AI MOMENTUM, MATURITY & MODELS FOR SUCCESS

BASED ON FINDINGS FROM A GLOBAL EXECUTIVE SURVEY

By SAS, Accenture Applied Intelligence,
and Intel with Forbes Insights

sas accenture intel Forbes insights

MAKING AI BUSINESS-SMART

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If you've ever assembled a large jigsaw puzzle, you know that for most of the time it takes to put it together, it looks like an incoherent mess. Small sections, made up of only a few connected pieces, sit isolated from one another, slowly gaining size as you find pieces here and there. But eventually the momentum shifts, and the glacial pace turns into a race to the finish – large chunks of the puzzle are united quickly, and it all snaps into shape.

When examining the survey responses of more than 300 executives across industries focused on artificial intelligence (AI) at large companies around the world, it appears likely that we are on the verge of a similar momentum shift. Critical parts of the AI puzzle – specific technologies, capabilities, processes and more – are being assembled in different parts of businesses, in different industries, addressing different challenges. We are rapidly approaching a "critical mass" moment in which the entire picture comes into view. The responses submitted by many of these executives show a level of enthusiasm and AI-focused activity that point to an explosion of AI adoption just around the corner, even as gaps in capabilities and strategy are revealed. Already, 72 percent of the organizations we surveyed have either deployed AI-based technology or are in the process of doing so.

While our survey findings revealed many unexpected insights, here are some of the most important findings, all of which this report examines in detail:

AI IS WORKING

Survey respondents report that they are encountering real success with AI, on a number of important fronts.

THOSE WHO HAVE SUCCESSFULLY DEPLOYED AI SEE A STRONG CONNECTION BETWEEN AI AND ANALYTICS

Those who have deployed AI with more success[1] were more likely than others to view AI as being strongly connected to analytics.

FULL DEPLOYMENT LEVELS SIGNAL HEALTHY MOMENTUM

Many respondents have moved beyond the experimental phase of AI deployment into more widespread applications.

AI OVERSIGHT IS NOT OPTIONAL

Leaders in AI – those who report having successfully deployed AI already – are putting processes in place for reviewing the outputs of AI-enabled systems, overriding questionable results and more – pointing to new levels of AI maturity.

ETHICAL USE OF AI IS TOP OF MIND

Most respondents report having ethics-focused processes already in place.

WHILE EMPLOYERS DON'T ANTICIPATE A BIG IMPACT ON JOBS FROM AI, EMPLOYEES MAY BE NERVOUS

Consistent with many reports suggesting that the threat of job loss from AI may be greatly overestimated, these respondents do not believe large-scale job loss is likely. Some, however, are concerned about employee perceptions of the impact of AI.

[1] This survey asked respondents "Are you or your team developing or deploying artificial intelligence-based technology?", with the option of answering "Yes, it has been deployed," "It is under development," "We are considering/planning deployment," "Not at this time," or "Unsure." Separately, we asked respondents to "Rate the impact of deployment of AI-based technologies on your operations," with the option of answering "Unsuccessful," "Slightly successful," "Mixed results," "Successful," "Highly successful," or "Too early to tell." **For the purposes of this survey report, we have chosen to define "leaders who have successfully deployed AI" as those who answered "Yes, it has been deployed" or "Under deployment" and also indicated that their efforts were either "Successful" or "Highly successful."**

It is clear from our survey findings that leaders and early adopters in AI are making important advances in key areas, identifying and expanding on what works as they put AI to work in more ways, in more parts of their organizations. Best practices are already emerging.

No one can predict the exact shape and trajectory of our AI future. But this survey provides a clearer view than ever of exactly how key elements are combining today to create an AI future. Here's an overview of some of the most important takeaways from the survey, conducted by Forbes Insights in conjunction with Accenture Applied Intelligence, Intel and SAS.

AI: A WORKING DEFINITION

Anyone working in artificial intelligence knows that different stakeholders define it differently. When we talk about AI in this report, we mean the *science of training systems to emulate human tasks through learning and automation.*

AI IS WORKING

Peel away the hype, and the big question is how will AI contribute to solving real business problems.

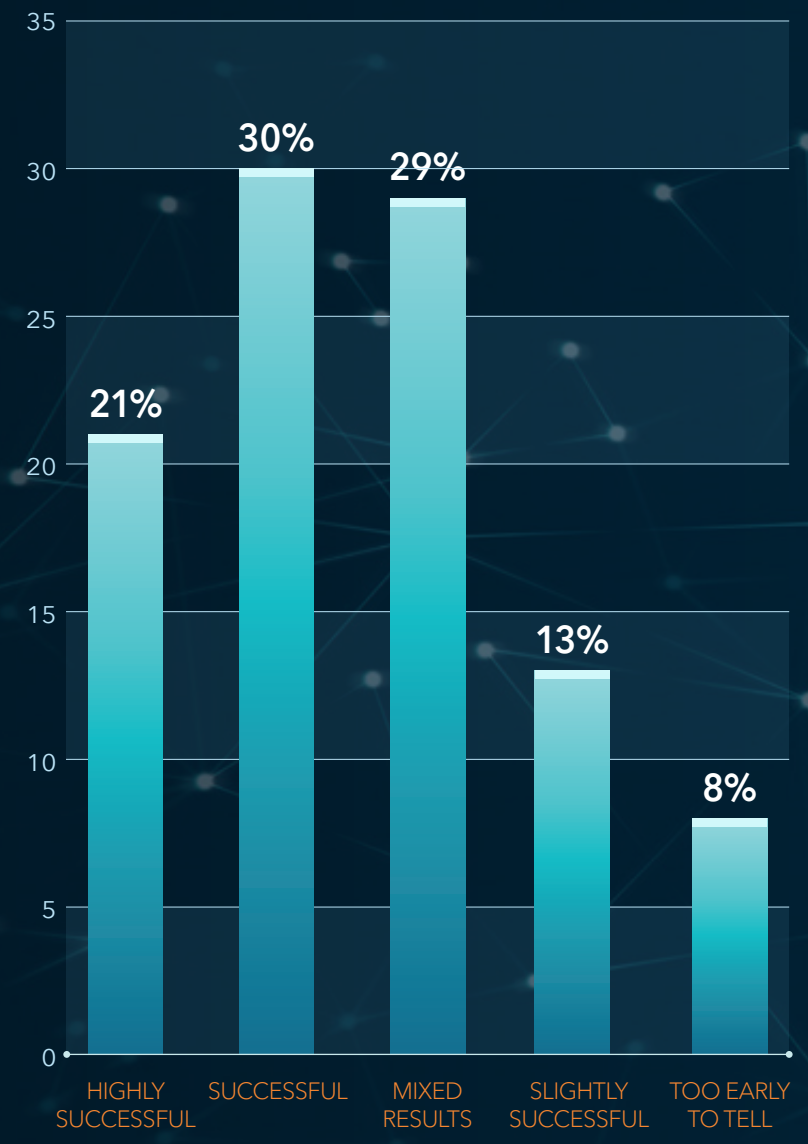
A large percentage of survey respondents report having real success with AI. When looking at only those who have reported having deployed AI, 51 percent say the impact of deployment of AI-based technologies on their operations has been"successful" or "highly successful."

Survey data shows that C-level executives seem less likely to report success than their non-C-suite counterparts – 45 percent of those in the C-suite say their AI efforts have been "successful" or "highly successful," with 59 percent of non-C-level executives reporting the same. For some, the scale of their efforts is likely to influence their reported success. Regardless, these are encouraging results for a promising technology that is still widely considered to be in its early stages.

"It's encouraging to see this level of success being reported by those who are actually using AI," says Melvin Greer, Chief Data Scientist Americas at Intel Corporation. "And if we want this trajectory to continue, we have to take steps to make sure users feel that they can trust AI. In the early stages of the adoption of advanced technologies, we tend to see that people are very trusting – but when that trust is broken, it can set back adoption significantly. We can build trust through improved data literacy, greater transparency, and a sustained focus on the ethics of AI."

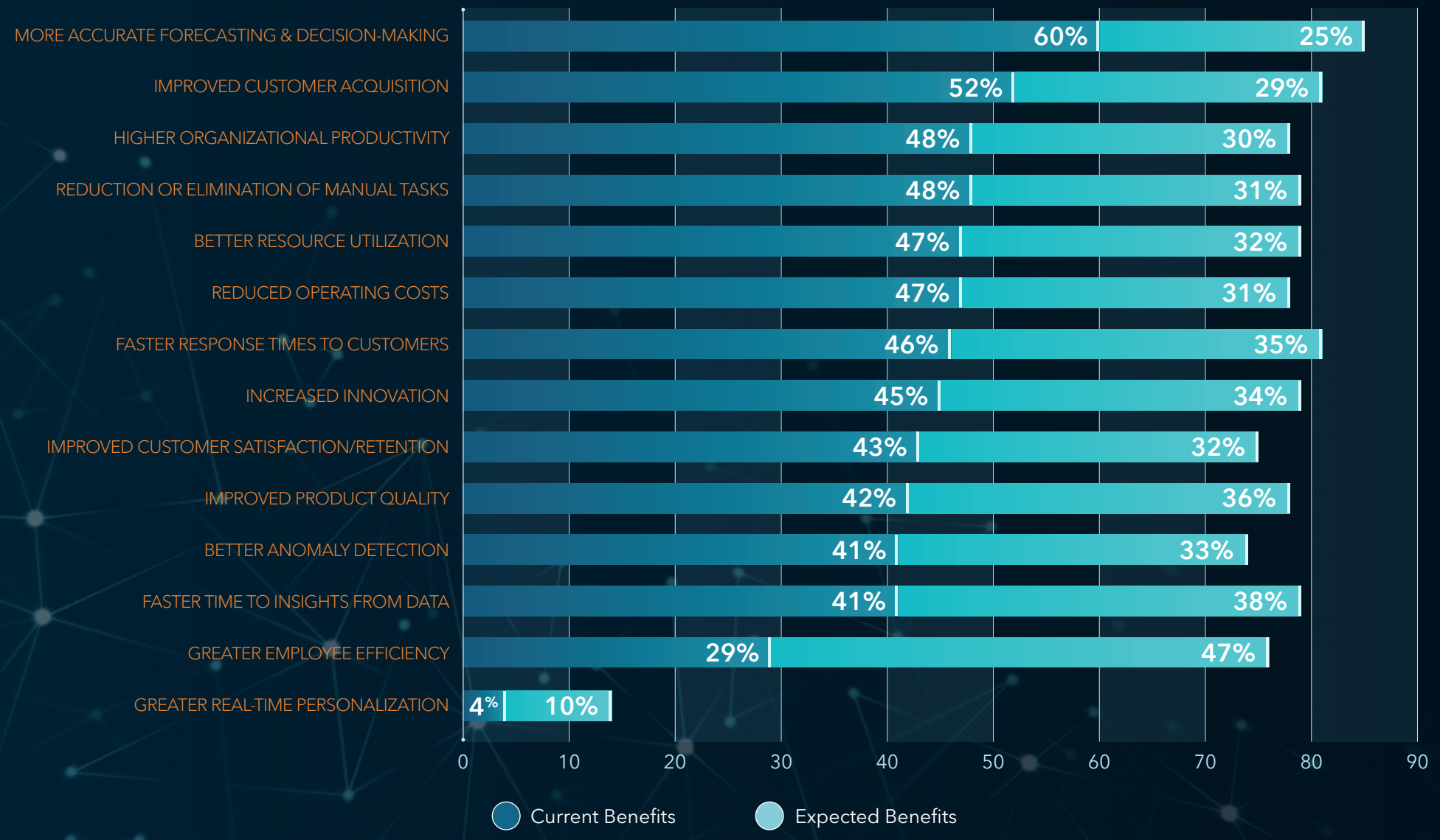
As we've seen with many other leaps in technology over the years, greater familiarity is likely to lead to greater trust. "Think about your first ride in a car sharing service, or the first time you used online banking," says Oliver Schabenberger, Chief Operating Officer and Chief Technology Officer for SAS. "In a sense, those represented a leap of faith in newer technologies. That is where we are with AI right now. But even for many sophisticated users, AI still is a black box – they put data in, they get an output, and they do not understand the connections between the inputs and the outputs of AI systems. That is a fundamental challenge that has implications on everything from regulatory compliance to the customer experience – it even affects how we respond to examining biases in our models. Organizations that have adopted AI can illuminate the black box by observing how the model responds to variations in the inputs, and adjusting accordingly."

Rate the impact of deployment of AI-based technologies on your operations



WHAT ARE THE BENEFITS?

What benefits are you seeing, or do you expect to see, as a result of using AI technologies in your organization?



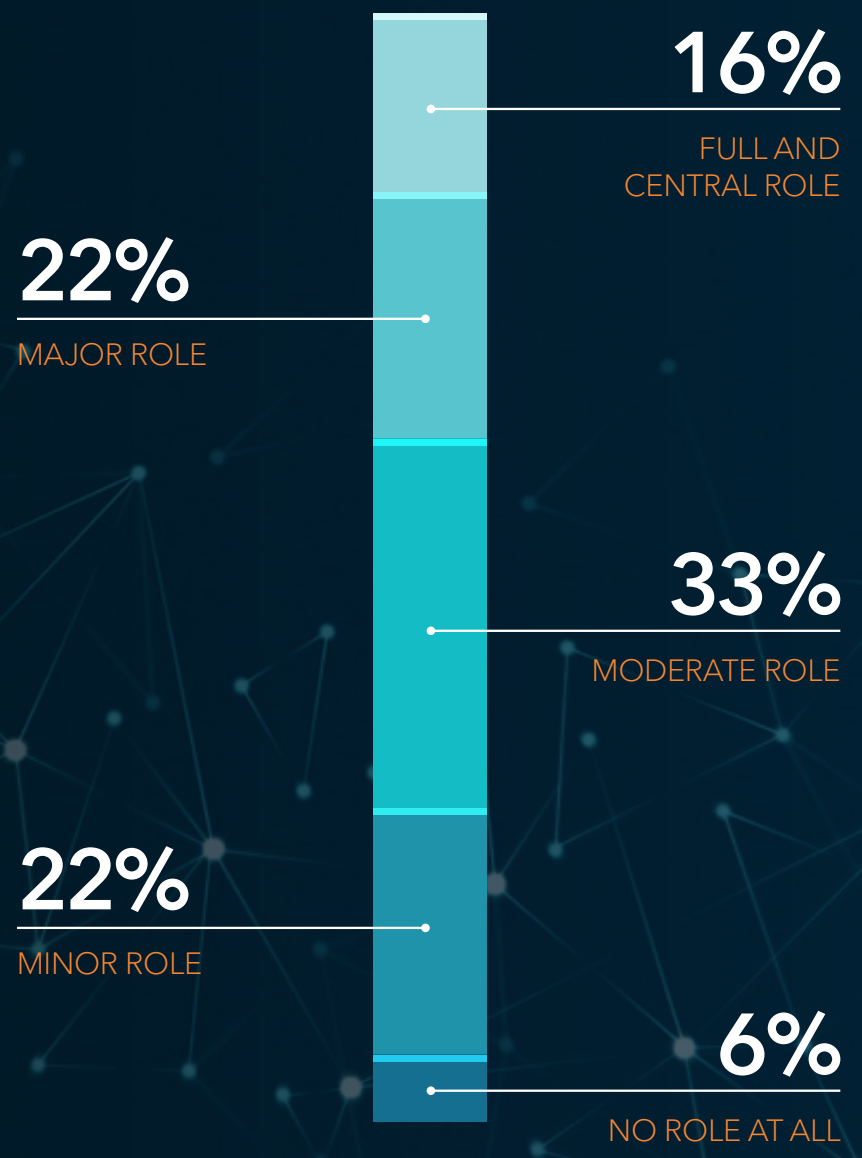
THOSE WHO HAVE SUCCESSFULLY DEPLOYED AI SEE A STRONG CONNECTION BETWEEN AI AND ANALYTICS

When we asked "To what extent do you expect to see analytics having a role in your organization's artificial intelligence?", we expected respondents to indicate a strong connection between the two.

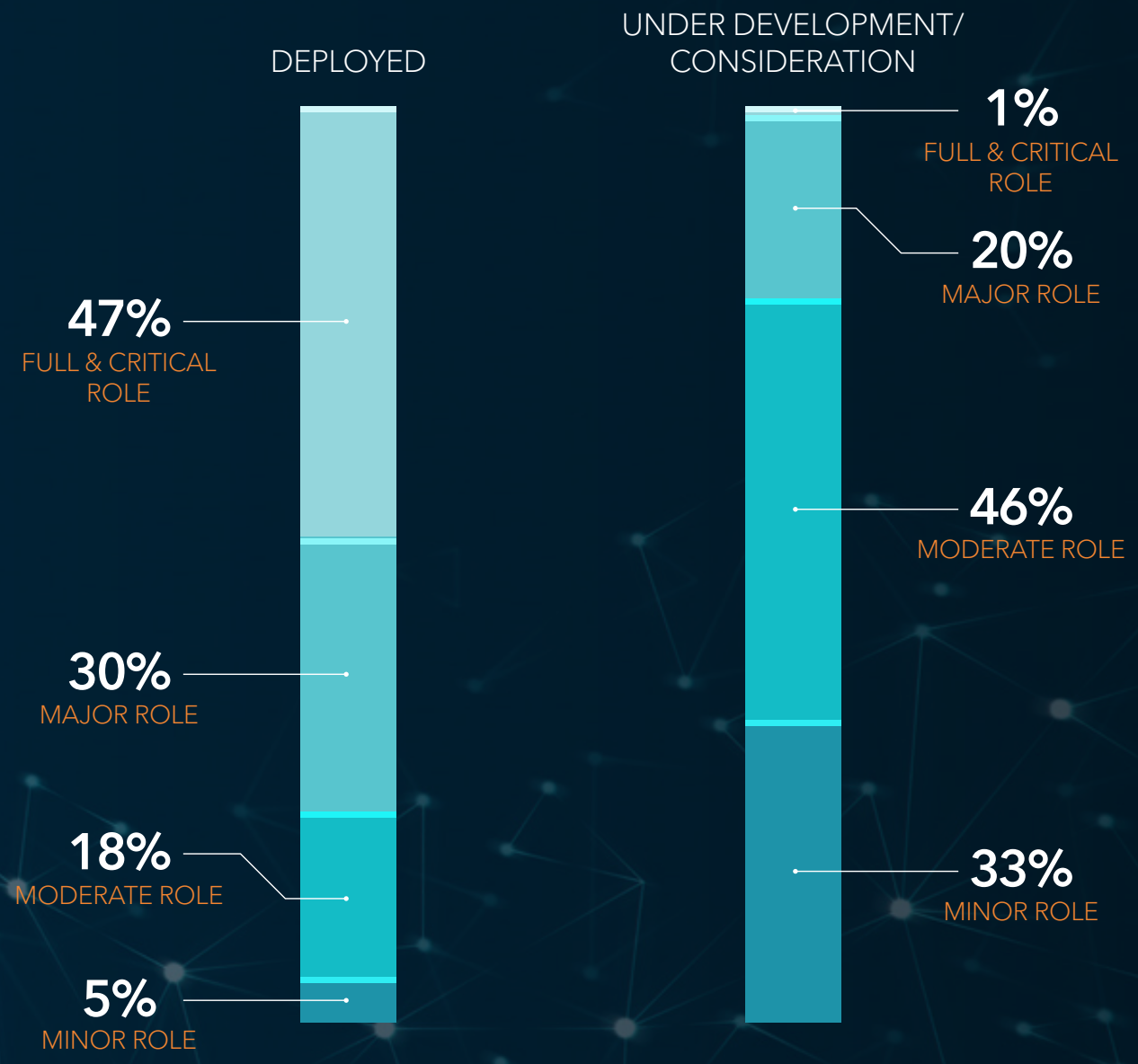
Many did, but there was more variation in the responses than we would have guessed – 61 percent indicated that they expect to see analytics having only a "minor" role, "moderate" role, or "no role at all" in their organization's artificial intelligence. Meanwhile, most AI leaders view the two as being inextricable from one another. Among survey respondents, 79 percent of companies that report having real success in deploying AI-based technologies also say analytics are expected to have at least a "major" role in AI. Only 14 percent of those who have not found real success say the same.

Overall, those who have deployed AI are far more likely to say that analytics will play a "full and central role" in their AI plans – nearly half. Those who are merely considering AI, or whose AI capabilities are still under development, don't see the connection nearly as clearly; roughly a third say analytics will play a "minor" role in AI – or no role at all.

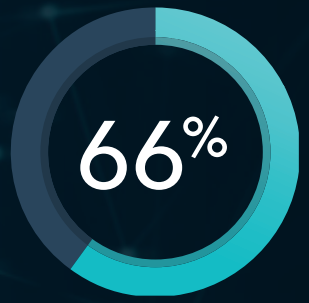
To what extent do you expect to see analytics having a role in your organization's artificial intelligence?



To what extent do you expect to see analytics having a role in your organization's artificial intelligence, based on whether you have deployed or considering deploying AI?



It seems clear that the more experienced you are in AI, the more likely you are to appreciate the central role analytics will play in your efforts. "Among those who have deployed AI, they recognize that success in AI is success in analytics," says Schabenberger. "For them, analytics has achieved a front and center role in AI. In fact, in many ways, AI is analytics." Perhaps that is why 66 percent of respondents agree that "AI will enable us to mine massive volumes of data faster to inform business decisions."



AGREE AI WILL ENABLE US TO MINE MASSIVE AMOUNTS OF DATA FASTER TO INFORM BUSINESS DECISIONS

"In many ways, AI is analytics."

Oliver Schabenberger
Chief Operating Officer & Chief Technology Officer for SAS

FULL DEPLOYMENT LEVELS SIGNAL HEALTHY MOMENTUM

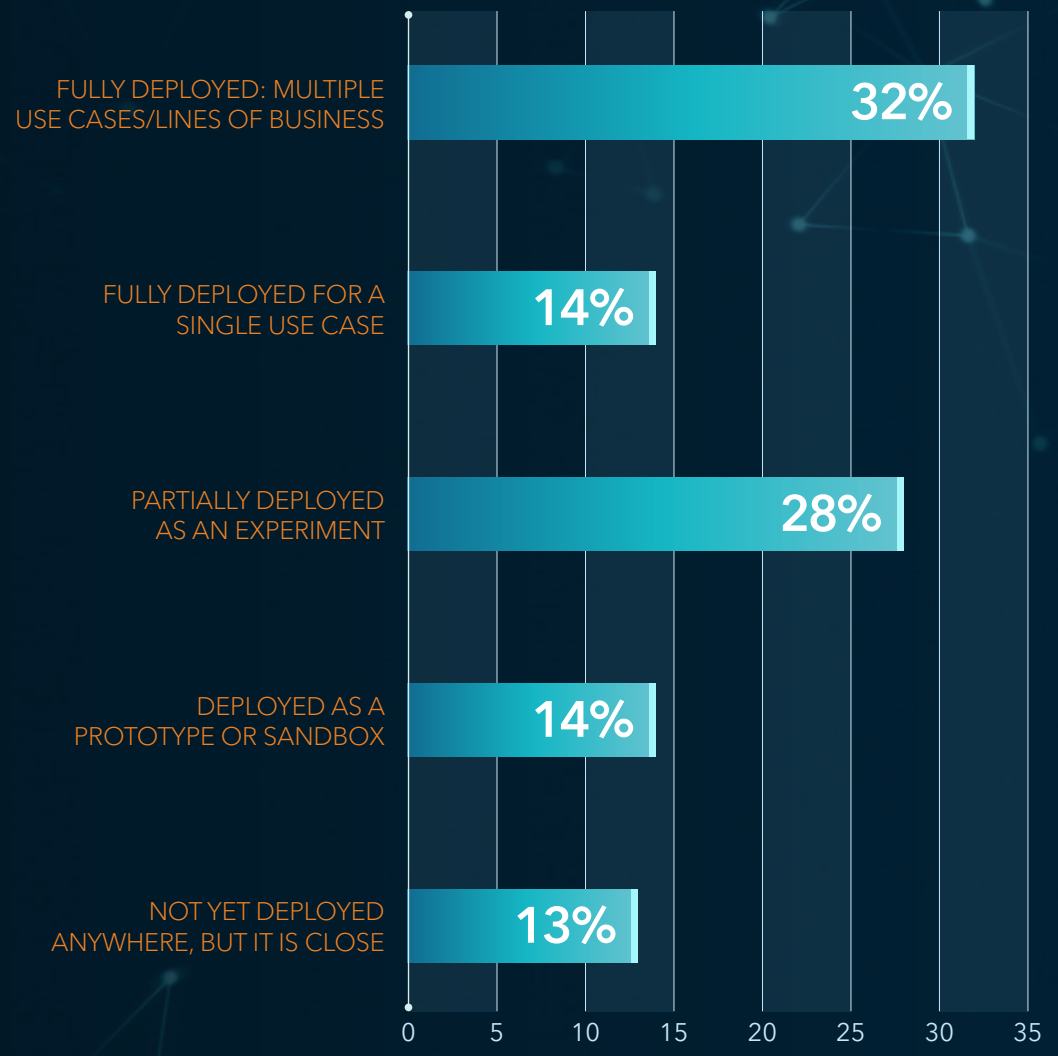
If you, like many observers, assume that AI is still primarily a sandbox exercise, these survey results hold some surprises.

To be sure, some respondents – 28 percent of those who have deployed or are deploying AI indicated that they have AI "partially deployed as an experiment." No surprises there. Interestingly, though, slightly more respondents (32 percent) report that their AI capabilities are "fully deployed, in multiple use cases or lines of business."

What's going on here? There are a number of possible interpretations. Rumman Chowdhury, Accenture's Responsible AI Lead, suggests that it's important to understand adoption rates through the lens of industry. "There are pockets of real progress," she says. "Just look at the financial services industry, where there's widespread use of AI, both internally and customer-facing. In others, not so much. In retail, for example, only 9 percent report that AI is fully deployed. Among those I'm talking to every day, I tend to see much more tentative deployment in the overall marketplace – but it's accompanied by a ton of interest."

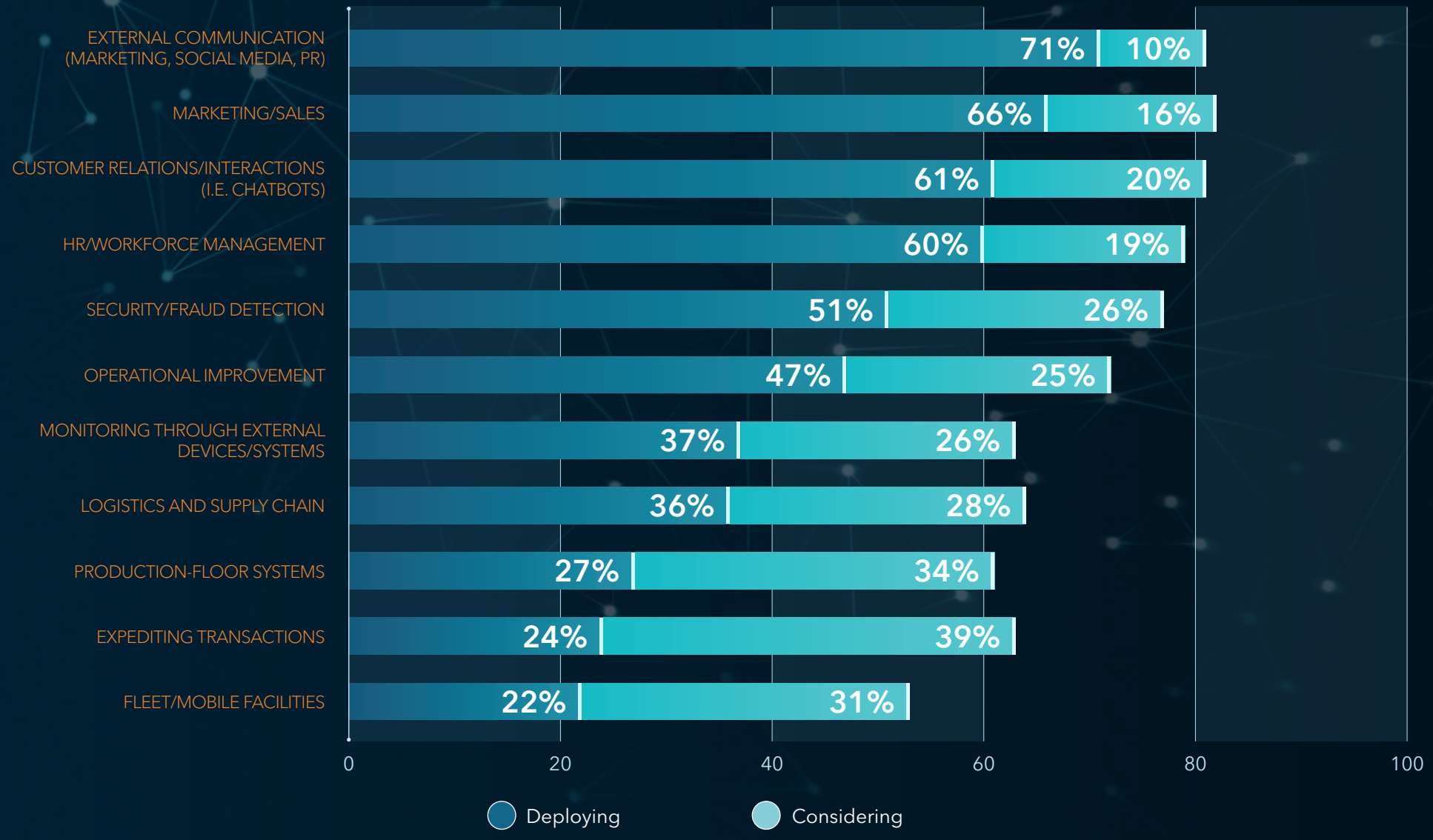
"Generally speaking, the progress of AI is unparalleled," says Intel's Greer. "We've seen some very positive first impressions regarding how AI can actually be used – and we have a long way to go. We've seen more sophistication from our customers, who are looking for us to be much clearer in our explanations of AI, and in illuminating important differences between different types of AI and analytics technologies – from augmented reality and machine learning to deep learning, automated forecasting and many more – so we don't treat AI as the hammer to every nail."

How would you characterize the status of your organization's deployment of AI?



WHERE IS AI BEING APPLIED?

In which of the following functional areas are you deploying or considering deploying AI?



EMERGING BEST PRACTICES

What sets successful AI adopters apart?

In this survey, respondents were asked whether they had successfully deployed AI capabilities in their operations. When the results of a number of survey questions are viewed through this lens, we can identify areas in which successful organizations stand apart from their less successful counterparts – particularly in areas where there are stark divergences. Consider these to be early-phase best practices adopted by those who are finding real success in their AI efforts – a beacon for others at earlier phases of their AI journeys.

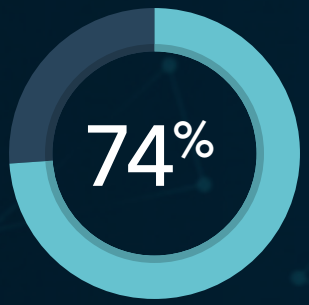
PROCESS MATURITY

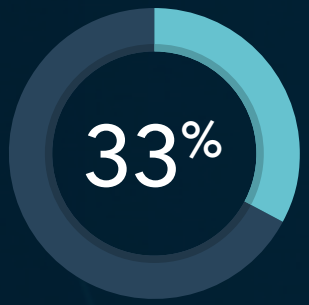
MORE SUCCESSFUL AI DEPLOYMENTS

LESS SUCCESSFUL AI DEPLOYMENTS

Reviews AI output at least weekly

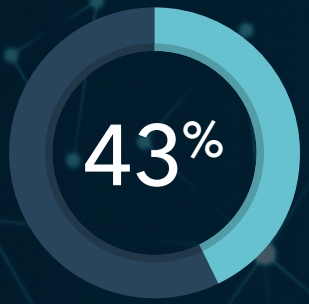
Any complex business processes - especially those with multiple contingencies and potential points of failure – are monitored frequently by successful organizations, and AI is no exception.

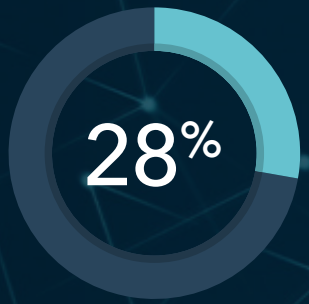




Have processes in place for augmenting or overriding questionable results

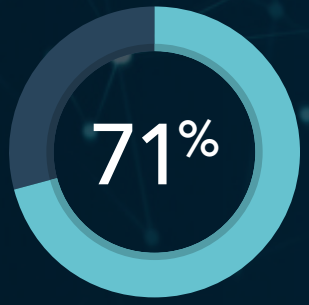
As organizations mature in their AI capabilities, they find that, just as with any other business capability, AI is not infallible. It will never have 100 percent accuracy – and more sophisticated organizations develop processes that account for this reality.





Anticipate more than 25 percent of processes being improved by AI in next three years

The more leaders are exposed to AI capabilities, the more they seem to understand its potential to transform the organization.



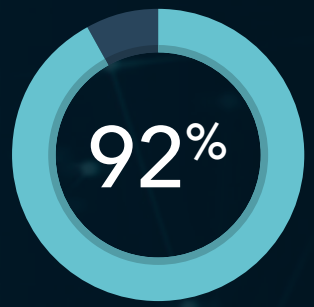
MORE SUCCESSFUL AI DEPLOYMENTS

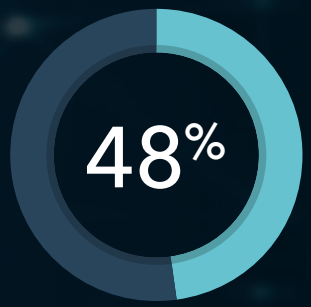
LESS SUCCESSFUL AI DEPLOYMENTS

FOCUSED ON ETHICS

Conduct ethics training for their technologists

Ethics is not a new area of focus for large organizations, so perhaps it's no surprise that these respondents indicated that they are preparing their employees for the ethical deployment of AI. What sets AI apart, however, is the recognition that an artificially intelligent process is one for which the organization has responsibility for the outcomes – in the same way that the organization is responsible for the actions of its employees. Ethical training for technologists signals an understanding of the stakes involved with potentially unethical uses of AI.

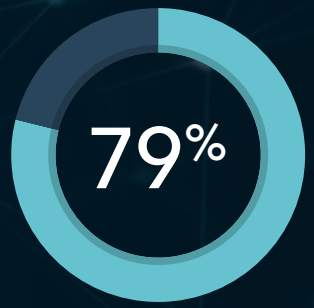


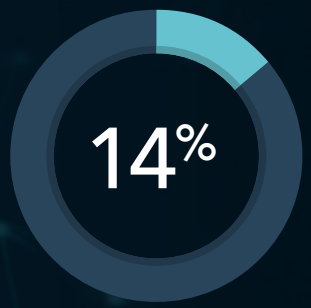


CONNECT ANALYTICS TO AI

See analytics having at least a "major role" in their organizations' AI strategy

Analytics drives the learning and the automation aspects of AI – a connection that may not be as clear among those who have yet to deploy AI successfully, as the responses to this question suggest. Successful AI users show a level of maturity with data-driven processes that would be expected with successful AI deployments.

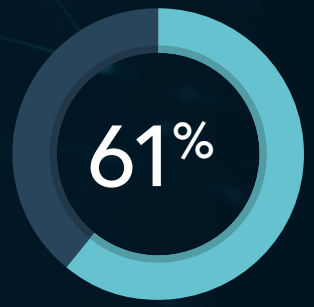


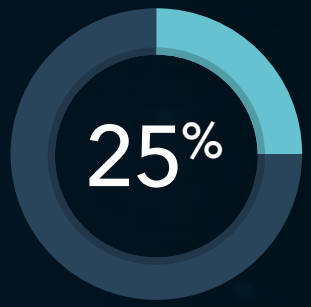


HAVE TRUST IN AI

Completely trust their organization's ability to ethically use AI technologies in the future

When it comes to AI, success breeds confidence – successful organizations are more than twice as likely to trust their ability to ethically use AI technologies in the future.





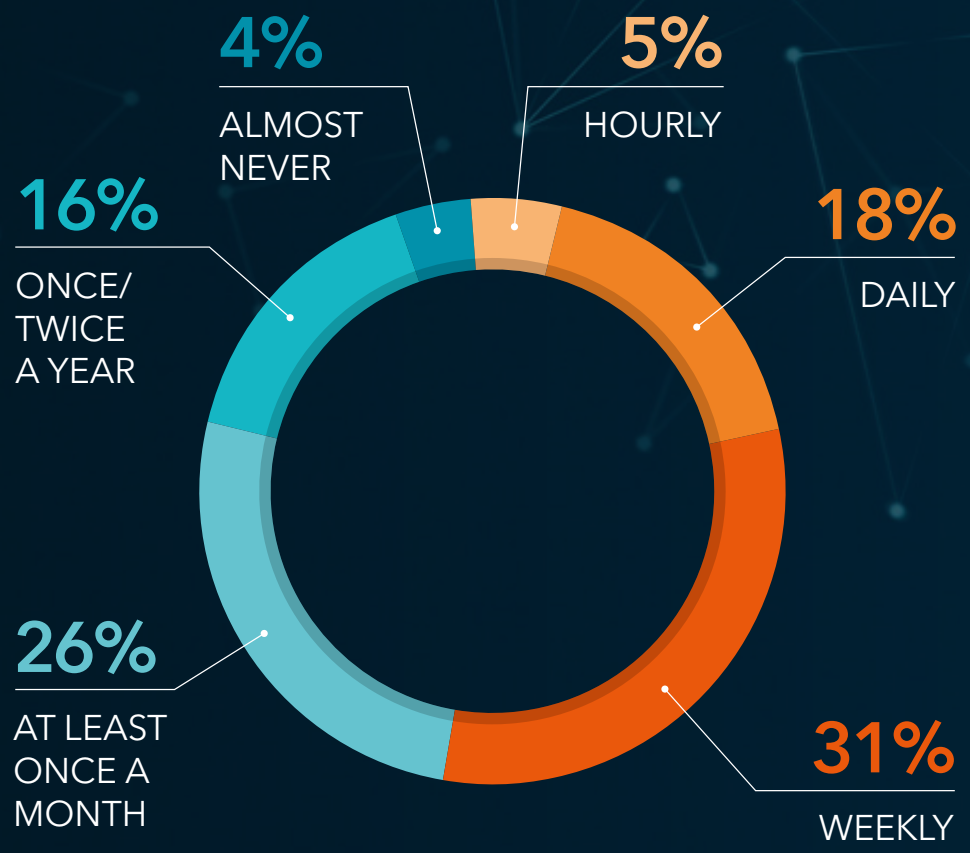
AI OVERSIGHT IS NOT OPTIONAL

Despite widespread messages in popular media that suggest that AI operates independent of human intervention, those responsible for putting AI to work in their organizations across industries recognize that these technologies require rigorous oversight. In fact, nearly a quarter (23 percent) of AI adopters review or evaluate AI outputs at least daily.

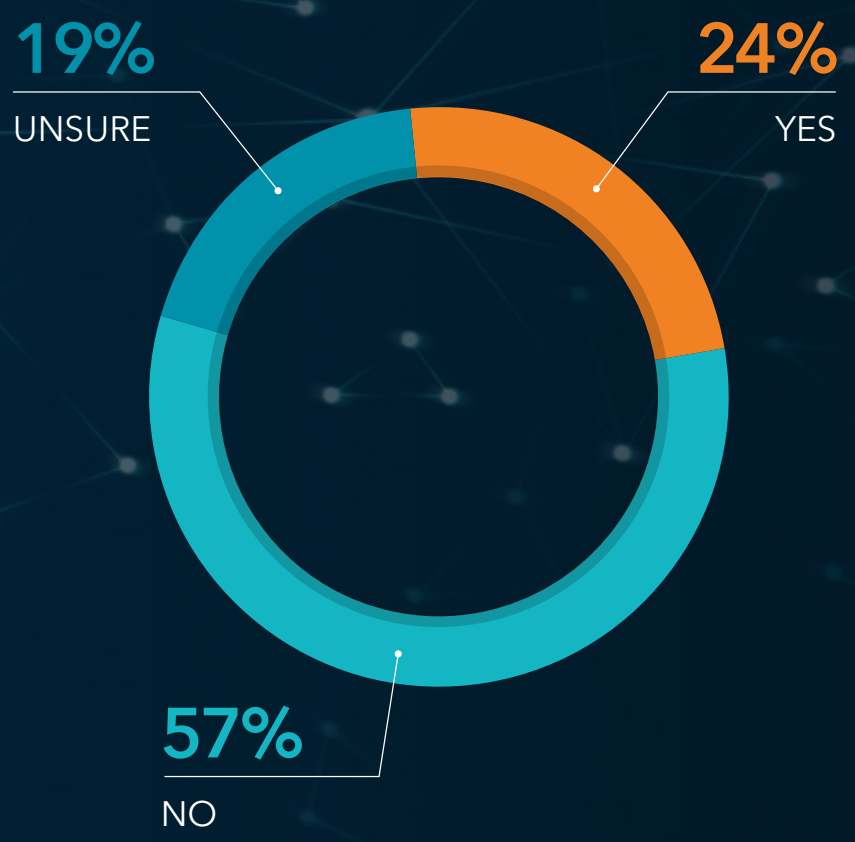
The data also suggests that companies that have been more successful with AI tend to have more rigorous oversight processes in place. For example, 74 percent of successful companies report that they review their AI output at least weekly, compared with 33 percent of those that are less successful. And 43 percent of successful companies have a process in place for augmenting or overriding questionable results, compared with 28 percent of companies that haven't yet found success in their AI initiatives.

Many believe that despite these positive signs, oversight processes have a long way to go before they catch up with advances in AI technology. "Although we are still in the very early phases of AI, the technology is already well ahead of the marketplace when it comes to the processes and procedures organizations have in place to provide oversight," says Oliver Schabenberger. "For example, we would be seeing more widespread use of driverless cars if government oversight and automaker-level governance capabilities were able to keep up with the technology itself. The technical capabilities are ahead of our ability to cope with the technology."

How often are outputs from AI reviewed or evaluated?



Have you ever had to rethink, redesign or override an entire AI-based system due to questionable or unsatisfactory results?



Some see evidence that the swift progress of AI is pushing oversight further up the agenda for many organizations. "AI is becoming a catalyst for stronger governance practices in many companies," says Kimberly Nevala, Director of Business Strategies for SAS. "If AI is directly influencing your customers or automating critical operational decisions, you can't take it for granted that the data will be just right, the models will just work and resultant outcomes will meet expectations. As organizations advance down the AI path and see these very real impacts – both positive and negative – they are moving quickly to put that next level of oversight in place."

Consider the survey responses to the question of "who conducts reviews or evaluations of AI outputs?" C-level executives such as the chief digital officer, chief data officer or chief analytics officer top the list of answers. At first glance, this may seem encouraging – after all, executive-level oversight would seem to be a positive reflection of the seriousness with which AI oversight is viewed at these organizations. But should these high-level executives be the ones to review AI systems outputs? "These executives have big responsibilities," says Accenture's Chowdhury. "We need to make sure they are providing oversight of AI at the systems level, and that their oversight is matched by equally rigorous oversight from managers and others at more tactical levels – multiple layers of oversight."

For Intel's Greer, the response to a separate question sheds light on the need for a more sophisticated approach to AI oversight. "The survey asked if respondents had to rethink, redesign or override an entire AI-based system due to questionable or unsatisfactory results," says Greer. "Fifty-seven percent of respondents indicated that they hadn't, which would imply that AI systems have been more successfully developed and deployed than any other systems, technology or otherwise, that have been deployed. Like any other systems, AI capabilities aren't perfect, and particularly at this stage in our evolution they will require much trial and error. I think that if oversight processes were working at a high level, we wouldn't see so many of these executives saying everything is working perfectly."

ETHICAL USE OF AI IS TOP OF MIND

AI adopters indicated relatively strong ethical processes in place today, with 63 percent affirming that they "have an ethics committee that reviews the use of AI," and 70 percent indicating they "conduct ethics training for their technologists."

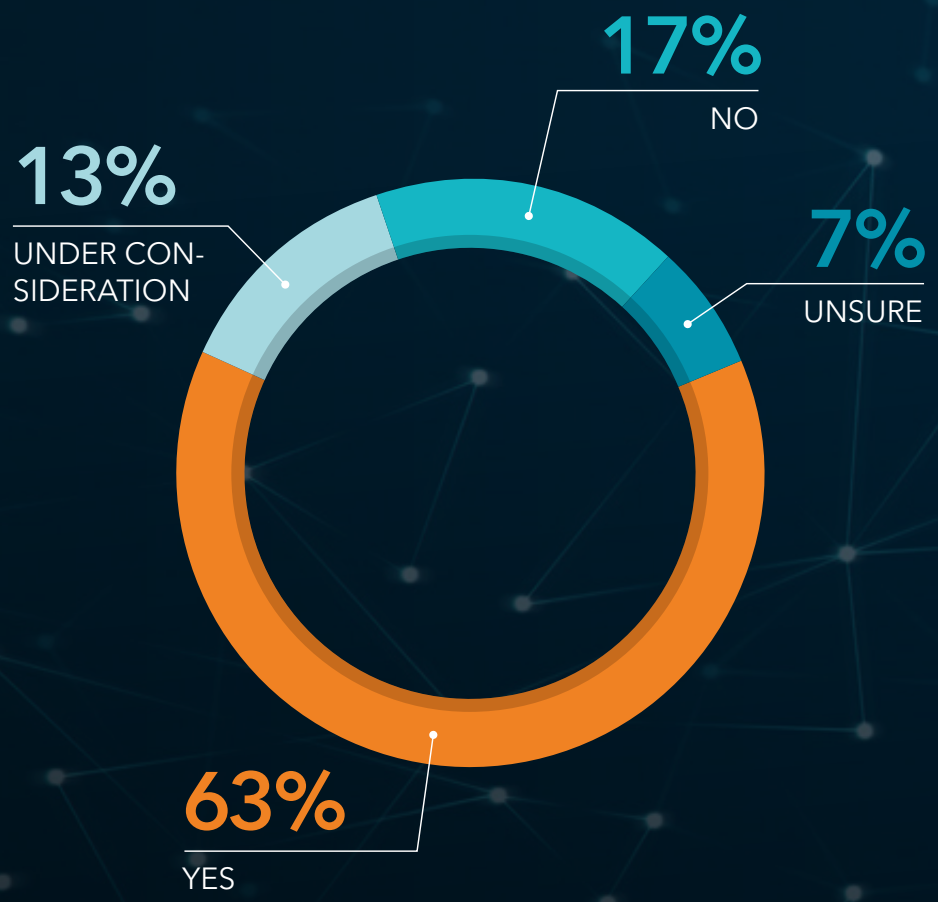
Among companies that report that they have achieved real success from their deployment of AI, 92 percent say they conduct ethics training for their technologists, compared with 48 percent of those that have not achieved real success yet from deploying AI.

Perhaps this level of interest in addressing the ethics of AI should come as no surprise. After all, from ***The Jetsons*** to ***The Terminator***, ethical issues surrounding AI have long captured the popular imagination, as expressed in countless books, films, television programs and more – long before these technologies were capable of matching the human imagination.

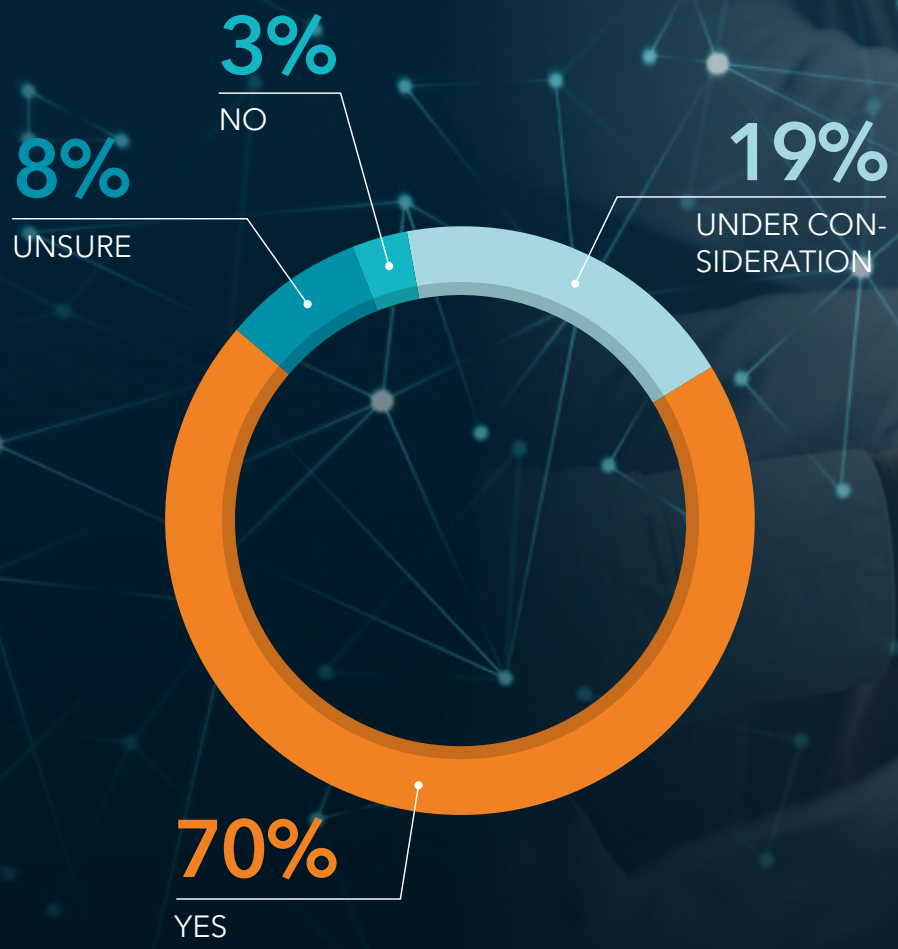
But today, as AI capabilities race ahead, government leaders, business leaders, academics and many others are more interested in the ethics of AI as a practical matter than ever. "If I had a nickel for every time I was asked about the negative end state of AI, I would be rich today," says Greer. "But many of those asking me about AI are unaware that these technologies are already shaping their lives in ways that are all but invisible every day. AI has a real impact on our lives already, highlighting the importance of having a strong ethical framework surrounding its use. That's where groups that are pressing on ethical issues can play an important role as we move ahead."

"These are positive steps, but nobody really has the answer to ethics and AI yet," says Accenture's Chowdhury, a widely recognized leader on the topic of responsible AI. "For example, I've seen many 'ethics codes' focused on AI, and while many of them are very good, they're more directional than prescriptive – more in the spirit of the Hippocratic Oath that doctors are expected to live by. Meanwhile, many data scientists are hungry for something more specific and technical. That's what we need to be moving toward."

Do you have an ethics committee that reviews the use of AI?



Do you conduct ethics training for your technologists?



“ Every technology in history, starting with fire, can be used for good or bad. I think it would be ethically irresponsible not to use AI to improve the human condition. Can we cure more diseases? Find new ways to reduce pollution? Live longer? We owe it to the world to use AI to find out. ”

Keith Collins
Chief Information Officer, SAS

WHILE EMPLOYERS DON'T ANTICIPATE A BIG IMPACT ON JOBS FROM AI, EMPLOYEES MAY BE NERVOUS

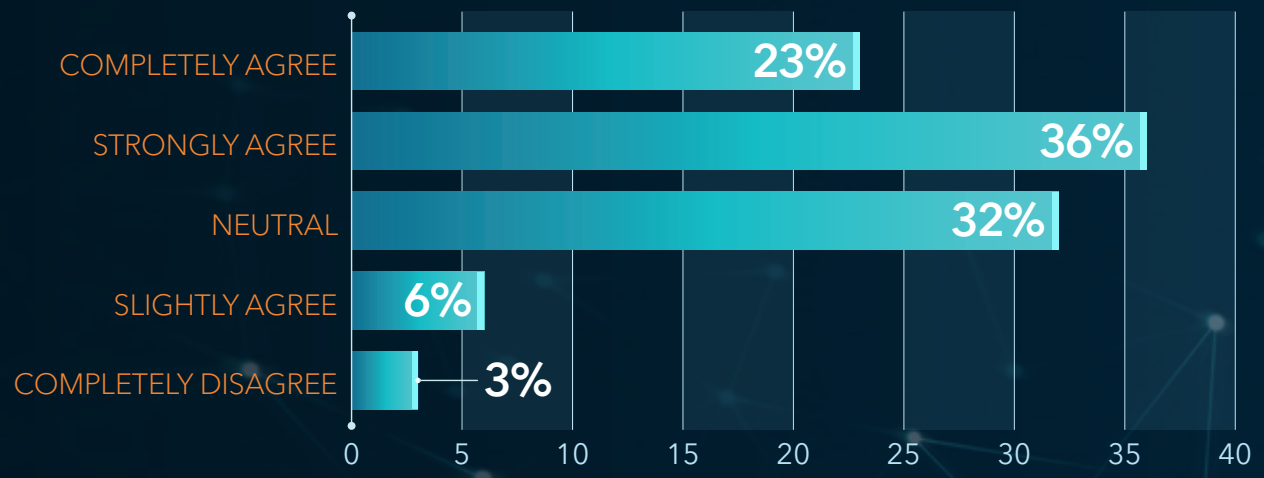
While stories in the popular and business media continue to anticipate massive job losses coming as a result of advances in AI, technology and business leaders on the front lines of AI routinely report a less dramatic path forward, in which AI augments human activities on the job but doesn't replace humans altogether.

"Think about aircraft," says SAS' Schabenberger. "Today pilots operate machines that fly autonomously in autopilot mode. But nobody is talking about getting rid of pilots – they play a vital role in getting you safely to your destination."

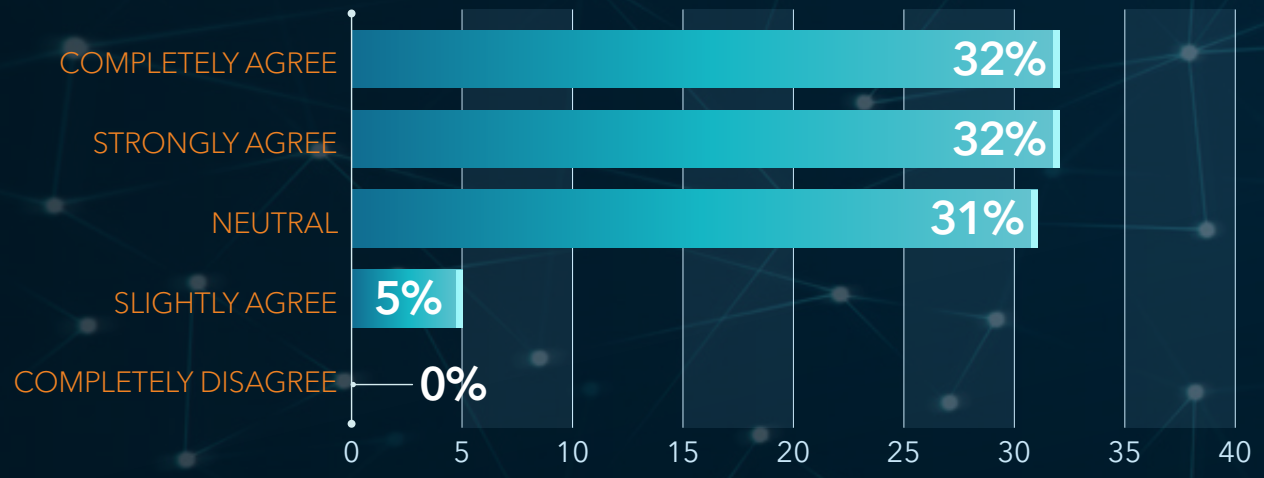
The results of our survey tell a similar story – with a twist. For example, nearly 60 percent of respondents either "strongly" or "completely" agreed with the statement "we do not anticipate any impact on jobs due to AI's implementation."

It comes as no surprise, then, that similar numbers indicated that they are "already

We do not anticipate any impact on jobs due to AI's implementation.



We are already seeing job roles being elevated as a result of AI (i.e. it will allow for employees to focus on more strategic rather than operative tasks).



seeing job roles being elevated as a result of AI (i.e. it will allow for employees to focus on more strategic rather than operative tasks) – 64 percent either "strongly" or "completely" agreed with this statement. They don't see jobs being replaced by AI – they see them being elevated.

"We believe AI will transform the relationship between people and technology," says Athina Kanioura, Chief Data Scientist for Accenture Applied Intelligence. "The real excitement lies with new jobs on the horizon, such as 'explainers' who will be responsible for making AI explainable, or 'trainers' who will have responsibility for directing the development of AI systems so that they perform at a higher level."

Given the largely positive outlook from these leaders regarding AI's impact on jobs, other survey findings take on more importance: Nearly 20 percent identify "resistance from employees due to concerns about job security" as a challenge to their AI efforts. Plus, 57 percent agree or strongly agree with the statement, "We are concerned about the impact of AI on employee relations (e.g. employees might feel threatened or overstrained)." So while business and technology leaders anticipate little threat to jobs from AI, many believe that their employees are worried – a concern that can be addressed in part by more education about AI and its real impact on the workplace.

For some observers, these results speak to the need for more education in and about AI – fast. "We really need to be focused on opportunities for job creation, because that's a bigger part of the AI story," says Intel's Melvin Greer. Then we can move on to practical considerations, such as the education, training and skills that will be required for people to fill those new jobs."

> "We believe AI will transform the relationship between people and technology."
>
> **Athina Kanioura**
> *Chief Data Scientist for Accenture Applied Intelligence*

LOOKING AHEAD

Taken together, these findings reveal significant momentum behind AI, leaving little doubt that it is poised to emerge as a transformative force in business, government and society.

The real question is how we manage this progress – personally, culturally, societally, and within businesses, governments and other organizations. History is replete with examples of technologies that bolted in front of the structures and processes on which we typically rely to get more value from them while keeping risk in check. As a result, leaders struggled to play catch-up, as these technologies continued their forward march.

"GUIDERAILS" FOR SUCCESS

These survey results show a technology that is still emergent – rapidly being adopted and applied, and still on a journey to achieve its full impact. There is still an opening in which to build the "guiderails" that ultimately will be needed to successfully manage its powerful potential. Fortunately, there are also clear signals in this data that such guiderails are already being constructed among the emerging "best practices" spotlighted previously in this report. With successful AI adopters addressing important areas such as oversight, ethics and processes, there's also a sense that more work remains in these areas, and there may be others yet to be identified.

COMBINING COMPETENCIES

As AI matures as a core enabling technology, we anticipate that some of the most exciting developments will occur at the intersection of various AI and other leading-edge technological advancements. For example, what happens when you combine AI and the Internet of Things, or automation and mobility? Expect to see breakout developments from such combinations, which may signal growing maturity in the AI space and which will foster new opportunities and new sets of best practices to master.

THE TRUST FACTOR

Do we trust AI? Overall, these results suggest that at minimum, business and government leaders do. But many are rightfully concerned about their employees' lack of trust in AI, manifested in their concerns about its impact on their jobs. And there are even signs that some of these leaders harbor pockets of doubt about the extent to which they can trust AI outputs. Trust will play perhaps a larger role in the evolution of AI than it has for any technology in recent memory. That's because of its self-perpetuating automation – when it is working as designed, AI is using data to "learn" and evolve on its own, often leading to outputs that few could have anticipated. It's far easier for humans to trust technologies over which they exercise full, constant control. AI, by contrast, demands a leap of faith. Once we learn how to balance our desire to control AI with the flexibility it requires to operate at its highest level, AI will engender real trust. Getting there will require education, transparency, clear ethical guidelines – and patience.

> “AI and the Internet of Things are inextricably linked. Because we shouldn’t be connecting things just because we can – we should be extracting business intelligence from them. Given the immense scale we anticipate for the IoT, AI will be instrumental in allowing us to tap those insights.”
>
> **Rose Schooler**
> *VP, Data Center Group, Sales, Intel*

For organizations that may have been sitting on the sidelines of AI, waiting to see whether it would fulfill its promise or merely flame out as yet another overhyped technology development, this survey of more than 300 leaders around the world, across industries, offers strong evidence that it is here to stay. In fact, these leaders made an even stronger case for AI than we had anticipated. They are deploying it in more ways, across more parts of their organizations, than ever before, and are supporting these capabilities with increasingly mature processes and infrastructures. “As with any new technology that’s quickly gaining traction, there will be challenges to overcome,” says Ross Gagnon, Research Director at Forbes Insights. “But the opportunities AI presents are seemingly endless, from operational efficiencies to increased productivity and revenue. The question executives should be asking themselves is not whether to deploy AI, but how quickly?” For those who are taking a wait-and-see approach to AI, it is time to move more aggressively – or be left behind.

ABOUT THIS SURVEY

A total of 305 respondents solicited by Forbes Insights completed this survey in July 2018.

WHO WE SURVEYED

28%
CHIEF INFORMATION OFFICER (CIO)

21%
CHIEF TECHNOLOGY OFFICER (CTO)

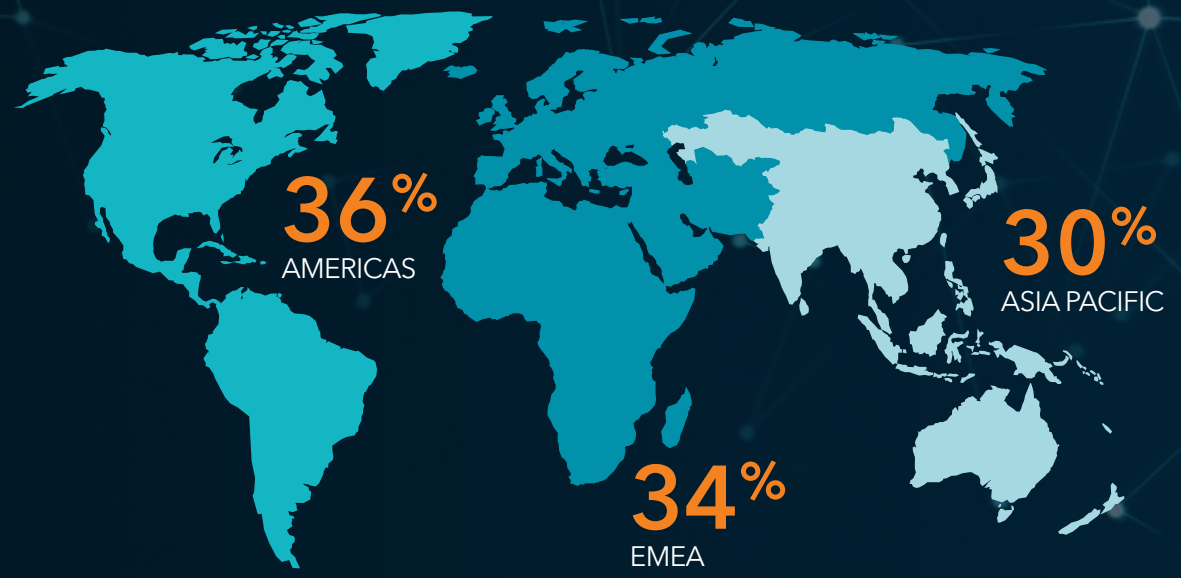
21%
CHIEF ANALYTICS OFFICER/EVP/SVP/VP, DATA & ANALYTICS/DIRECTOR, BI/HEAD OF ANALYTICS

16%
CHIEF DATA OFFICER/DIRECTOR, DATA & ANALYTICS

9%
EVP/SVP/VP, DATA SCIENCE/ DIRECTOR, DATA SCIENCE

5%
OTHER

REGION



KEY INDUSTRY SECTORS

17% FINANCIAL SERVICES

16% MANUFAC-TURING

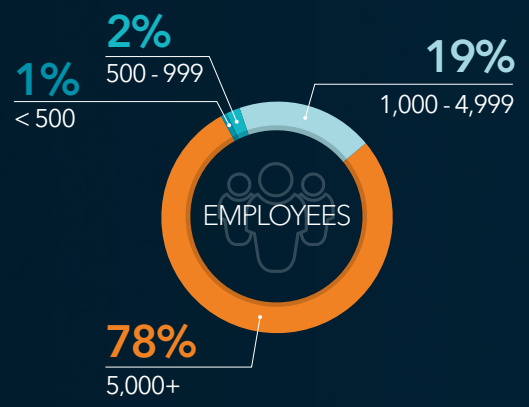
11% RETAIL

10% GOVERNMENT

7% COMMUNI-CATIONS

7% OIL, GAS & ENERGY

SIZE OF ORGANIZATIONS



ABOUT SAS

SAS is the leader in analytics. Through innovative software and services, SAS empowers and inspires customers around the world to transform data into intelligence. SAS provides organizations with a practical approach for incorporating AI and analytics capabilities into organizational processes, resulting in superior customer experiences, operational agility, leaner processes and smarter use of assets. As the global leader in enterprise analytics, SAS is a proven partner for digital transformation that drives long-term growth and profitability. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW.®

ABOUT ACCENTURE APPLIED INTELLIGENCE

Accenture Applied Intelligence, part of **Accenture Digital**, applies artificial intelligence and human ingenuity at the core of business to help clients solve their most complex business problems. By deploying AI responsibly and combining it with our deep industry and analytics expertise, we enable the digital transformation of organizations, extend human capabilities, and make intelligent products and services a reality. Follow **@AccentureAI** and visit **accenture.com/appliedintelligence**.

ABOUT INTEL

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