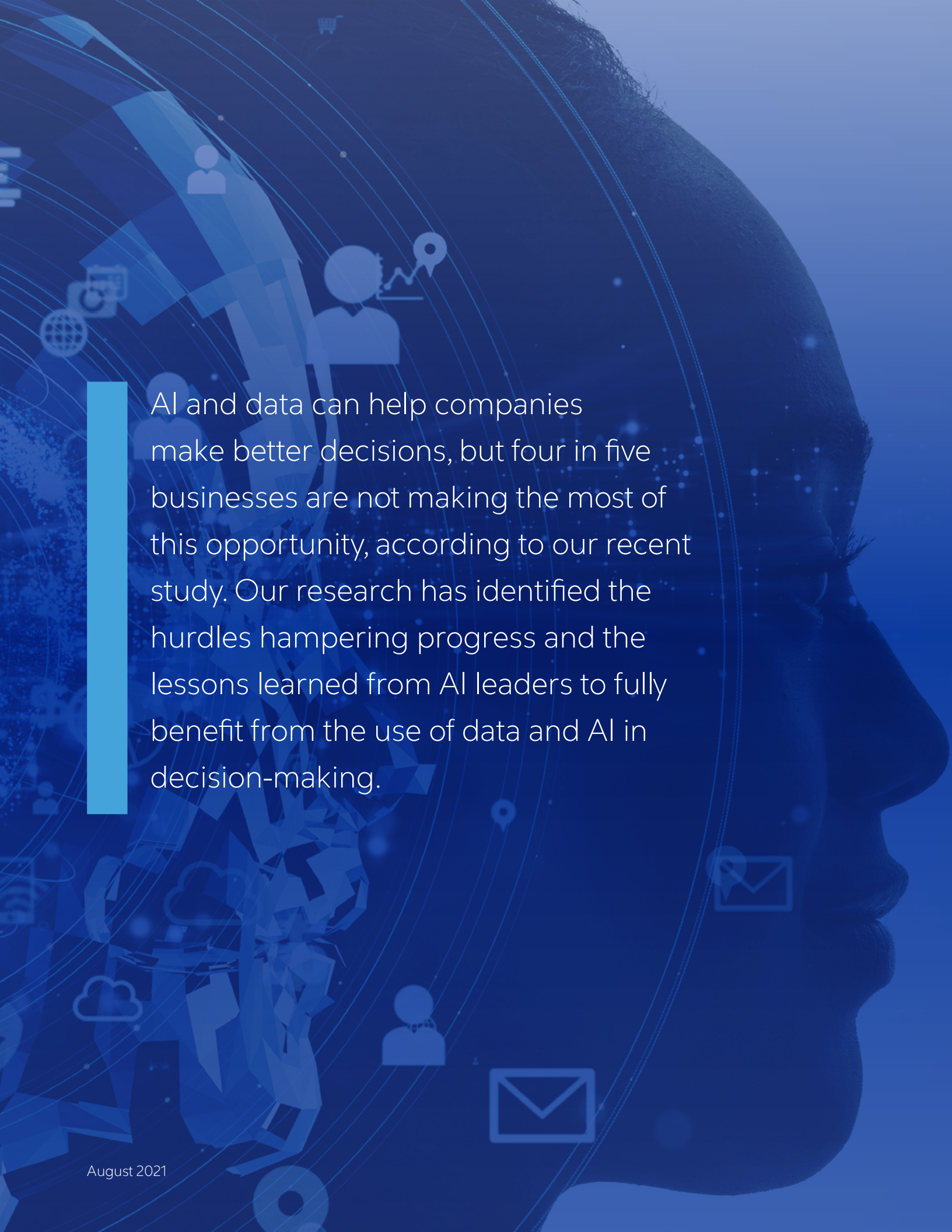


## Data modernization: breaking the AI vicious cycle for superior decision-making

Our recent research reveals what separates leaders from laggards when it comes to using data and artificial intelligence to make better decisions.





AI and data can help companies make better decisions, but four in five businesses are not making the most of this opportunity, according to our recent study. Our research has identified the hurdles hampering progress and the lessons learned from AI leaders to fully benefit from the use of data and AI in decision-making.

# Executive Summary

Amid the increasingly complex business, economic and social environment of the post-pandemic world, companies need even greater intelligence to make fast, optimal decisions. For many companies, that means finding the relevant data — whether on-site or through a third-party — amid the fast-growing data volumes generated by our hyper-digitized economy and using it as a fuel for artificial intelligence (AI), a key ally in sound decision-making.

Most businesses already understand this. We recently partnered with ESI ThoughtLab to survey 1,000 senior executives from companies of different sizes across a range of industries in the US. Our research reveals that the majority of respondents (57%) believe the main benefits of AI are improved planning and decision-making, above even AI's ability to support faster innovation and higher profitability.

According to more than half of respondents, AI is an invaluable tool for interpreting unstructured data (68%) predicting outcomes (62%), gathering real-time intelligence (57%), problem-solving (56%) and gaining new insights (56%).

However, not all companies have embraced data and AI to the same degree or are reaping its decision-making benefits equally. To better understand what separates AI leaders from those lower on the maturity curve, we developed a framework to gauge how important AI is for respondents' business processes and the number of areas in which they are adopting these technologies (see methodology, page 20).

Through this analysis, we found that while 20% of US companies are powering ahead in the use of AI for decision-making (we call this group AI leaders), the remaining 80% are struggling with a vicious cycle that holds them back. In this cycle, the self-reinforcing interplay of three factors is impeding progress: failure to appreciate AI's full decision-making potential, low levels of trust in AI and limited adoption of these technologies.

In other words, smart business processes are as important as technology expertise for companies to benefit from successful adoption of data and AI-powered decision-making.

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## Our key findings include:

- I The use of and trust in AI go hand-in-hand.** The more that companies use AI in decision-making, the more confident they become in these technologies' ability to deliver. In our study, 51% of AI leaders trust the decisions made by AI most of the time, far more than the 31% of nonleaders who feel the same.
- I The vicious cycle can be transformed into a virtuous one.** By looking at the differences between AI leaders and laggards, it becomes clearer what actions businesses can take to break the vicious cycle: promoting widespread understanding of and trust in the use of data and AI in decision-making, going beyond low-hanging fruit to realize the substantial advantages of AI, and putting humans at the center of AI decision-making by using technology to empower, rather than replace, them.
- I Without decisive action, the gap between leaders and laggards will widen.** This is a dangerous situation for businesses caught in the vicious circle. The post-pandemic marketplace won't be kind to organizations that fail to sharpen and accelerate their decision-making with AI. They will be easily outcompeted by those whose choices, big and small, reflect a deep understanding of the dynamics of a fast-changing world. Moreover, the more a company understands, trusts and uses data and AI to make decisions, the more it implements decisions made with AI support -- which, in turn, further boosts understanding and trust. Over time, this will lead to an ever-widening gap between leaders and laggards.
- I Even leaders must work continuously to stay on top of their game.** With the continuous evolution of AI and the ongoing work needed to embed AI decision-making in the company's DNA, a one-off set of initiatives, even if brilliantly planned and implemented, isn't sufficient for sustaining the benefits of this approach in the long-term. Through institutionalized processes, businesses can keep abreast of the latest developments in this field, educate workers on how to collaborate with AI systems and establish AI decision-making as a high priority for the company.

The findings in this report demonstrate that, when it comes to decision-making, many businesses have a long way to go to make the most of the AI opportunity. Fortunately, there is much that can be learned from the trailblazers' experience. The time to act is now.



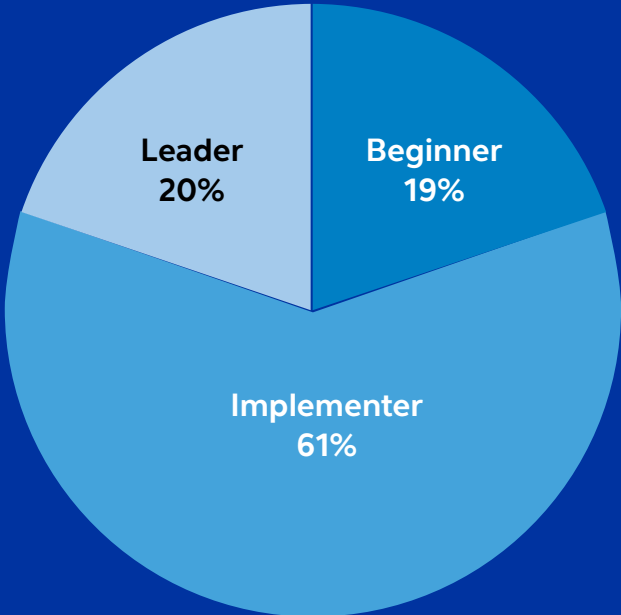
# UNDERSTANDING AI MATURITY

Most US businesses are far from being able to make AI-based decisions, let alone trust them. According to our maturity framework, only 20% of respondents are AI leaders, and 61% have made some progress in this area but are not yet mature in it — who we call “implementers.” The remaining 19% (“beginners”) are at the very early stages of both understanding the importance of AI and deploying it (see Figure 1).

Businesses’ AI maturity levels are strongly correlated with how they rate the effectiveness of their AI investment. Overall, 81% of leaders, but only 20% of beginners and implementers, believe AI investments are highly effective in driving performance. This feeds into future expectations, with 78% of leaders anticipating AI will have a substantially positive impact on their companies by 2023, a view shared by just 32% of the remaining companies.

### Few at the top of the AI maturity curve

The maturity framework was based on two criteria: importance of AI for business processes and the number of areas of AI deployment. For full framework details, see methodology, page 20.



Response base: 1,000 US businesses  
Source: Cognizant Center for the Future of Work  
Figure 1

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## Advancing maturity by breaking the vicious cycle

Our research has identified three interconnected and self-perpetuating hurdles that, together, form a vicious cycle that keeps businesses from advancing their use of AI for superior decision-making.

**1. Failure to appreciate AI's full decision-making potential.** Although few executives dispute AI's relevance, not everyone sees it as a game-changer. For instance, while no fewer than nine in 10 leaders in our study see AI as "the great story of our time," only four in 10 of beginners and implementers hold a similar view.

Indeed, leaders have a far clearer view of AI's role in supporting decision-making, with 97% approving of its contribution to understanding potential impacts and predicting future trends. A large majority (91%) applaud AI's ability to flag early warning signs, and a similar share highlight its benefits for analyzing large amounts of data. Among beginners and implementers, these levels fall to 31%, 50% and 33%, respectively.

Unsurprisingly, then, leaders would expect more serious consequences if AI wasn't available to them: 84% say this would increase the cost of realizing their business goals, a view shared by only 46% of the remaining companies.

**2. Low trust levels.** Limited understanding of AI's potential fuels uncertainty about what AI can and cannot accomplish. This, in turn, undermines trust in it. Indeed, 92% of leaders, but only 48% of others, say AI has improved their confidence levels in their decisions.

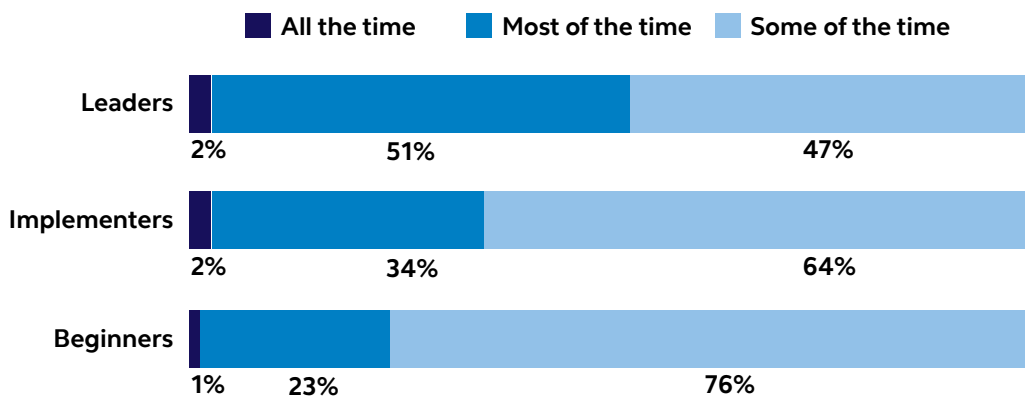
Moreover, more than half of leaders trust AI-made decisions most of the time. Among beginners and implementers, only one-third do (see Figure 2).

While this gap is impressive, the fact that nearly half (47%) of leaders only trust AI decisions some of the time (rather than most of the time or always) indicates that building trust in the use of AI to make superior decisions takes time.

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## Experience leads to greater trust in AI-driven decisions

Respondents were asked to what degree they trusted decisions made by AI systems. (Percent of respondents)



Response base: 1,000 US businesses

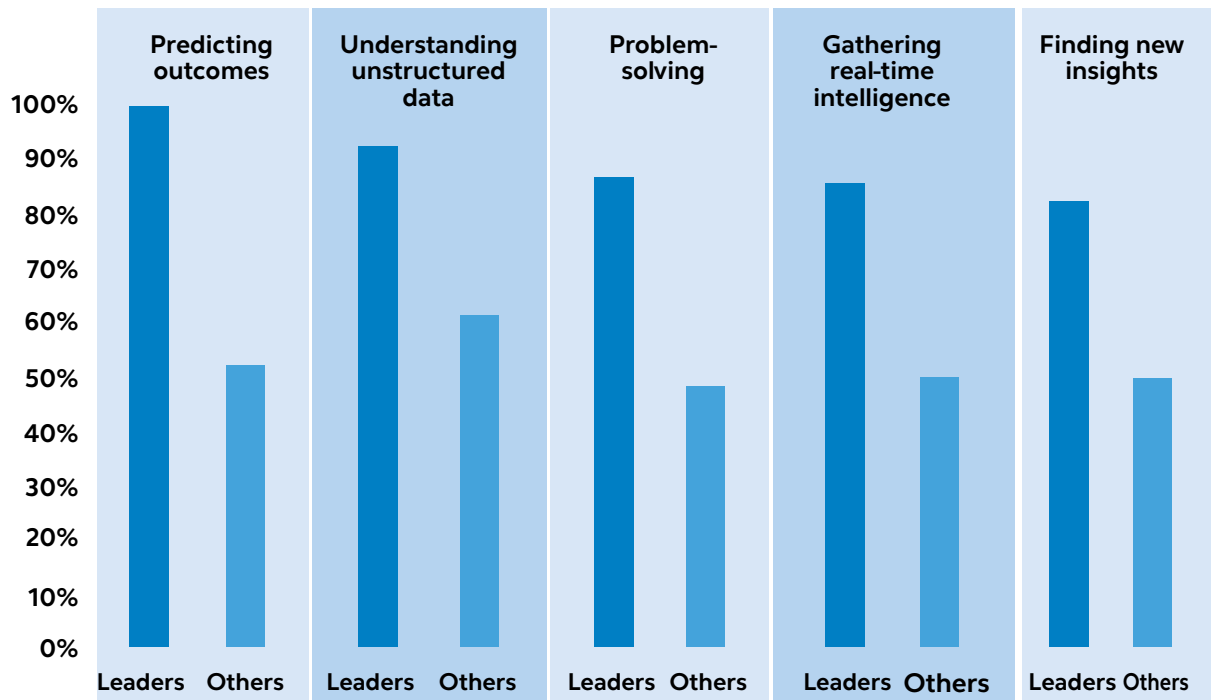
Source: Cognizant Center for the Future of Work

Figure 2

**3. Limited AI application in decision-making.** Finally, poor knowledge and low trust go hand in hand with limited use of AI in decision-making. The opposite is also true: Leaders use AI to make a broad array of decisions, far more than other companies (see Figure 3).

## Leaders use AI for a wide array of decisions

Leaders are more apt to apply AI to a variety of decision types and particularly for predicting outcomes.



Response base: 1,000 US businesses

Source: Cognizant Center for the Future of Work

Figure 3

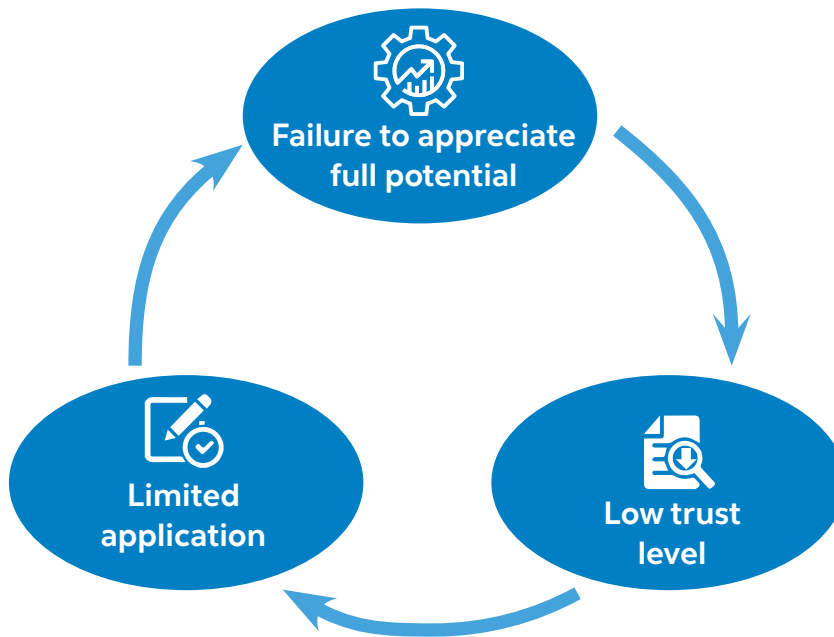
Companies that take a limited approach to applying data and AI to make decisions don't give themselves the opportunity to develop the understanding of these technologies' full potential. Therefore, they remain locked in the vicious cycle that prevents them from making the most of the insights and speed AI injects into modern decision-making processes — often without even realizing they are missing out on a golden opportunity (see Figure 4, next page).





## The vicious cycle

Businesses need to break out of the three interrelated forces keeping them from making the most of AI in decision-making.



Source: Cognizant Center for the Future of Work  
Figure 4



# TURNING DATA AND AI INTO ALLIES: FROM VICIOUS TO VIRTUOUS CYCLE

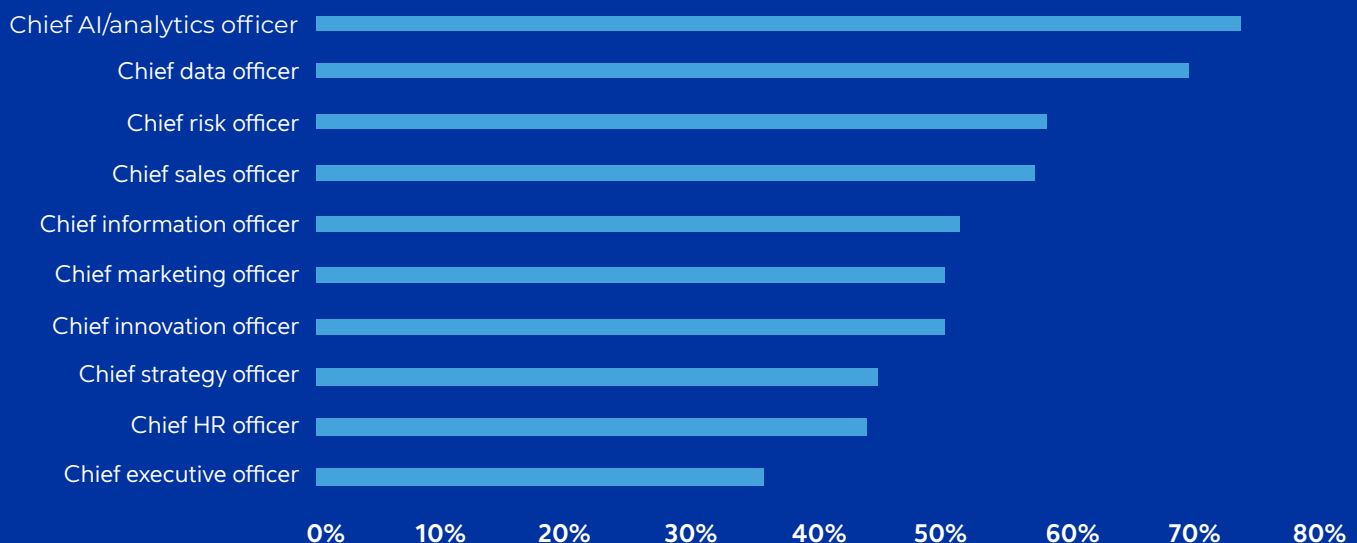
A vicious cycle is a difficult thing to break out of. But by better understanding what leaders do differently, companies lower on the AI maturity curve can make progress in their own AI decision-making maturity. Our research reveals the activities AI leaders engage in, such as applying new measures to boost trust in AI decisions, going beyond applications that deliver quick gains and ensuring that people are intimately involved with the AI solution vs. made irrelevant by it.

With these findings in mind, we've identified three specific steps that companies can take to move from a vicious to a virtuous cycle in the use of AI in decision-making.

**1. Plan purposeful steps to break the vicious cycle.** As with any relevant initiative, the deployment of data and AI in decision-making will only be successful if embraced by leadership. The problem is that the C-suite frequently includes no shortage of skeptical leaders wary of investing in technologies they don't understand. Internal champions have a key role in helping to overcome such skepticism. These will often be the leaders of areas related to technology and innovation, who tend to be more familiar with AI systems (see Figure 5).

## AI: the great story of our time?

CEOs are least likely to see AI as a driving force for the future. (Percent of respondents who agree with the statement "AI is the great story of our time")



Response base: 1,000 US businesses  
Source: Cognizant Center for the Future of Work  
Figure 5

Champions should present significant case studies and highlight specific areas of their company where AI can improve decision-making. Businesses should first define the decisions they want to make with AI support, and the business outcomes they want to achieve and then ensure they have the relevant data.

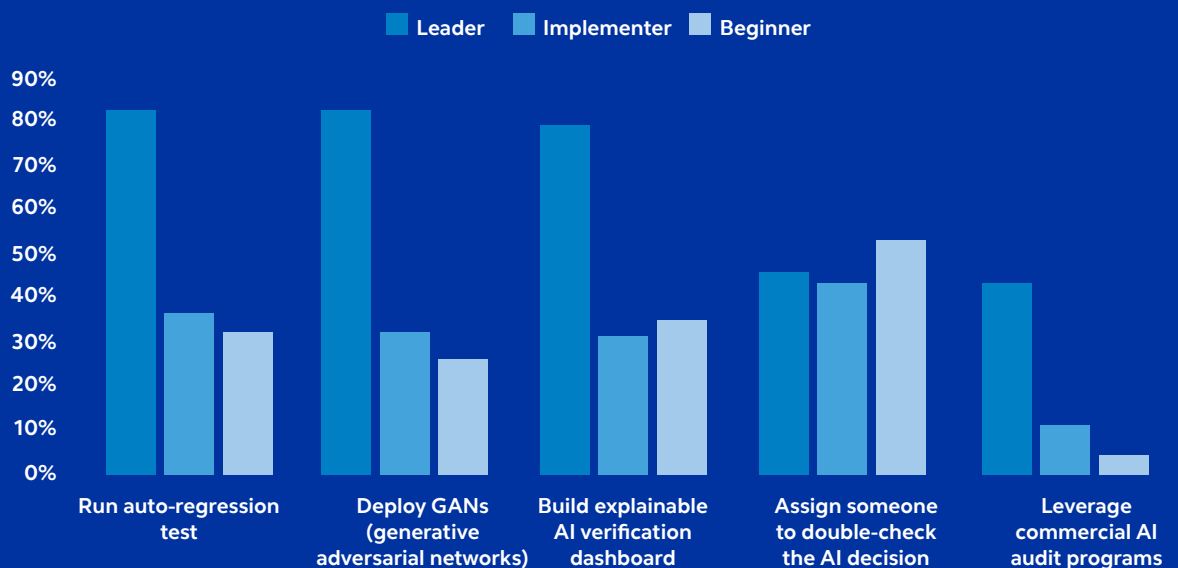
In this effort, technology-oriented leaders will often be able to count on the support of those in charge of the non-technological areas that stand to benefit from the application of AI to their specific parts of the company. For example, fully 77% of chief sales officers and 67% of chief customer officers believe AI is important or essential to business development. The upshot: techies and non-techies who find themselves on the same side of this debate should form an alliance of AI champions to influence the C-suite as a whole.

Yet even if they are open to listening to their peers, skeptical C-level executives may need an additional push to embrace wider AI participation in decision-making. Data scientists can help by ensuring the company's AI is fed with modern data — in the right format, refreshed and available for informing up-to-date algorithmic models — and that the decisions it produces are aligned with corporate strategies. This will fortify trust while making sure AI is an important tool for all executives, including its first proponents, on their daily jobs.

In fact, we found that AI leaders are far more likely to use superior verification mechanisms to ensure the quality of decisions made by AI (see Figure 6).

## Leaders use more sophisticated verification mechanisms

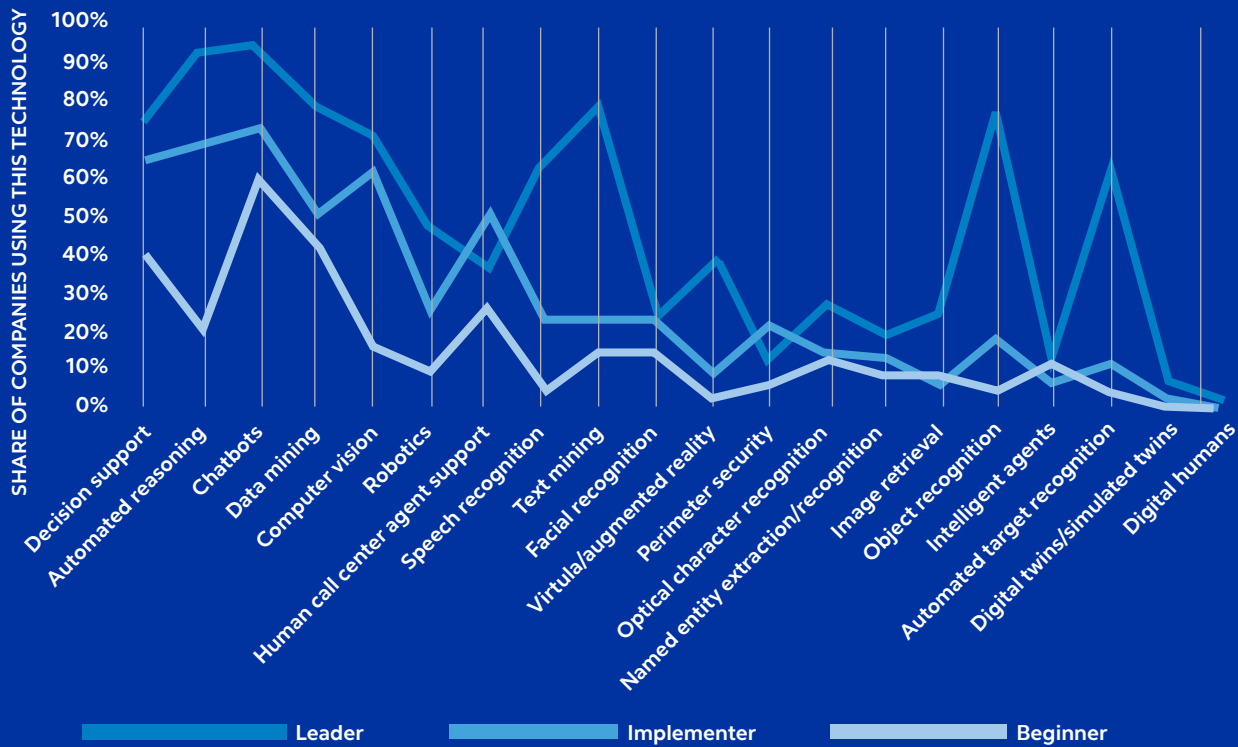
Leaders bolster trust in AI decisions by building in formal validation systems.



Response base: 1,000 US businesses  
 Source: Cognizant Center for the Future of Work  
 Figure 6

## Beyond chatbots: Leaders use a wider range of AI technologies

Beginners and implementers are most apt to apply AI to chatbots and call center support, while leaders have moved into decision support and automated reasoning, in addition to text mining and object and speech recognition.



Response base: 1,000 US businesses  
 Source: Cognizant Center for the Future of Work  
 Figure 7

Business leaders also need to stay abreast of the latest developments in the fast-evolving and continuously changing field of AI. Without an institutionalized process in place, such understanding is likely to fall through the cracks. One way to ensure this doesn't happen is to task a tech-focused leader, such as the CIO or chief digital officer (CDO), to continuously scan the AI horizon and present the relevant news and insights on monthly presentations to the C-level.

Data and AI champions must also seek buy-in from middle managers who play a vital role in day-to-day operations. Doing so will likely be easier than gaining C-suite support. Our study shows that less-senior executives are more likely to trust AI-based decisions than their more senior counterparts. Moreover, using AI in decision-making processes will help boost their productivity and allow them to focus on the more strategic and engaging parts of their jobs.

In the words of the COO at a large financial services firm in our study, "These solutions offer them hassle-free operations." Or, as a director at a large retailer told us, "People from this younger generation are always ready to accept challenges and changes frequently."

**2. Go beyond the low-hanging fruit.** Leaders not only are more apt to adopt AI; they also embrace a significantly broader range of AI tools and technologies. They are far more likely than beginners and implementers to use AI for decision support and automated reasoning, as well as text mining and speech and object recognition.

Beginners, by contrast, have yet to venture beyond the more basic uses, such as chatbots and data mining (see Figure 7, previous page).

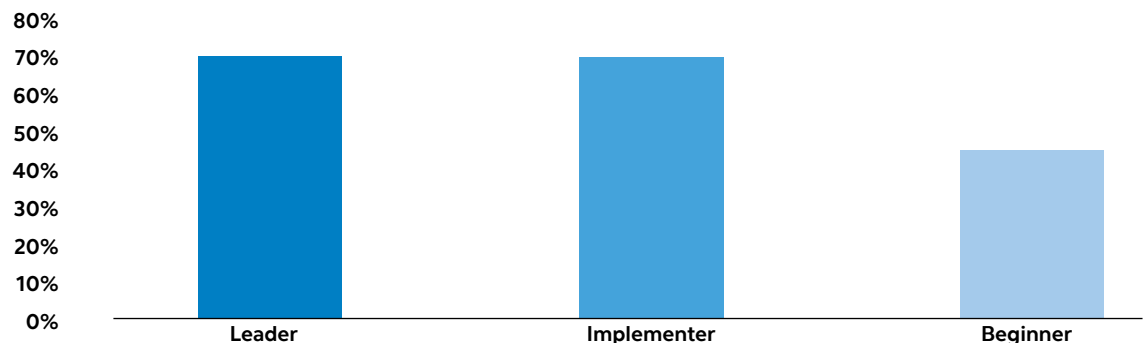
Leaders (as well as implementers) also use AI not just to have faster, more accurate answers to the questions they have long needed to answer; they also use AI-based decisions more often to explore completely new questions (see Figure 8). This can lead to innovation, productivity gains and new avenues for business growth.

In the words of a retail executive included in our study, AI allows companies to ask questions with “a higher degree of complexity.” Or, as a C-level executive from the consumer products industry highlighted, AI delivers a more “holistic” view of operations, leading to different questions with more insightful answers. For instance, an insurer in Germany recently combined investment in data mining and AI with a partnership with a university to improve its risk assessment methodologies. As a result, the insurer is now in a position to make better investment decisions, underpinned by a deeper understanding of the risk landscape. (For more on this topic, see our report “[The Work Ahead in Insurance: Vying for Digital Supremacy.](#)”)

Sooner or later, however, businesses find that using AI systems to solve existing problems, streamline current operations and improve today’s processes is only the first step. Eventually, well-deployed AI will go beyond improving a company’s work to transform how it works. For example, a director at a retail firm told us AI is helping fashion designers come up with new concepts and patterns and apply the right mix of colors to make the clothing more appealing to customers.

## Beyond decisions, AI prompts new questions

Respondents were asked whether AI decision-making changes the nature of the questions they ask. (Percent of respondents who agree)



Response base: 1,000 US businesses  
Source: Cognizant Center for the Future of Work  
Figure 8

The precise nature of transformation each company experiences depends on elements such as its sector and the specific characteristics of the goods or services it delivers. Take the case of a financial services firm whose CFO told us it is using AI in financial modeling and future-trend forecasting. In a healthcare company, an executive said AI is being used to improve the remote treatment of patients.

What all these businesses have in common is that they are going beyond the quick benefits offered by the low-hanging fruit. Using AI to ask different questions and make data-informed decisions that transform your operations is no doubt more difficult than deploying it just to maximize your performance at what you already do, but the potential rewards are exponentially higher.

**3. Make AI deployment human-centric.** Given the increasing prominence of AI in different human activities, calls for it to be human-centric have proliferated — and rightly so. This must be done in at least two ways.

First, considerations about the likely and possible impact of technology on human welfare and integrity must be at the center of AI development processes. Second, organizations should seek first and foremost to empower human workers when it comes to their AI deployments.

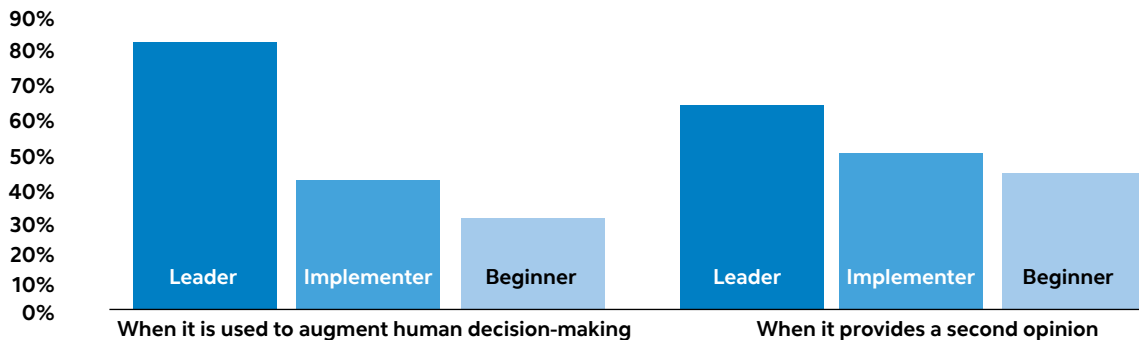
The COO of a large healthcare payer puts it succinctly: “Analyzing and recommending based on a data set is one thing, but complex and strategic decision-making still requires human activities.”

Leaders tend to believe more than others that AI works best when it is used to augment human decision-making and to provide a second opinion (see Figure 9).

For instance, a banking executive explained that AI is helping managers gain superior insights into customers thanks to its ability to swiftly examine data originating in different touchpoints, leading to “lower costs, faster decision-making and less complexity.”

## Leaders see higher potential with AI/human collaboration

Respondents were asked when AI works best in decision-making. (Percent of respondents)



Response base: 1,000 US businesses

Source: Cognizant Center for the Future of Work

Figure 9

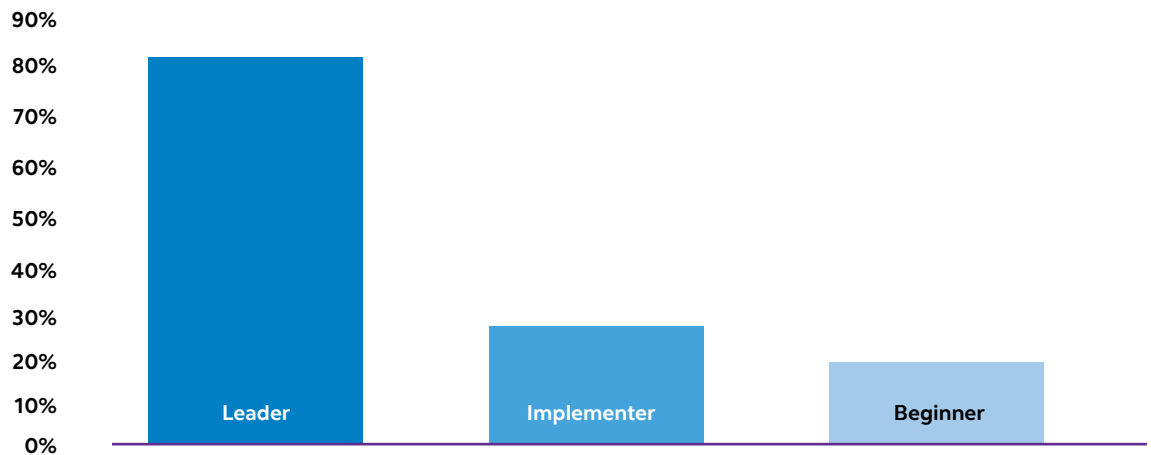
For almost eight in 10 AI leaders in our study, AI helps in decision-making by providing multiple data points for people to consider when making decisions; the same is true for fewer than one in four of the remaining respondents (see Figure 10).

What AI leaders have found out is that it is precisely this kind of human-centric use of AI that gives them an edge in decision-making. Their aim is not to automate humans away from decision-making; rather, it is to remove unnecessary burden from workers and empower them to make superior decisions.

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## AI provides input for human-made decisions

Respondents were asked whether they used AI to derive multiple inputs for decisions made by humans. (Percent of respondents)



Response base: 1,000 US businesses  
Source: Cognizant Center for the Future of Work  
Figure 10

Likewise, leaders are far more likely to use AI to generate new ideas for humans to explore (80% vs. 47%) and to provide first-level analysis for human decision-making (71% vs. 54%). For example, Chorus.ai uses natural language processing and computational linguistics to identify important topics or pain points that surface in the sales calls of individual companies or wider sectors. Then, sales representatives can use those AI-generated insights to elaborate better strategies and approaches for their conversations.





# SUSTAINING AI BENEFITS OVER THE LONG TERM

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Even for dynamic leaders, the use of data and AI in decision-making requires continuous fine-tuning and improvement. It is a never-ending journey, rather than a destination. As AI technologies evolve, new opportunities will arise, as will new challenges and ethical questions. Moreover, as companies deepen their understanding of AI systems, new business models will be created, and new ways of organizing operations will emerge.

Three initiatives will help companies sustain the benefits of AI deployment in decision-making over the long term:

- I Consider adopting proprietary AI solutions** Our study reveals that 75% of the AI systems companies use are commercial off-the-shelf (COTS) solutions. It may make sense to prioritize COTS systems in a company's early stages of the AI journey, notably because the upfront costs of these solutions are lower than those of proprietary systems. However, AI solutions developed specifically for your company will have been tailored for your processes and business requirements. Therefore, they will offer the possibility of making more precise decisions in situations where COTS systems cannot be customized (or are too costly to customize).
- I Offer regular training into new decision-making modes and models.** Making decisions with the support of data and AI requires new skillsets — for example, taking the necessary steps to identify the right data, ensuring data is refreshed frequently and is easily consumable by AI, adjusting decision-making models to keep pace with dynamic business cycles and understanding how to rank the importance of the multiple insights that may emerge.

This requires training, which will be far more effective if it involves real-world situations in which participants have the opportunity to directly apply AI technologies to solve business problems — for example, to organize new delivery schedules to a warehouse based on AI-generated projections for new orders. Such training must be offered on a regular basis to keep up with opportunities created by new AI developments, as well as to incorporate the latest findings from areas such as neuroscience and psychology that can help executives make better decisions.

- I Get the message across.** The success of data and AI deployment in decision-making requires buy-in from leaders, middle managers and, ultimately, the company as a whole. People with less seniority tend to be more willing to embrace AI, but businesses must make clear to all that AI decision-making is more than just welcome; it is a priority. This can be achieved with regular, engaging internal communication campaigns.

Using data and AI in decision-making can be an arduous task, but it will bring rich rewards. The big prize is reserved for those that both understand the magnitude of what is at stake and keep their eyes on the ball at all times.

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## Methodology

### The maturity framework

We categorized each respondent into three distinct groups: beginners, implementers and leaders. These categories were based on scores across the following criteria:

- I Importance of AI for business processes:** Respondents were asked to rank the level of importance of AI in 19 areas of their businesses. We assigned 0 points for each “not important” answer, 1 point for “slightly important,” 2 points for “moderately important,” 3 points for “considerably important,” and 4 points for “very important/essential.”
- I Areas of AI deployment:** Respondents were asked about their use of AI across 20 different business activities. They received 1 point for each area in which AI was currently deployed. Some examples of these business activities include speech and facial recognition, data and text mining, automated reasoning, chatbots and decision support.

We calculated the average score for each respondent for both importance of AI and areas of AI deployment. The scores were combined to arrive at an overall average score. Each respondent was then assigned a maturity level based on that score.

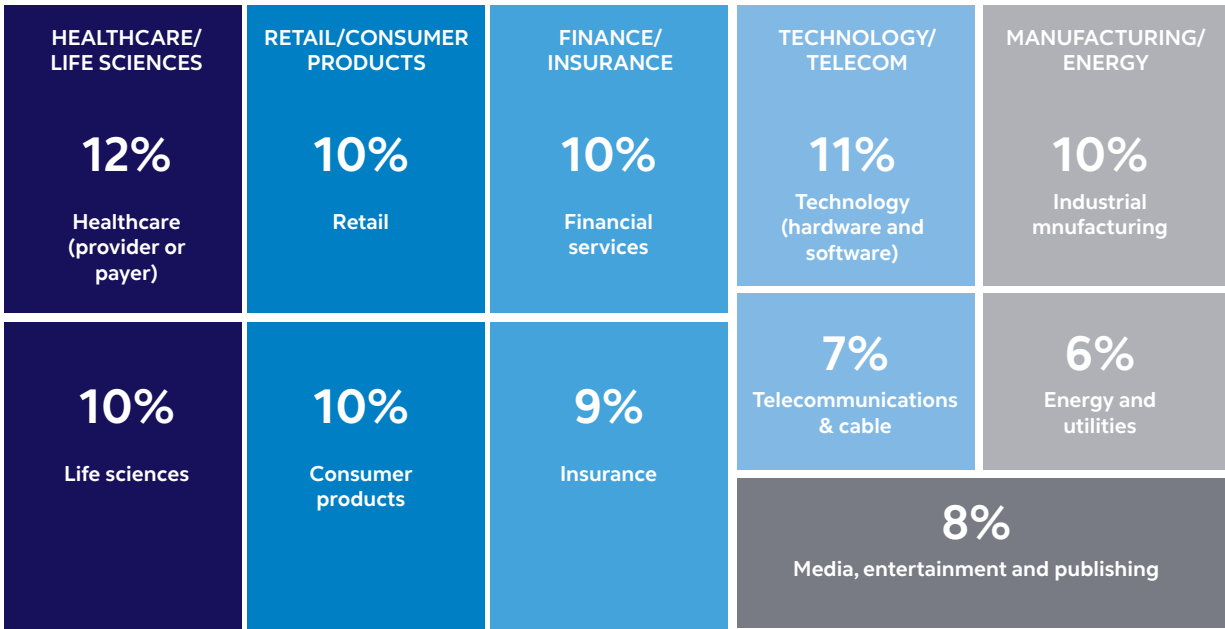
### Study methodology

To understand how companies are using AI for decision-making and the benefits they are realizing, ESI ThoughtLab conducted a comprehensive CATI survey (computer-assisted telephone interviews) in February and March 2021. Respondents were senior executives at 1,000 companies in 11 industry sectors, which were consolidated into six groupings: (1) healthcare and life sciences, (2) financial services and insurance, (3) manufacturing and energy, (4) consumer goods and retail, (5) technology and telecom and (6) media and entertainment.

The revenue size of companies in the sample ranged from less than \$1 billion to over \$25 billion, with an average size of \$7 billion.

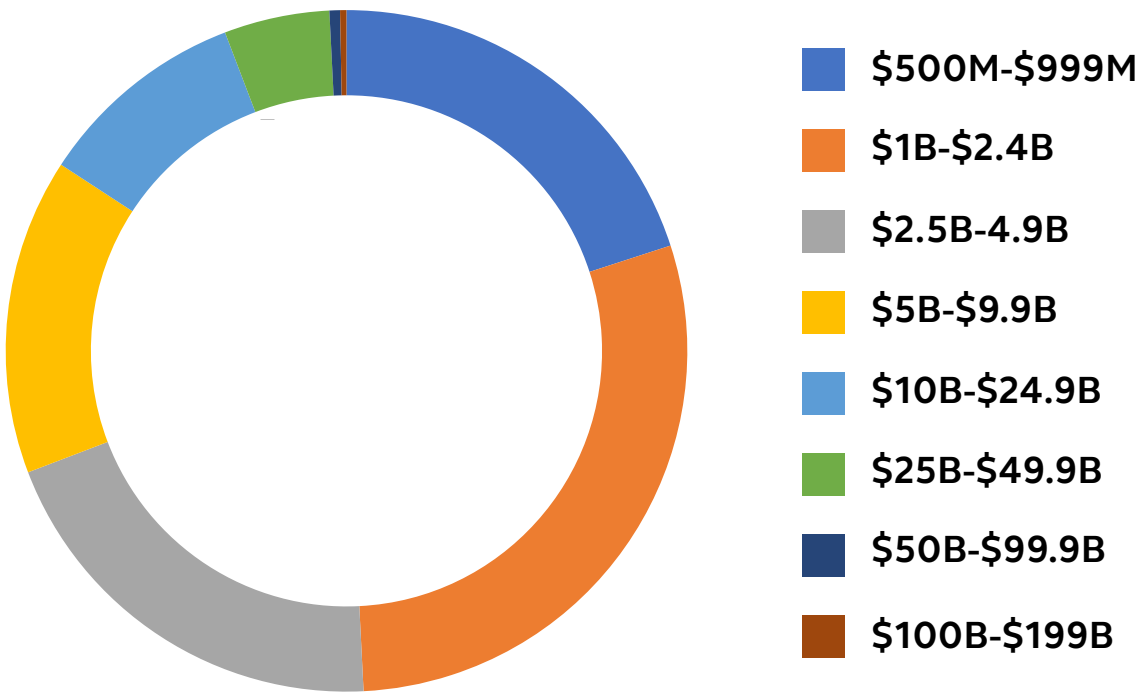


## Respondents by industry



(Percentages may not add to 100% due to rounding)

## Respondents by revenue



## About the author



### Eduardo Plastino

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Eduardo Plastino is Director of Cognizant's Center for the Future of Work. His research focuses on the impact of digital transformation on work, societies, organizations and economies in Europe.

Before joining Cognizant, Eduardo spent several years at Accenture Research, where he focused on a range of topics, including skill-building in the digital age, the learning experience of the future, responsible leadership, innovation ecosystems and different aspects related to the development and adoption of artificial intelligence.

Prior to Accenture, Eduardo worked for British consultancy Oxford Analytica, where he led the global economy analysis desk, and Spain-based international news agency Agencia EFE, where he held several roles.

Eduardo holds an M.Sc. in development studies from the London School of Economics (LSE) and an M.Phil. in international relations from the Catholic University of Rio de Janeiro (PUC-Rio), where he also earned his B.A. in communication. He is also a fellow at the Royal Society for Arts, Manufactures and Commerce (RSA), a member of the MIT Technology Review Global Panel and a certified Strategic Foresight practitioner.

Born in La Plata, near Buenos Aires, and raised in Rio de Janeiro, Eduardo has also lived in São Paulo, London and Oxford, with additional short spells in Geneva and Madrid. He speaks English, Spanish, Portuguese and French.

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## About the Center for the Future of Work

Cognizant's Center for the Future of Work™ is chartered to examine how work is changing, and will change, in response to the emergence of new technologies, new business practices and new workers. The Center provides original research and analysis of work trends and dynamics, and collaborates with a wide range of business, technology and academic thinkers about what the future of work will look like as technology changes so many aspects of our working lives. For more information, visit [Cognizant.com/futureofwork](https://www.cognizant.com/futureofwork), or contact Ben Pring, Cognizant VP and Managing Director of the Center for the Future of Work, at [Benjamin.Pring@cognizant.com](mailto:Benjamin.Pring@cognizant.com).

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## About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 185 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at [www.cognizant.com](https://www.cognizant.com) or follow us [@Cognizant](https://twitter.com/Cognizant).

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