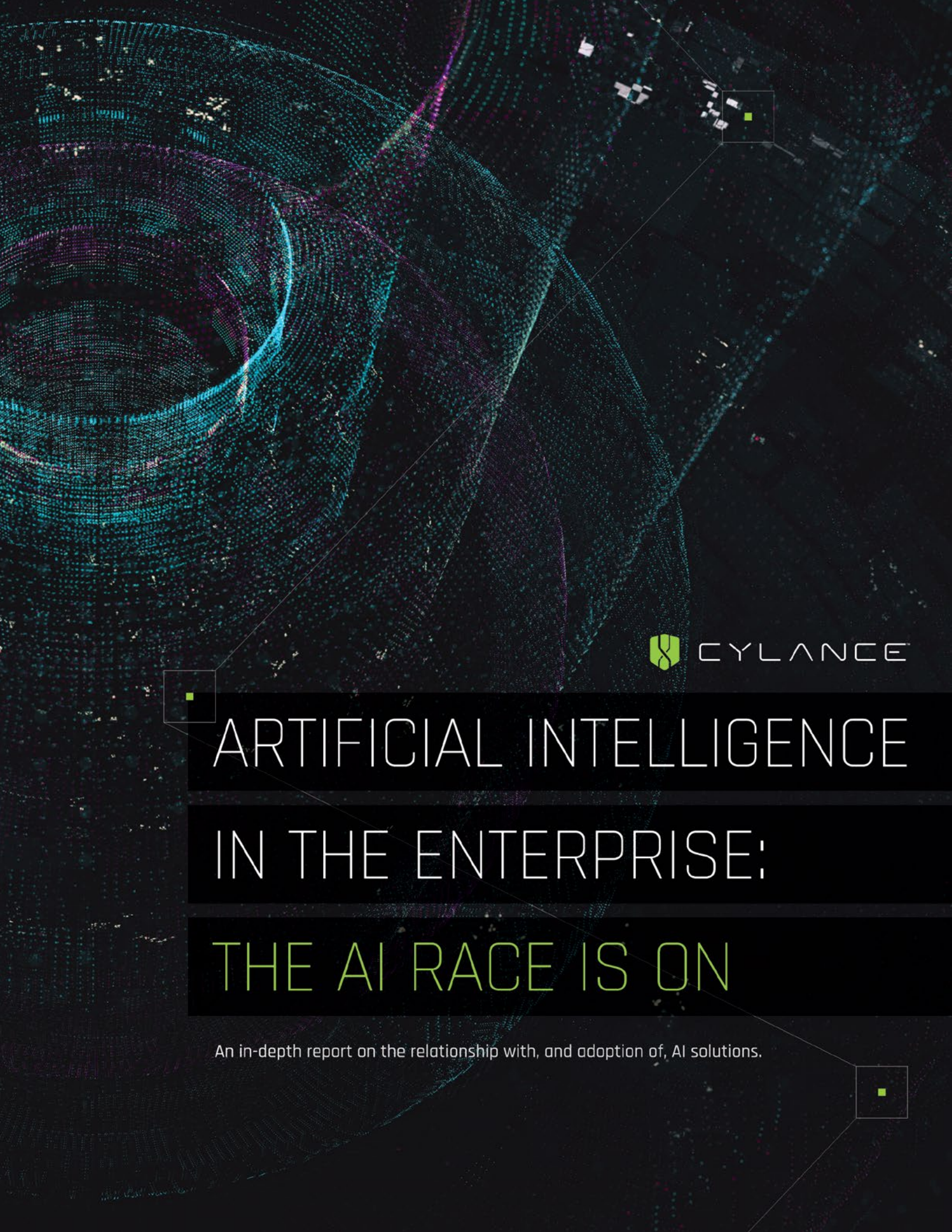


CYLANCE

ARTIFICIAL INTELLIGENCE IN THE ENTERPRISE: THE AI RACE IS ON

An in-depth report on the relationship with, and adoption of, AI solutions.

ARTIFICIAL INTELLIGENCE IS A POSITIVE FORCE IN THE ENTERPRISE

100% of the IT decision makers surveyed say they are either currently spending on AI-powered solutions, or plan to invest in them in the next two years.

For security teams, AI is moving the needle:

70% say their security team is using AI in their threat prevention strategies.

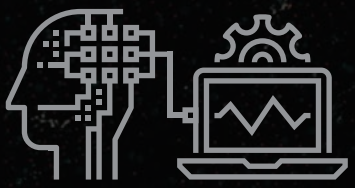
77% say they have prevented more breaches following their use of AI-powered tools.

81% say AI was detecting threats before their security teams could.

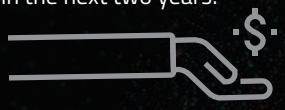
78% say the technology has found threats humans couldn't see.

Organizations are already investing in AI, and this will only increase:

60% of the IT decision makers surveyed say they already have AI-powered solutions in place.



40% said they are planning to invest in them in the next two years.



AI is seen as a competitive advantage:

87% see AI-powered technology as a competitive advantage for their IT departments.

83% are investing in AI to beat competitors.

AI brings productivity, meaningful work for employees:

80% believe that teams using AI have become more productive.

81% say AI is critical to the company's digital transformation.

81% say AI will lead to more meaningful work for employees.

Artificial Intelligence is making inroads in enterprises as IT decision makers and other corporate leaders realize the benefits it brings to productivity, digital transformation, employee work satisfaction, and for security in particular, detecting and stopping threats. Companies that wait too long to adopt AI, or at least explore the possibilities with AI, run the risk of losing to faster-moving competitors. With innovation, time is of the essence, and AI is happening now.

Survey conducted by Market Cube on behalf of Cylance.

AI IS MOVING THE NEEDLE FOR COMPANIES IN THE US, THE UK, FRANCE, AND GERMANY.

01 OVERVIEW

Artificial intelligence (AI) seems to be on everyone's mind. It powers natural language recognition within voice-powered assistants like Siri and Alexa, beats world-class Go players (Google AlphaGo), and enables hyper-targeted e-commerce and content recommendations across the web, as we see on Amazon and Netflix. But, over the past year or two, AI has begun actively expanding its footprint within the enterprise. Executives are trying to more fully comprehend what AI is and how they can use it to better capitalize on business opportunities by gaining insights into their data and engaging with customers more productively, thereby honing a competitive edge. AI is *the* frontier of enterprise technology, but there remains many misperceptions about what it is and how it works.

Part of the confusion stems from the fact that AI is an umbrella term that covers a range of technologies — including machine learning, computer vision, natural language processing, deep learning, and others — that are in various stages of development and deployment. The use of AI for dynamic market-based pricing and targeted marketing has been spreading through corporations for a while, but actual AI computing where machines think like humans is still years in the future. The various possibilities prompt a range of reactions from people who understand AI's disruptive potential.

As a field, artificial intelligence encompasses three distinct areas of research and practice:

1 Artificial superintelligence is the type popularized in speculative fiction and in movies such as *The Matrix*. The goal of this type of research is to produce computers that are superior to humans in virtually every way, possessing what author and analyst William Bryk referred to as "perfect memory and unlimited analytical power."

2 Artificial general intelligence refers to a machine that is as intelligent as a human and equally capable of solving the broad range of problems that require learning and reasoning.

3 Artificial narrow intelligence exploits a computer's superior ability to process vast quantities of data and detect patterns and relationships that would otherwise be difficult or impossible for a human to detect.

The research covered in this report focused on artificial narrow intelligence (referred to herein simply as AI) that is being targeted for specific business cases in the enterprise.

So, is enterprise AI just an over-exposed and under-delivering concept about to fall off a cliff and into Gartner's Hype Cycle Trough of Disillusionment? Or is it the holy grail of business innovation that will leave companies without it in the dust of tech transformation? In an attempt to answer these questions, we commissioned a survey of over 650 IT decision makers at large enterprises working across industries in the U.S., the U.K., Germany, and France, ranging from directors to C-level executives, to gauge their pulse. We asked a host of questions to find out if and how enterprises are using AI, what their future plans are, and what they think the impact of AI will really be on their organization, among other things. Here are five key findings:

1 **For Security Teams, AI Is Moving the Needle:** The survey found that 77% say they have prevented more breaches following their use of AI-powered tools, and 81% say AI was detecting threats before their security teams could.

2 **Organizations Are Already Investing in AI, and This Will Only Increase:** All of the IT decision makers surveyed said they are either currently spending on AI-powered solutions, or planning to invest in them in the next two years. 60% already have AI in place.

3 **AI Is Seen As a Competitive Advantage:** 87% of IT decision makers see AI-powered technology as a competitive advantage for their IT departments, and 83% are investing specifically in AI to beat competitors.

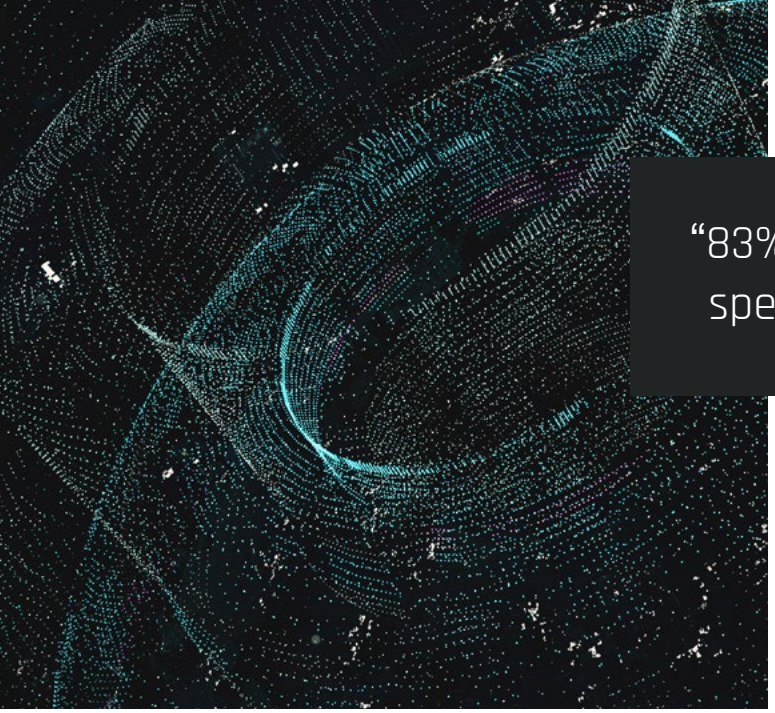
4 **AI Is Living Up To Its Promises:** Despite the fact that 76% of respondents are concerned that marketing hype will make it difficult to vet AI-powered tech, 86% say the AI they've used has lived up to its promises. Furthermore, 64% of IT decision makers expect to see ROI from their investments in AI in fewer than two years.

5 **Concerns Linger, but AI Opportunities Abound:** 68% of IT decision makers say AI will make certain jobs obsolete, and 74% are concerned AI technology will replace human jobs. But, 93% say it will create new job opportunities, and 80% believe AI will lead them to hire new workers and retrain existing employees.

02 THE IMPACT OF AI IN THE ENTERPRISE

It appears we've finally reached a point where AI is shifting from talk to action as companies have begun investing in AI in order to make better use of all the data they're gathering and the increased computing power to which they have access. According to a recent McKinsey Global Institute Report, AI entrepreneurial investments were between $26 billion and $39 billion in 2016, a three-fold increase over the previous three years. IDC predicts enterprise spending on AI and cognitive computing will rise this year by nearly 60% to $12.5 billion, and then grow to $46 billion by 2020.

Granted, most investment in AI comes from big players like Google, Amazon, and other big tech firms, but the AI spending fever is spreading. AI is being used to forecast electricity demand at utilities, to train vehicles to become chauffeurs and truck drivers, and to power robots that box up our Amazon orders. Netflix, for example, says the AI algorithm behind its search and recommendations engine has saved it from losing $1 billion each year due to canceled subscriptions. According to the McKinsey report, early adopters tend to be tech, telecoms, and financial services firms that deploy AI across technology groups and as a core part of their business, all with the support of executive leadership.



> "83% say they are investing specifically in AI to beat competitors."

INVESTMENT IN AI

The large enterprises that took part in our survey are bullish on AI. Nearly all say they are either currently spending on AI-powered solutions or planning to invest in them in the next few years. A majority also say AI solutions are already in deployment. This percentage might seem high, but not if you consider that data-driven IT departments are often early adopters of new technologies and are always looking for ways to optimize processes and reduce costs.

Specifically, the survey reveals:

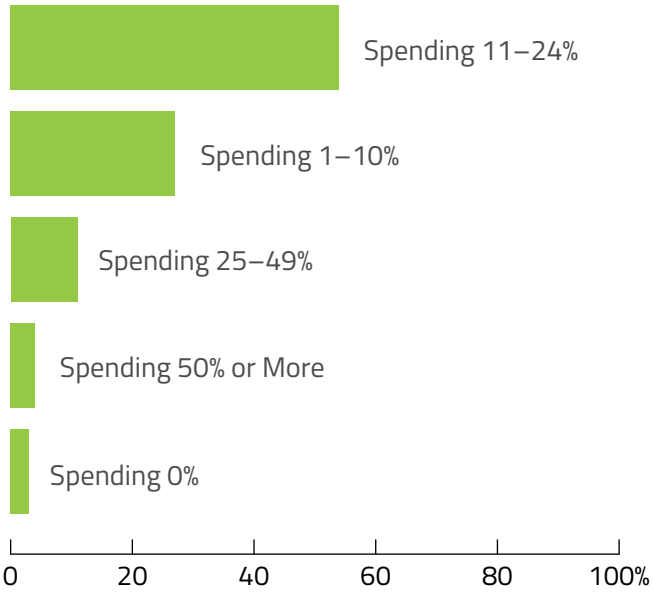
- Nearly 100% say they are either currently spending on AI or planning to invest in the technology in the next two years
- 60% already have AI in place
- 54% are currently spending 11% to 24% of their budget on AI technology
- 4% are devoting half of their budget to it
- 38% will spend 25% to 49% of their IT budget on AI over the next 12 months
- 8% will spend more than half of their budget on it over the next 12 months

The survey shows that IT decision makers see AI as a way to stay competitive and feel they will lose out if they don't adopt it, particularly for IT and security departments. Eighty-three percent say they are investing specifically in AI to beat competitors, and 62% say they fear their competitors' investments in the technology may pose a threat to their business.

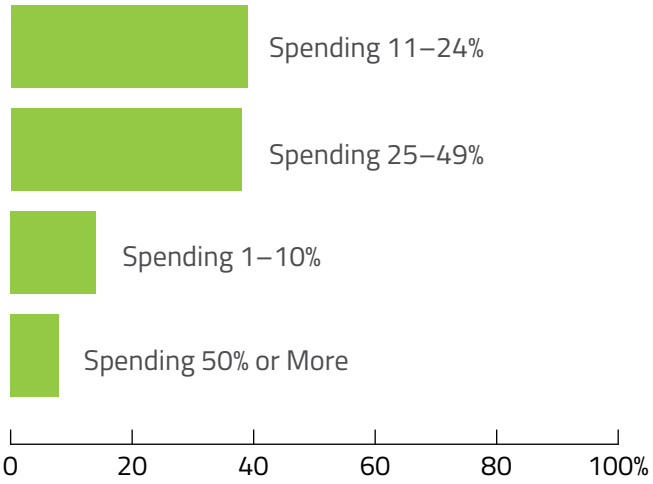
The competitive benefits AI provides can also be seen across the organization:

- 87% of IT decision makers see AI as a competitive advantage for their departments

Approximately what percentage of your IT budget is your organization currently spending on AI technology?



In the next 12 months, what percentage of your IT budget is your organization planning to spend on AI-powered technology?

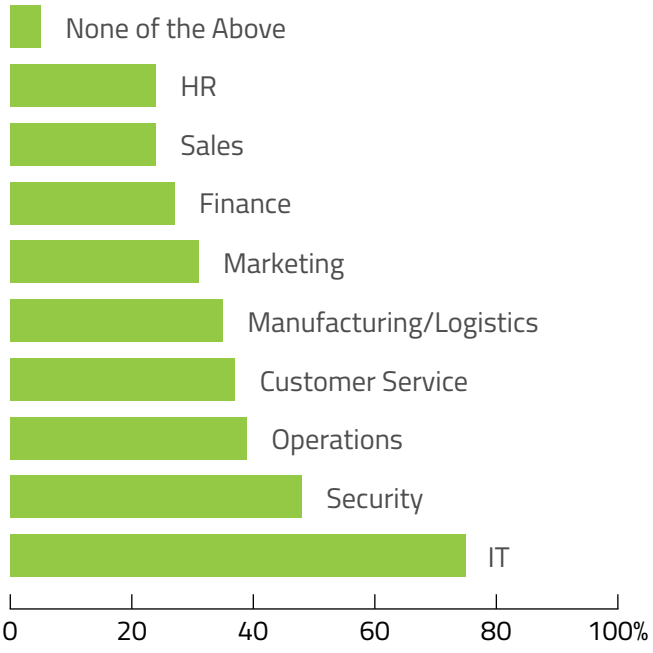


- 79% believe AI will also benefit their security teams
- 75% think AI will benefit manufacturing and logistics
- 74% believe AI will benefit their customer service departments

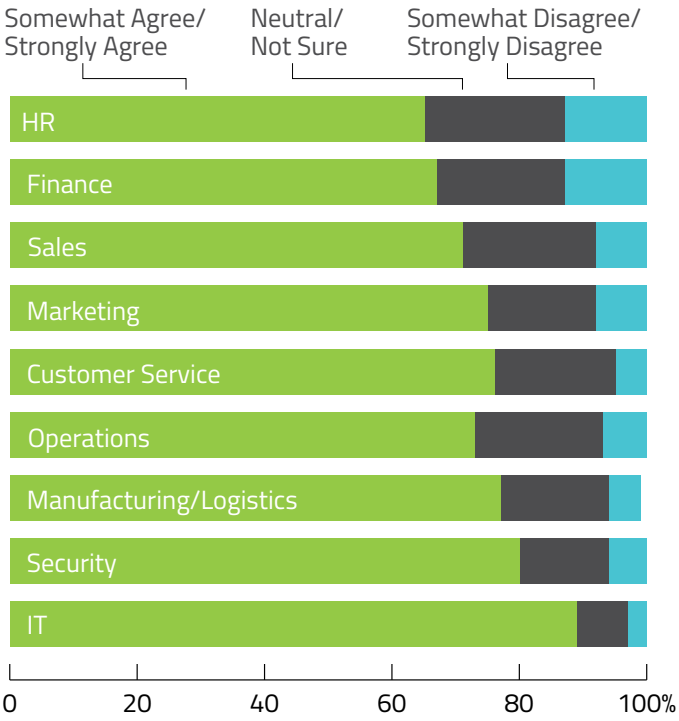
Which industries and departments are investing in AI? According to the survey, the technology is primarily in use in the IT, security, operations, and customer service areas, while manufacturing and logistics are also among the top departments asking for it. As far as units within an organization, respondents say IT departments lead adoption at 75%, followed by security teams at 48% and operations at 39%. As far as where respondents are feeling the most impact, IT, security, and manufacturing and logistics are the departments where AI has changed the way they work the most. In general, departments that traditionally deal with data and analytics are best positioned to take advantage of AI.

Survey respondents say they were pleased with the results they've seen from their use of AI technologies, despite the hype. While 76% of respondents say they are concerned that over-optimistic marketing will make it difficult to vet AI-powered tech, 86% say the AI they've used has lived up to its promises. Furthermore, 64% expect to see ROI from their investments in AI in fewer than two years, with the top benefits expected to be improved operational efficiency at 49%, improved business performance at 48%, and automation of repetitive tasks at 44%.

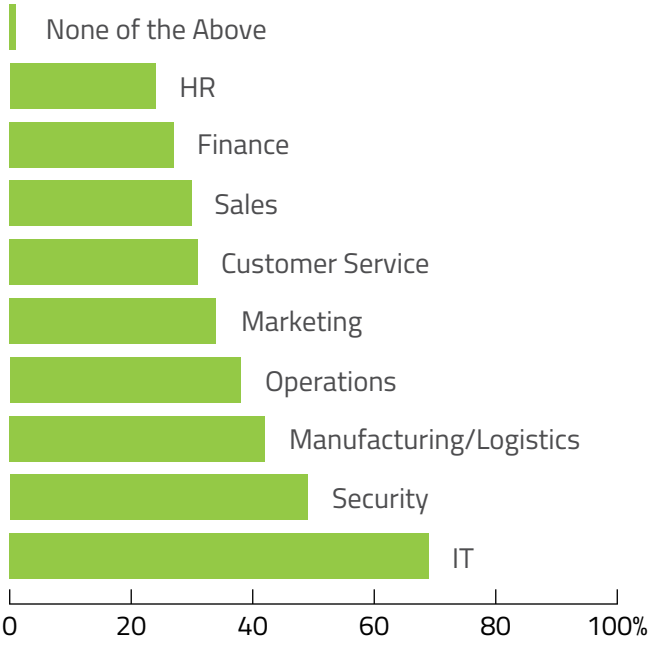
Which departments are currently using AI-powered technology?



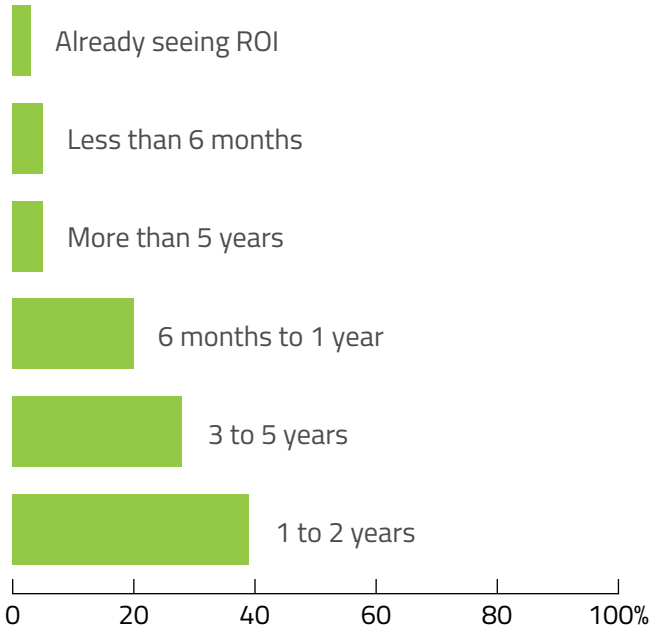
AI-powered technology has changed the way these departments operate.

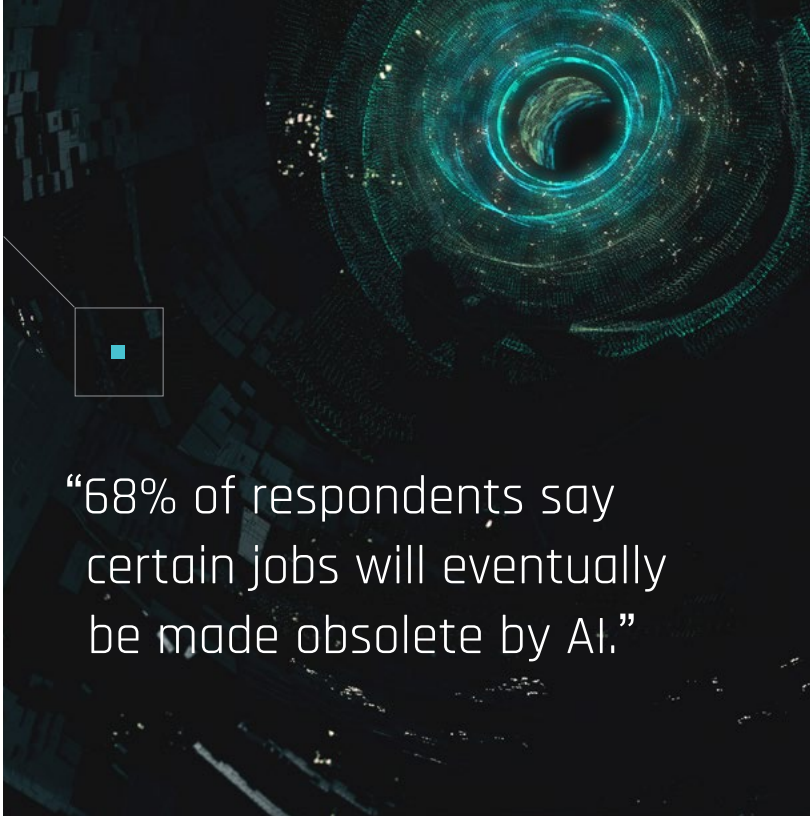


Which departments are demanding more AI-powered technology?



When do you anticipate seeing ROI from the use of AI-powered technologies?





03 PERCEPTIONS OF AI IN THE ENTERPRISE

No study on AI would be complete without taking a look at how people think the technology might impact the workforce. One of the biggest challenges to widespread adoption of AI is the perception that workers will be displaced. Yes, AI will mean retraining for a number of jobs, but it will result in great productivity and efficiency gains, and the potential for greater job satisfaction. Replacing obsolete jobs creates vast new opportunities that will free up humans to use their brains for more critical thinking and do less monotonous, mundane, and repetitive tasks.

AI will change the nature of the work people do, moving it away from menial tasks to more strategic functions. AI will be used to parse through all the new data being generated from companies about customers, industrial operations, business activities, and other processes that humans could never expect to effectively manage. But, AI can't operate on its own or in a vacuum; it needs humans to create the knowledge trees upon which the AI learns, and needs humans to train and maintain the technology.

While IT decision makers see plenty of promise and opportunity in AI — and are already deploying it and seeing benefits — there are some lingering concerns about the technology's impact on the workforce. Sixty-eight percent of respondents say certain jobs will eventually be made obsolete by AI, while 74% say AI will replace jobs now done by humans.

JOB CREATION

However, those concerns were heavily counterbalanced by expectations that the technology will result in new opportunities, including more meaningful work for employees and additional benefits to the overall organization that will impact every worker. Clearly the nature of some jobs within the enterprise will shift as a result of AI technologies, but respondents predict new job creation as a result, too.

Specifically, the survey reveals:

- 93% of respondents say AI will create new types of jobs
- 80% say AI will lead them to hire new workers and retrain existing employees
- 81% say AI will be a leading driver in getting technical employees to do more meaningful work
- 74% say AI will enable less technical staff to use technology more effectively

For the overall organization, respondents report numerous benefits from the use of AI. Eighty-four percent of respondents say AI improved the overall quality of employees' work, and 80% believe that teams using AI have become more productive. Meanwhile, 96% of respondents say they are confident that AI-driven technologies will improve organizational efficiency, and 94% are confident AI will produce a quantifiable return on investment.

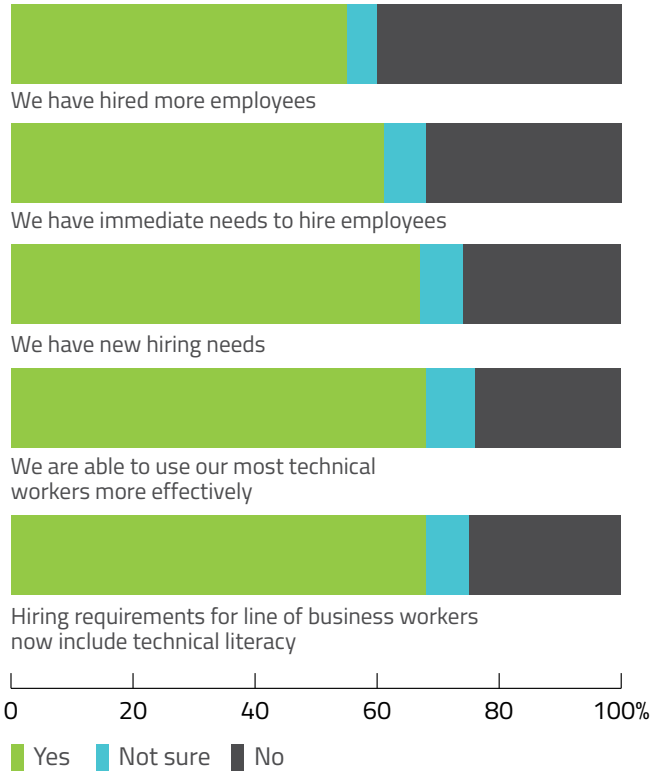
According to respondents, some of the top benefits that will come from AI are:

- Improvements to operational efficiency
- Boosted business performance
- Automation of repetitive tasks
- Increased insight into customer behavior

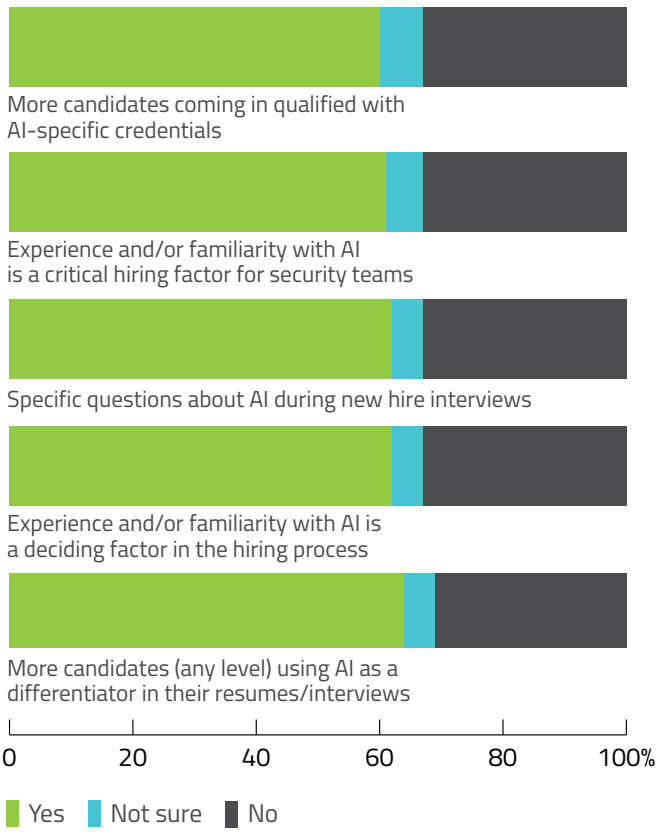
Hiring is an early indicator of the job landscape for emerging technologies, and we're already seeing increasing demand for data scientists and analytics experts who can help organizations make the most of AI technology. The number of open analytics jobs in 2015 was already at 2.3 million, according to data cited in a recent PwC report, while IBM predicts that by 2020, the annual demand for data engineers and scientists will be 700,000. Our survey results show that IT leaders understand the workplace risks, but are willing to embrace the evolution of the workforce to more strategic and analytical functions.

Enterprises are actively seeking employees who have familiarity with AI technologies to help build out their AI capabilities — and job seekers are anticipating that need. Sixty-four percent of respondents say that more candidates at every level are using AI as a differentiator on their resumes and in interviews. That is smart because 62% also reported that these skills are a deciding factor in the hiring process, and 61% say it is a critical hiring factor for security teams. Sixty-two percent are even going so far as to ask candidates directly about AI during the interview process.

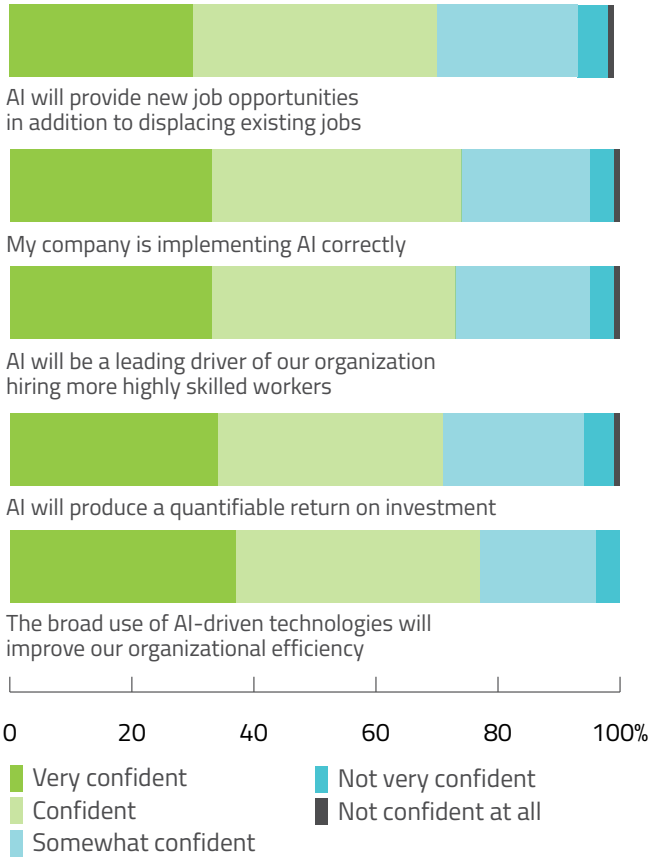
Impact of AI-powered technology on your company's hiring practices:



Describe what you're seeing in the hiring process:



How confident are you about each of the following as it relates to AI technology?



04 THE FUTURE OF AI IN THE ENTERPRISE

Unlike much of IT spending, the AI discussion is more akin to the cloud debate and reaches into the upper echelons of companies that are considering which technologies can help them be innovative and gain a competitive advantage. Boards and C-suite executives are also key stakeholders in these conversations, and their support is needed for AI initiatives to commence and be successful.

Investment in AI over the next year is a high priority for 66% of IT decision makers, with 30% ranking it as a medium priority. However, 79% say that for their board and C-suite, it's a top priority.

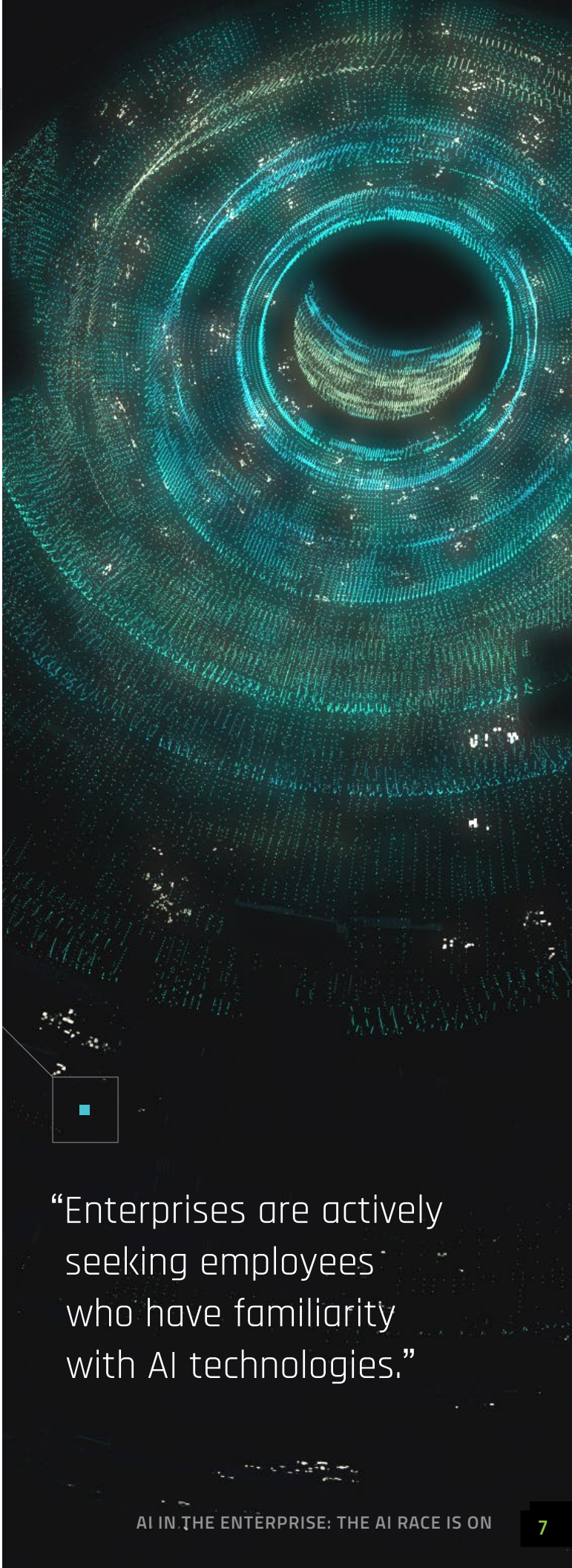
In addition, there seems to be no question that AI is the next wave of digital transformation for most IT decision makers. Eighty-four percent say AI-powered technology was part of their digital transformation strategy, and 81% say it's critical for the success of those initiatives. While companies may feel pressure to adopt AI, they should realize that they need a strong digital foundation to start out with, or the AI will be severely limited. AI serves as a forcing function in this way.

While the value of AI is apparent to IT leaders, it's not always easy to figure out which vendors to choose. Sixty-five percent of respondents say that market noise around AI makes it difficult to understand the difference between all the different vendor solutions. Clearly, IT decision makers know AI will be important, and they know it can provide a strategic advantage, but they don't really know how or where to start. This is stressful for them, not only because of the obvious challenges of adopting new technology, but also because they know that companies that *don't* keep up will quickly be at a strategic disadvantage. What's more, there are network effects with AI, so scaling is exponential. In other words, the leaders of the pack are pulling away — and their advantage is immediately and increasingly defensible.

But, how do you evaluate AI solutions? There's no manual for that because evaluating AI solutions depends greatly on each individual application. There's no blanket way to assess AI.

Some general questions and other considerations when looking into AI options include:

- Getting customer references to find out how their adoption is going and what the pain points and challenges are, if any
- Asking for a demo and using your own data — ideally, one that stands alone and not in the cloud so you can see that the software itself, not an analyst behind a curtain, is processing your data



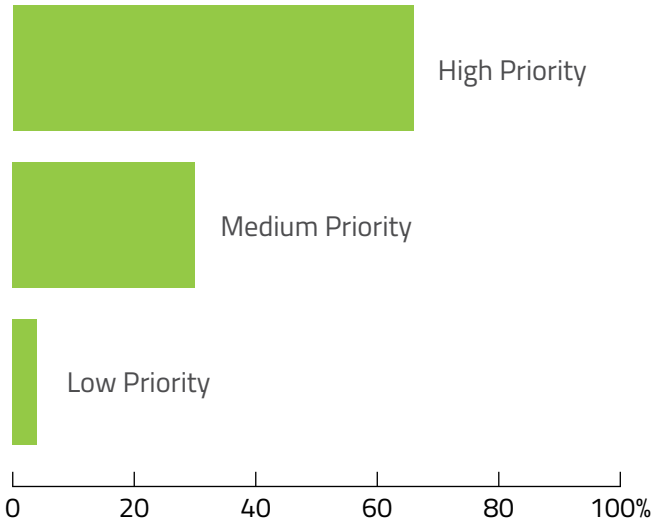
"Enterprises are actively seeking employees who have familiarity with AI technologies."

"Enterprises shouldn't wait to get informed and should dive right into evaluating AI solutions."

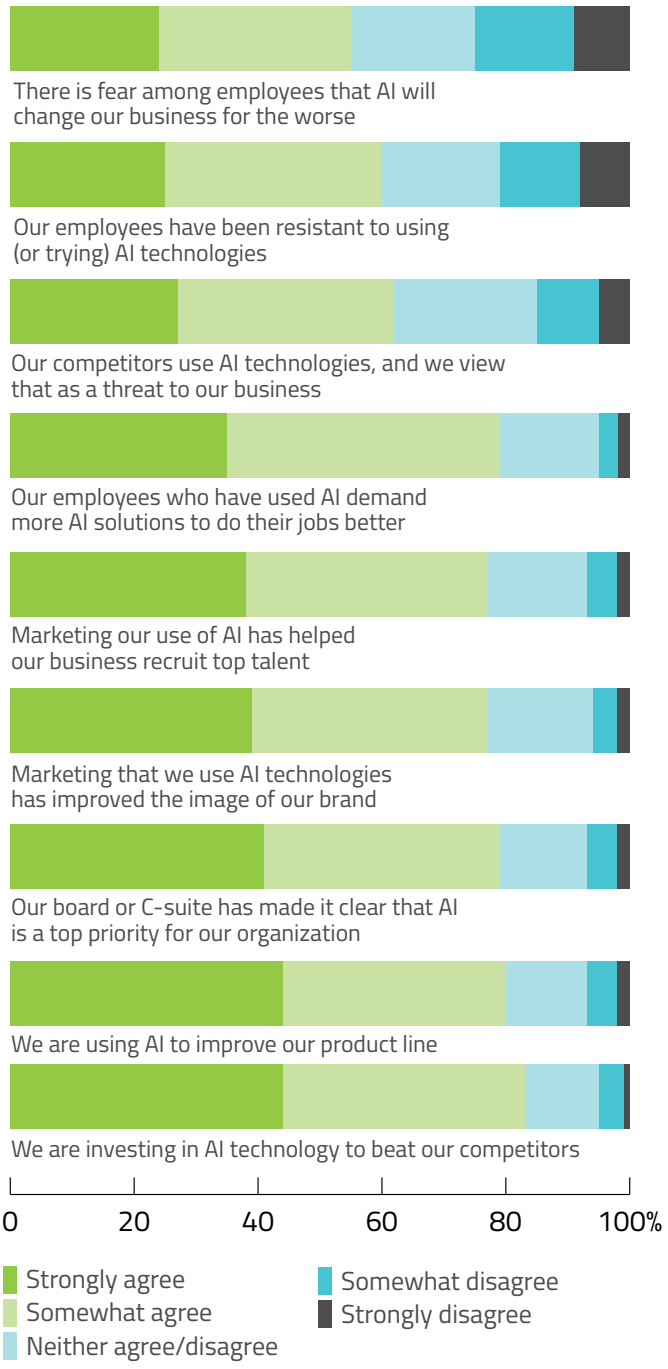
- Asking what vendor data sources are, as well as the size of the data set, parameters, and capacity
- Asking about the algorithm being used, including what data is encoded and decoded, how the neural network is implemented, and other technical aspects to their approach
- Considering compatibility, functionality, user experience, and price

Based on the survey responses, it's clear that enterprises are using AI to varying degrees and that executives understand the benefits it can provide for near- and long-term operational and market advantage. The hype doesn't diminish the potential for profound business impact, although it is muddying the waters for some, making it harder for IT leaders to make clear decisions and move forward. Enterprises shouldn't wait to get informed and should dive right into evaluating AI solutions. Just as companies that embraced the early Internet and the cloud saw notable positive impact to their business results, operational effectiveness, and market position, those that see AI as a strategic differentiator and support AI adoptions will find themselves ahead of the curve instead of behind, or missing it entirely.

Where does AI rank among your list of priorities for technology investment over the next 12 months?



How much do you agree or disagree with each of the following statements?



05 AI IN CYBERSECURITY

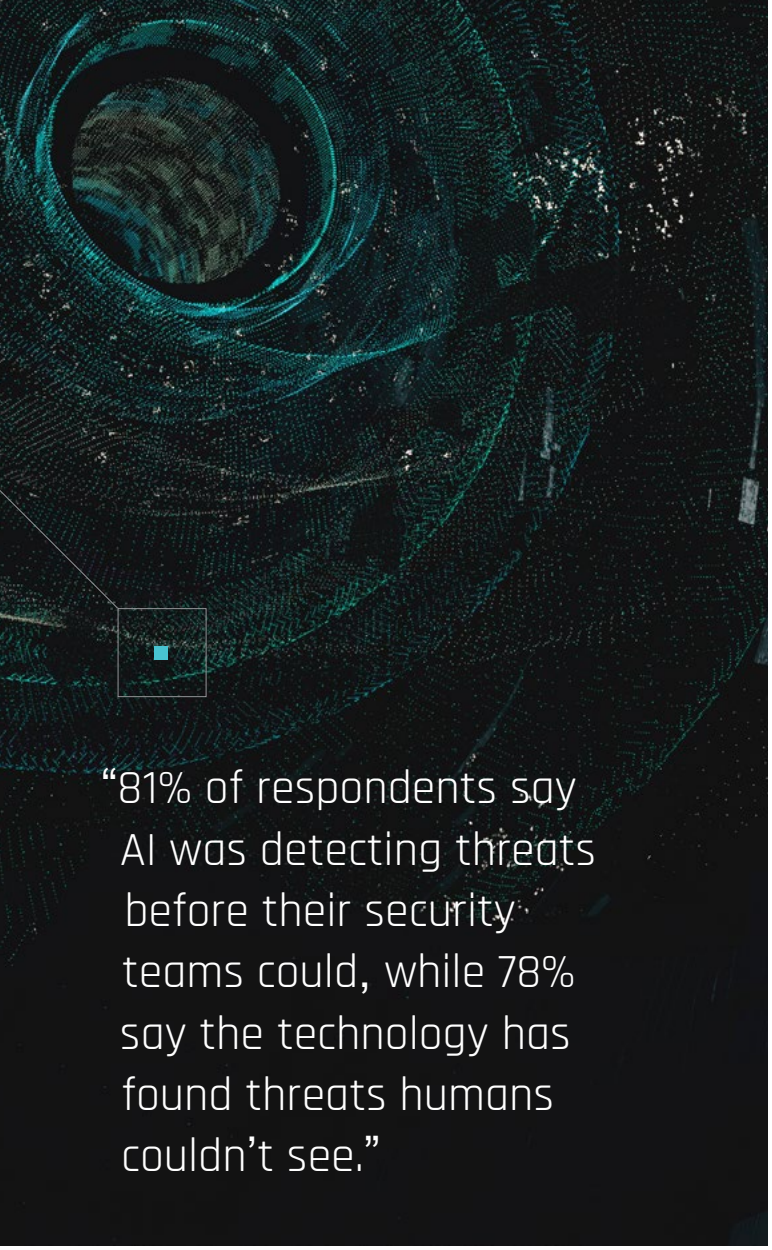
Security is one of the few application areas where AI can be used to help teams make quick decisions and act on them. AI is helping teams identify threats across an expanding attack surface (including mobile, cloud services, and IoT) by automating data aggregation across different data types, mapping it back to compliance requirements, and ruling out false positives. The technology is also being used to help companies assess their risk and the potential impact on the business from specific threats using internal security data and external data on exploits, malware, and threat actors. In addition, AI can automate remediation processes that are used for incident reporting, and with the help of humans, the analysis can be fine tuned for increased effectiveness and reliability. AI is not just detecting threats, it's also stopping them and preventing future incidents.

Respondents in our survey reported that the AI is having a big impact on their cybersecurity efforts. Seventy percent say their security team is using AI in their threat prevention strategies, and 77% say they have been able to prevent more breaches since they began using AI-powered tools. The technology isn't just supplementing the work of humans, it's eclipsing it. Eighty-one percent of respondents say AI was detecting threats before their security teams could, 78% say the technology has found threats humans couldn't see, and 77% believe it is impossible for human-only cybersecurity teams to keep up with the threats.

The technology doesn't just make systems smarter, it's making people smarter too, which will help cybersecurity and other workers become more skilled. There are chatbot applications designed to help mentor junior security team members to use specific technologies, as well as AI that adjusts the information it presents based on skill level and knowledge of a new user. Traditionally, vendors have either been looking to hire more technical, experienced security operations center candidates or offer tools that make the qualifications of candidates less important. As IT departments try to attract employees across a broader range of skill levels, AI security products are going to have to be more flexible in terms of the assumptions about the user's background and be more proactive about helping them learn.

Interest in AI runs all the way up the corporate ladder. AI is on the agenda for the top executives who see it as critical for keeping their data and networks secure. While nearly 80% report that the board or C-suite see AI as a top priority for the entire organization, 63% say board members have asked whether AI is being used for security specifically.

How much do you agree or disagree with each of the following statements as they relate to AI-powered solutions related to cybersecurity?



"81% of respondents say AI was detecting threats before their security teams could, while 78% say the technology has found threats humans couldn't see."

SKILLS GAP

The allure of AI for executives and security teams isn't just the technological benefits, it's also the impact it can have in staffing. AI is seen as the solution to a problem that plagues every organization — the lack of skilled cybersecurity engineers and analysts to meet the growing demand in the face of increasing cyberattacks and threats. Last year, there was a talent shortfall for information security analysts of more than 15,000 workers, with 200,000 additional job openings for cybersecurity-related skills, according to CyberSeek, a project supported by the National Initiative for Cybersecurity Education, which is part of the U.S. Commerce Department's National Institute of Standards and Technology. By 2022, the global shortage of cybersecurity professionals is expected to reach 1.8 million, predicts Frost and Sullivan. Our survey respondents were optimistic that AI will help solve that problem.

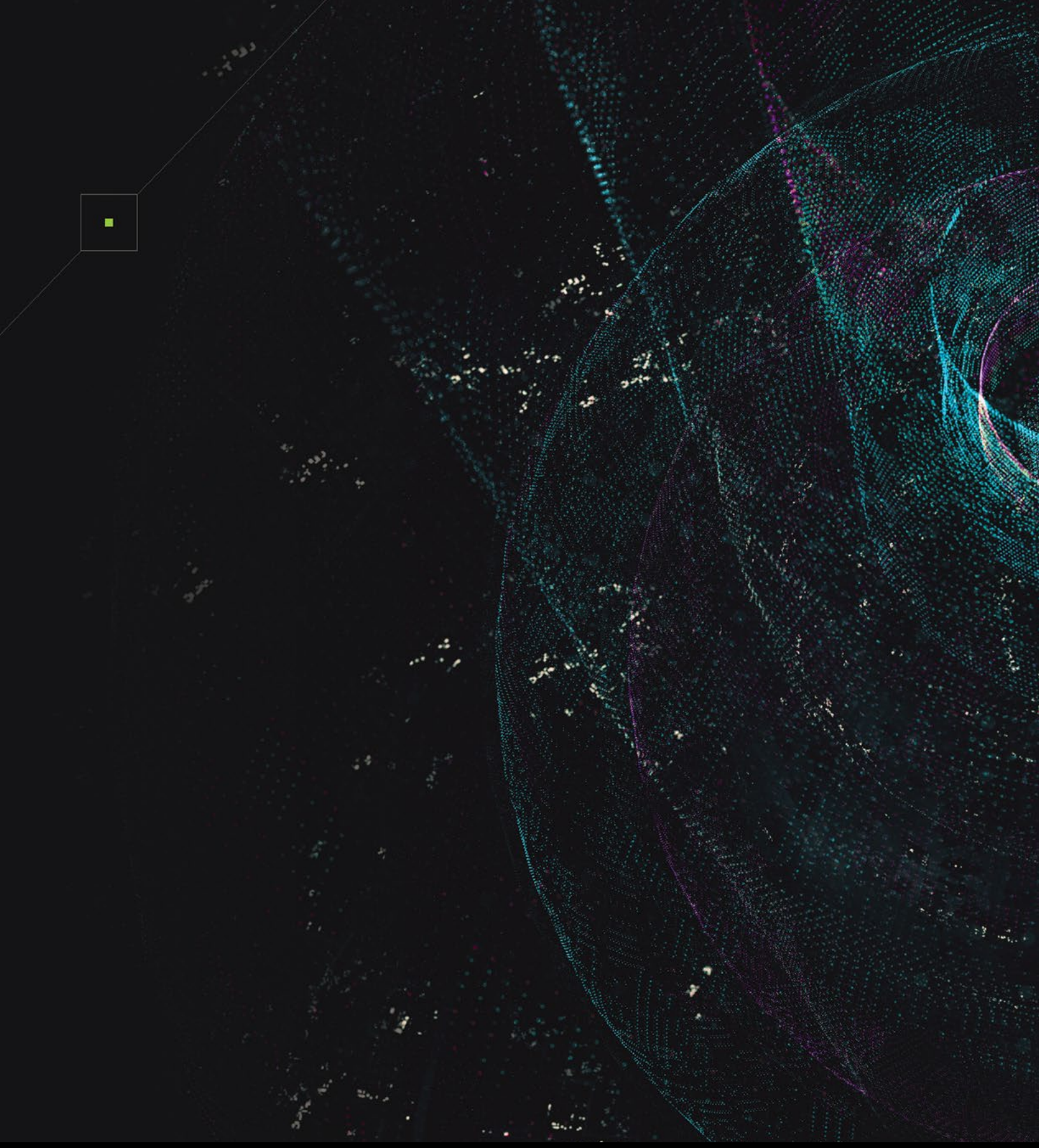
Specifically, the survey reveals:

- 81% say AI will help them solve the cybersecurity skills gap
- 83% of those already using AI say the technology has enabled their security teams to do more analytical, contextual, and highly skilled work
- 86% say AI has automated repetitive tasks for workers

Indicate which apply to your security team as it relates to AI:

METHODOLOGY

The survey was conducted by Market Cube on behalf of Cylance. Participants were 652 IT decision makers in the U.S., the U.K., Germany, and France who responded to questions online between June 24 and July 30, 2017. Respondents were senior managers and executives in IT roles, three-quarters of whom work in large enterprises and the rest in SMB. The margin of error is plus or minus 3.8 percentage points.



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