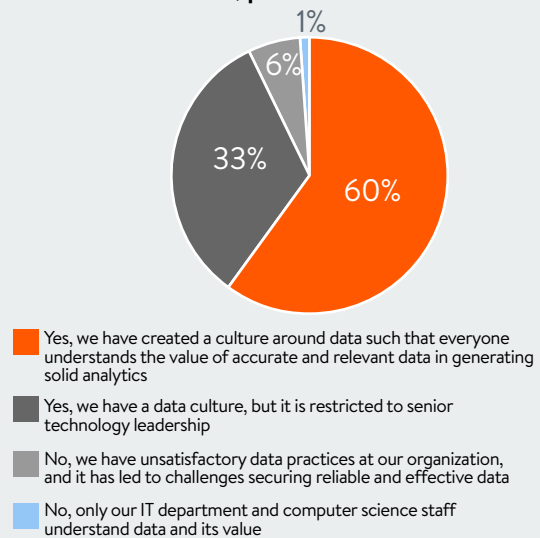


Figure 5. Does your organization have a top-to-bottom data culture that extends from employees at all levels and across divisions, to vendors, partners and consultants?



Mindset Meets Challenges

Companies certainly have the ambition to make the most of data—and, as just noted, they're making great strides—but the nuts and bolts of extracting value remain a challenge for many. The overriding goal for almost any business today is to form extensive supply chains of data from a variety of sources. Without them, AI systems can't produce valuable insights that help businesses meet and exceed business goals. The challenge in managing data, to repeat Progressive's Divakarla, is "caring for data."

Most companies are not overly challenged in obtaining fresh, relevant data. Look at Figure 7: 40% say gathering quality data is a challenge, which means that 60% do not have trouble getting actionable data. That's encouraging. It's the caring part where many companies have problems. Half (51%) report challenges integrating multiple sources of data, and almost the same percentage say they're pressed in prioritizing data to gain insights (49%). Looking again at both sides of the coin, 60% are able to handle data in a privacy-compliant manner, but 40% cannot. This is a sticking point because solving for privacy issues is paramount; AI simply won't be fully accepted—and, hence, advance—without trust.

"We basically make data," Divakarla says. "The goal for us is to organize Progressive's data and make it accessible. We collect information on people's driving—speed and time of day, for example—and from such simple pieces of data we can derive many more insights to rate our customers. We want to be as accurate as possible for an individual customer, to get this person the best rate and the best experience."

For Progressive, the destination is the best customer experience possible—and the journey toward that point is paved with technology, including better use and governance of data, the deployment of AI, and a workforce enabled by a modern workplace. "The technologies by themselves are not a goal," Divakarla adds, "they are just sort of a way to get to our goal."

AI AT WORK: REDESIGNING CULTURES

Machines will make us more human. It sounds daring to say. But we already live in a world where the best possible outcomes in many jobs can be accomplished only with the helping hand of an algorithm, a collaboration that will only deepen in the years ahead. "The full potential of AI is realized when organizations foster a culture where AI experiences are democratized and scaled across the organization," Azizirad says. "By providing every employee in an organization with AI capabilities and self-service AI, employees are empowered with the insights most relevant to their roles at a



Figure 6. On a scale of 1 to 5, how would you characterize your digitization of data and adoption of analytics throughout your organization?

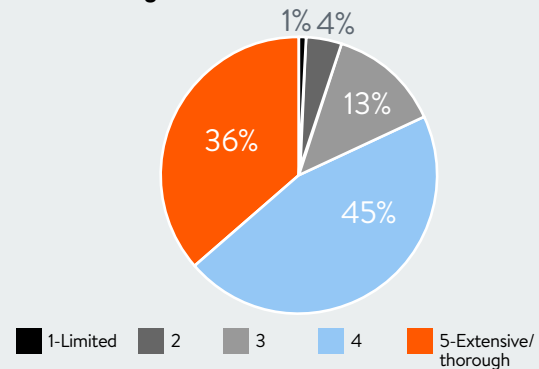
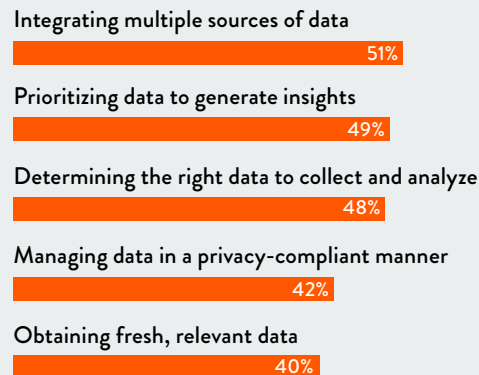


Figure 7. What are your challenges with extracting value from the data you already have?



scale and speed never seen before.”

The imperative for businesses today is to design processes and cultures around data and people, supercharging them with the intelligence of machines, as the AI Leaders have done, or fall behind. Over 80% of them have created a culture around data such that its workforce understands the value of accurate and relevant data and analytics, something only 40% of AI laggards have done. The reimagining is not about eliminating jobs, though many roles will drop away as AI becomes more prevalent. “Robots will replace many human jobs,” says Thomas. “They’re not going to replace humans.”

Unlike the earlier wave of industrial automation in the 1970s, it’s about giving humans more time and freedom as machines take over mundane, routine tasks—and it’s about finding the talent to manage and mold algorithms into resolutely good tools that produce accurate insights and decisions.

“The technologies are very compelling, but it actually can be very complicated to implement them,” Brynjolfsson says. “And that takes a lot of management effort, worker retraining, rethinking of business processes—all of these take time and cultural changes. That’s the bigger revolution, not just simply buying a lot of database and analytics tools.”

Machine Learning Takes on Tasks

In a recent report, “What Can Machines Learn and What Does It Mean for Occupations and the Economy,” Brynjolfsson and two colleagues looked at about 20,000 tasks in the U.S. economy across 970 different occupations. Each occupation had about 20 to 30 tasks. The team found that, for almost every occupation, machine learning techniques could handle at least some of the tasks in that occupation. “We also found—and this is important—that for none of those 970 jobs could these techniques do all of the different tasks humans do. There were always some tasks that humans needed to do.”

Survey results show that workers are adjusting to the arrival of machines into their jobs. Only one executive among the 305 surveyed (0.33%) felt that employees were experiencing outright fear of AI. Overall, 38% believe their



Figure 8. In your view, what mindset or attitude toward AI technologies do your rank-and-file employees display?

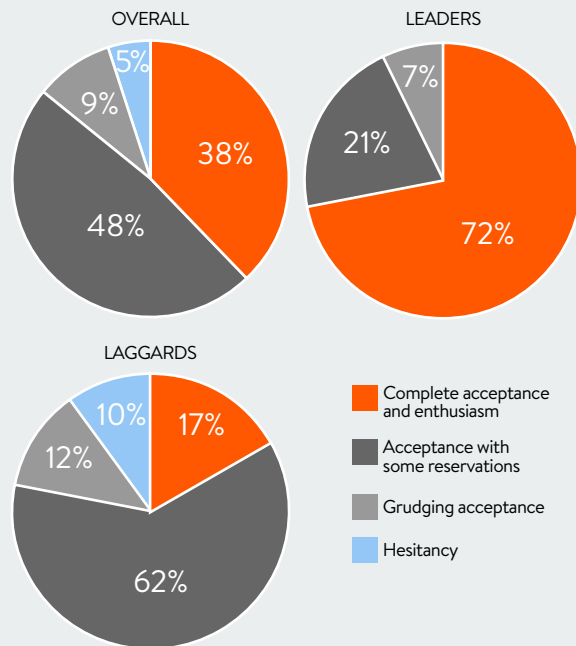


Figure 9. What actions has your leadership taken to communicate with employees about the role AI is playing or will play at your organization?



workers exhibit complete acceptance of AI technologies (Figure 8). Among AI Leaders, the adjustment will be far less challenging: Over seven in 10 say their employees completely and enthusiastically accept AI technologies, while only 17% of laggards say their workers have the same mindset or attitude.

Based on this research, it's reasonable to observe that as AI advances across processes, boosting the ability of talented people, reservations and hesitancy will dissolve. Back to the leadership theme, it's important to communicate the benefit—the enablement—that AI will bring to many tasks within job roles, as 50% have done (Figure 9).

“You have to understand the institutional fears around AI and design comprehensive, long-reaching programs to prepare your workforce. You can't let it happen accidentally—you need to deliberately plan for what your company will look like in the next generation,” says Thomas.

The dynamic of the human-machine relationship is not just about how AI will influence workers; it's how workers will influence AI. “There will be jobs where humans complement machines,” Kanioura says. “For example, where workers train machines to perform tasks, explain the machine outcomes and sustain the machines in a responsible manner.”

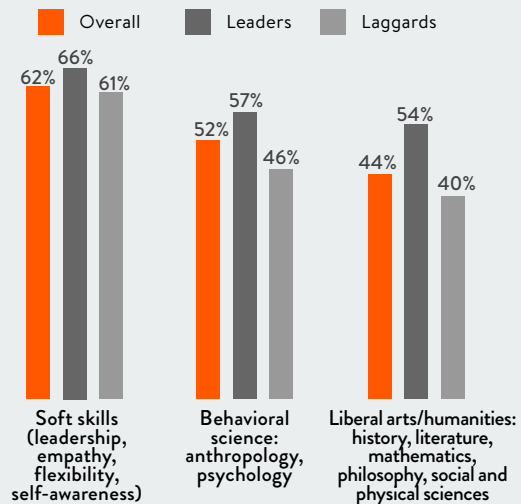
Results show that the human component underlying AI is already playing out on the ground. Soft skills like leadership and qualities like empathy are becoming a bigger factor in the successful implementation of AI technologies, a trend that crosses the landscape of AI Leaders and laggards (Figure 10). One area where laggards need to catch up is the importance being placed on the humanities in their talent base, a gap that could cost them as the need for a humanist perspective rises with the machines.

ETHICAL AI: THE HUMAN HAND BEHIND ALGORITHMS

AI is a profoundly human science. The technologies are built by people and, even as machine learning and deep learning systems train themselves, they will require oversight and molding by a human hand, an effort that is becoming a bigger part of the strategy and deployment within organizations today.



Figure 10. What skills (aside from data science) does your organization feel are important to enable the adoption of and maximize benefits from AI technologies over time?



“AI will have a profound impact on society and needs to be built in a way that earns trust, protects against bias, and respects privacy as a fundamental human right,” Azizirad says. “The task of building responsible AI is not for one company alone, but something that the entire industry needs to collectively focus on.”

“The real danger is that AI advances without addressing ethics—and it's a huge concern,” Brynjolfsson says. “It's something for social scientists, ethicists and managers to weigh in on. The technology is becoming more powerful. And that means we're handing over more decisions. If we're not thoughtful about it, some of those decisions could have really adverse effects on individuals, on groups, even on society.”

What does it take to build ethical AI systems? As seen in Figure 11, over half (52%) believe that the results of AI systems need to be transparent and comprehensible to consumers and employees, who should be able to control data (48%). Almost half (47%) point to reducing bias and developing explainable solutions. It ultimately comes down to creating new roles for people involved in the building and shaping of algorithms—and jobs such as forensic and transparency analysts (Figure 12) are beginning to appear in the job market.



Figure 11. What steps must organizations take to build ethical AI systems?

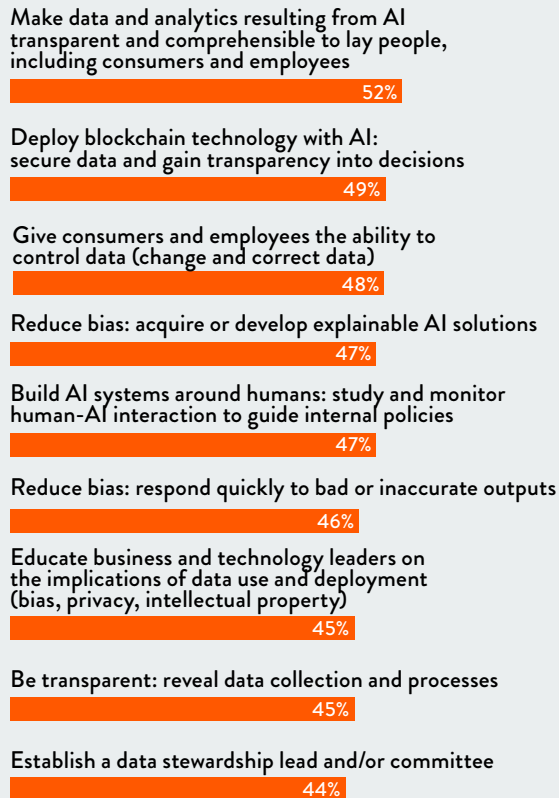


Figure 12. What new jobs are being created or will be created at your organization as AI systems are optimized in the future?

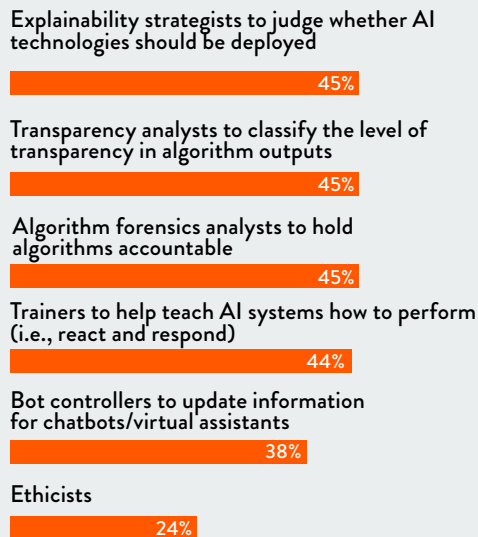
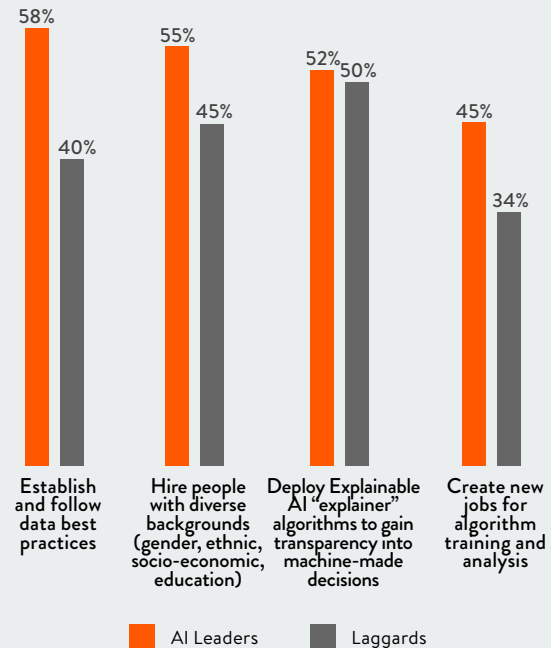


Figure 13. What steps is your organization taking to reduce bias in AI systems?



Beating Bias

Another aspect largely lost in today's discussion about bias in AI is the research showing machine learning systems to be less biased than humans. Eliminating bias is no less of a priority because of this—and, to Brynjolfsson and the other experts in this report, it's beatable.

"Bias is where I'm more optimistic than a lot of people," Brynjolfsson says. "While algorithms can be tough to decode and often people think of them as black boxes, compared to humans, they're a lot easier to improve. Humans are black boxes, too, and trying to get the humans to change their biases is a much tougher haul than redesigning algorithms. You can test and retest algorithms to see if they're giving you unexpected or inappropriate answers. We'll have a world with less bias if we are conscious of updating and tuning the algorithms."

Progressive's approach to eliminating bias in outcomes is baked into its processes around data

and analytics. The company is built on predictive analytics and the products that result from it, so teams are particularly focused on understanding what their models are doing—gaining transparency into machine-driven outcomes. “We have business reviews, we have peer reviews,” Divakarla says. “When we build a model for some goal, it gets reviewed. We question the systems to make sure that they’re doing the right thing. We have a culture of transparency, so black box outcomes really don’t exist for us.”

Results of the survey show that companies are taking action to address bias, including building diverse workplaces, deploying explainable AI and establishing best practices around data. Not surprisingly, AI Leaders are taking more steps in this regard (Figure 13).

STEPPING AHEAD

The AI Leaders are already well on their way to redesigning their organizations around human-machine collaboration. They’re building cultures around data and analytics, and they’re creating diverse workplaces where uniquely human qualities are guiding and informing machines. Even more significant, the human talent in these organizations is being supercharged by a machine-driven ability to gain insights hidden within complexity that only data and AI together can reveal.

Companies lagging behind in these efforts can catch up. Establishing data supply chains, balancing the work and capabilities of minds and machines, and finding the right partnerships can make the difference between success and failure as AI changes business and the world around them.

To scale AI, organizations should focus on three steps:

1. HARNESS END-TO-END CAPABILITIES AT SCALE. Don’t focus on a single algorithm or tool, but rather develop a clear understanding of the right data services platforms and a robust data supply chain that will deliver the intelligent

insights. And make sure data moves at the right speed to be relevant.

2. GET THE BALANCE RIGHT BETWEEN AUTOMATION AND AUGMENTATION.

Organizations can achieve the largest boosts in performance when humans and machines work together as allies, not adversaries, taking advantage of each other’s complementary strengths.

3. TAP INTO THE ECOSYSTEM OF INNOVATION.

The AI field is changing fast, with startups and technology innovations appearing daily. It’s critical to have the right guide and alliance partners with complementary goals.

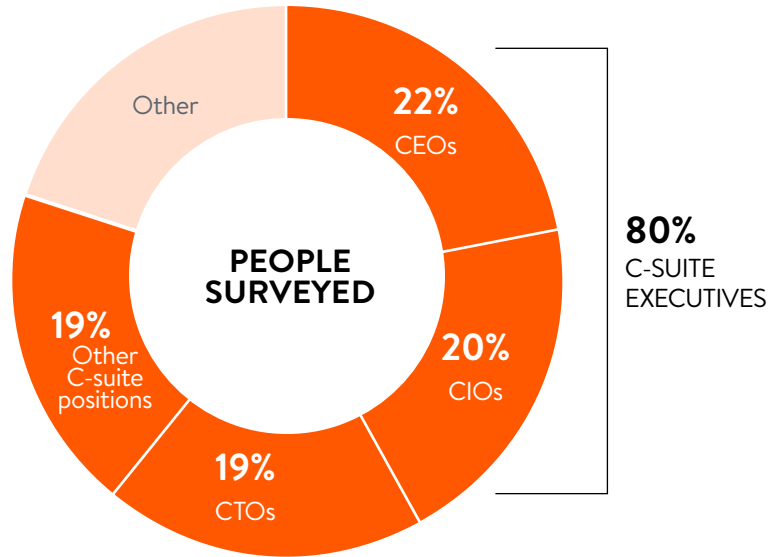
“We’re right at the point on the growth curve before it goes vertical,” Kanioura says. “Organizations across the board will make significant investments in these technologies as they look to scale across their organizations and markets. They know there’s a lot at stake. The time for companies to act on AI is now—or risk quickly falling behind and losing competitive advantage.”

True to the results of the Forbes Insights survey, Brynjolfsson stresses the vital importance of reengineering work and processes in tune with the advance of machine power. The native power of the human mind will only become more valuable in the machine age.

“We’re very far from the end of work or the end of labor,” Brynjolfsson says. “When I look around, I see so many unsolved problems in our society that only entrepreneurs and government and non-profits can address—things like childcare, caring for the elderly, healthcare, cleaning the environment, and creative things like the arts, scientific invention and creating new business models. There’s no machine technology that can do them; they don’t have a clue how to do most of these things, and they won’t anytime soon. The real issue is redeploying people towards those problems—and solving them.”

METHODOLOGY

The findings in this report are based on a survey of 305 executives conducted by Forbes Insights, in partnership Accenture, Avanade and Microsoft, in August and September 2018. The vast majority of those surveyed—243, or 80%—were in the C-suite across industries, including professional services, financial services, manufacturing and technology. A fifth each were CEOs (22%), CIOs (20%) and CTOs (19%). Geographically, a quarter of the respondents (26%) were in the U.S. and 11% in the U.K., with an almost equal distribution of about 10% across nine other countries, including Australia, China, France, Germany and Japan.



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- **Simon Thomas**, Global Head of Data and AI, Avanade

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