EVOLUTION

2018 GLOBAL REPORT: THE ARTIFICIAL INTELLIGENCE IMPERATIVE

The Artificial Intelligence Imperative: Unlocking Data Insights to Fuel Business Growth and Innovation

Senior leaders know AI-driven data intelligence is crucial to their future success. Amid AI enthusiasm, leaders are also aware that overcoming adoption challenges is key, according to a global survey of more than 2,300 business leaders worldwide.

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Executive Summary

In all industries across the globe, senior leaders are well aware that future growth hinges on intelligent use of data. The most successful businesses today are identifying insights within their large and varied data stores and acting on them to deliver new forms of value, including anticipating customer needs, customizing product and service offerings, developing new business models, and understanding changing market dynamics in real time as they occur.

The difficulty of doing this—particularly with sparse resources, high data volumes, and the speed of conducting business today—has fueled interest in artificial intelligence (AI) technologies. The overwhelmingly positive attitude toward AI and its promised benefits became clear in a recent survey of 2,300 global business and IT leaders by MIT Technology Review Insights, in association with Pure Storage, a leading enterprise flash storage company. At the same time, the survey revealed that senior leaders must begin now to address the practical challenges of AI adoption and assuage concerns about balancing the human-AI equation.

Key insights from the study include:

- **Fast generation of data-based insights is the foundation for business success.** Nearly 90% of respondents agree that data is key to delivering better results and future growth, especially when it comes to shaping a more personalized customer experience.

- **Nearly 80% of respondents voice widespread concern about their ability to analyze data**, particularly regarding data volumes, quality, and speed.

- **Nearly 80% of respondents have been asked to evaluate next-gen technologies like AI**, with the hope of capturing benefits that range beyond automation use cases.

- **The primary barriers to AI adoption** are cost, infrastructure readiness, and sparse talent resources. Such concerns may be more pronounced among leaders who are less involved with data-driven decision making, versus those with decision-making responsibilities.

- **Such barriers don't seem to deter respondents' enthusiasm for AI's game-changing potential**, with the vast majority (just over 80%) believing AI will have a positive impact on their industry. Benefits of AI extend beyond increased efficiency and process enhancement, to freeing up workers to be more creative and focus strategically on customers.

Data: The Catalyst for Growth and Innovation

Just as data has grown exponentially in volume, so has it increased in importance for businesses worldwide. At each digital touchpoint, customers leave a wealth of knowledge which can be transformed into actionable insights to drive competitive advantage.

It is therefore not surprising that the vast majority of respondents to a recent survey say data is the foundation for making optimal business decisions, delivering better results for customers, and growing their business. The global survey, by MIT Technology Review Insights in association with Pure Storage, a leading enterprise flash storage company, revealed that this is particularly true when it comes to pointing the way to new products and services, and discovering novel ways of engaging and serving customers (**SEE FIGURE 1**).

> The vast majority of respondents to a recent survey say data is the foundation for making optimal business decisions, delivering better results for customers, and growing their business.

▼ **FIGURE 1**

Data has influence within the business...

86%
say data is the foundation to making business decisions.

↓ Automotive: 46%

...and influencing potential growth

87%
agree that data is key to delivering better results for clients and/or customers.

↑ Americas: 65%
↓ EMEA: 54%
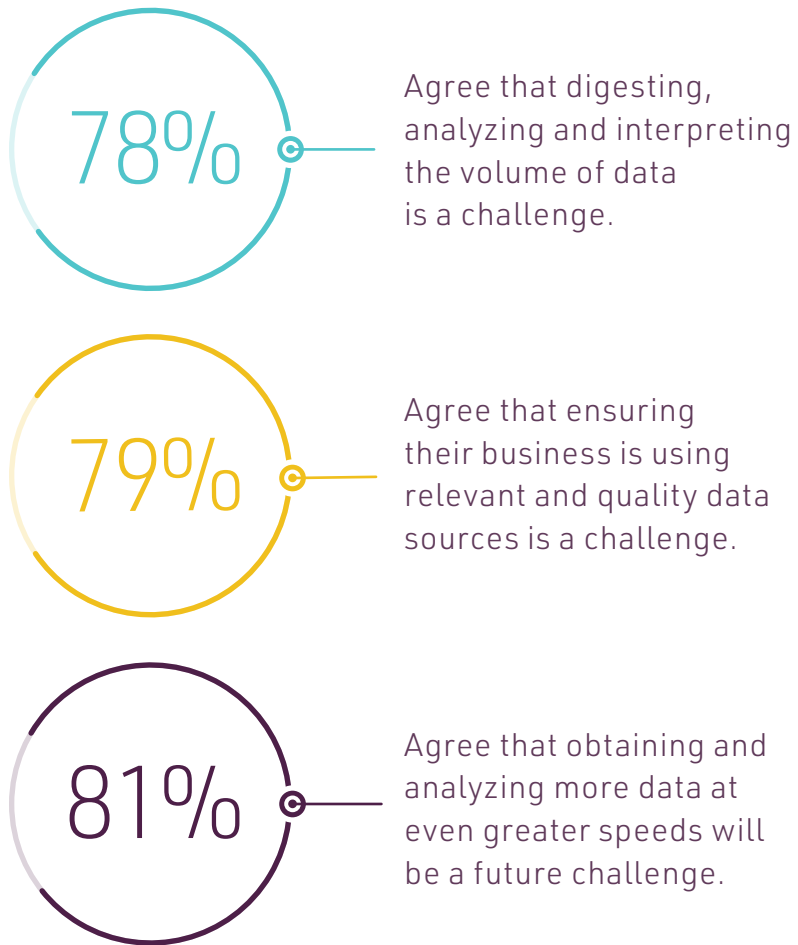↓ Government: 49%
↓ Automotive: 48%

87%
find that collecting data is important to business growth.

↑ Manufacturing: 64%
↓ Automotive: 53%
↓ Healthcare: 49%
↓ Government: 47%

↑↓ Significantly lower /higher vs global average (95% level)

Many face challenges in digesting, analyzing and interpreting large volumes of data

78%
Agree that digesting, analyzing and interpreting the volume of data is a challenge.

79%
Agree that ensuring their business is using relevant and quality data sources is a challenge.

81%
Agree that obtaining and analyzing more data at even greater speeds will be a future challenge.

Despite this belief in the importance of data and the insights it can produce, many organizations have yet to develop a data analytics competency they are fully comfortable implementing. More than three-quarters of respondents say they are struggling to digest, analyze, and interpret their large volumes of data (**SEE FIGURE 2**). Data quality is another key concern, as is the prospect of needing to quickly analyze mounting data volumes in the future.

84% agree that the speed at which data can be received, analyzed, interpreted and acted upon is key.
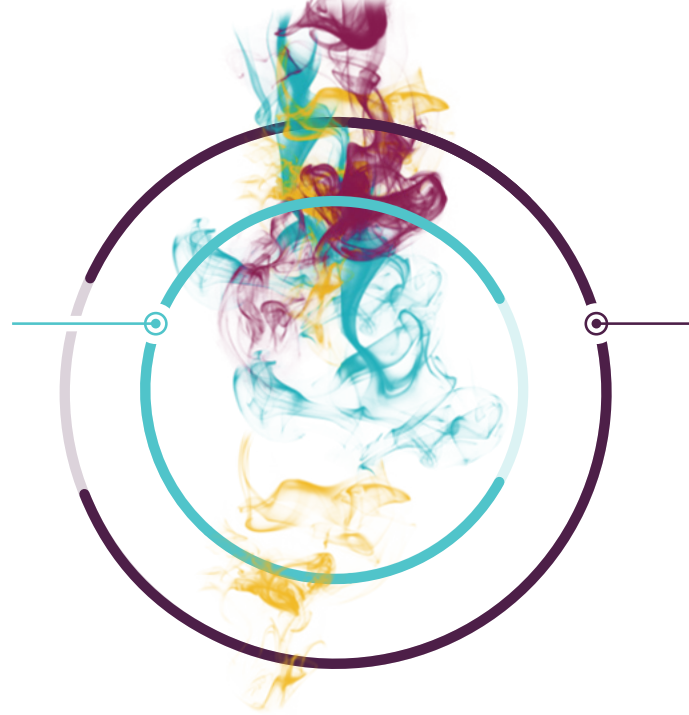
87% agree that it is essential that data is analyzed for meaning and context.

▲ **FIGURE 3**

Even companies that may have invested in developing an analytics core competency are pressured to uncover insights at an accelerated pace to keep up with fast changes in consumer preferences and market trends. More than 80% of respondents agree that the speed at which they can receive, analyze, interpret, and act upon their data is key (**SEE FIGURE 3**).

Businesses are also feeling compelled to keep up with agile competitors that are using analytics in increasingly innovative and creative ways. Such businesses are finding new ways to deliver value through the data they collect and analyze, whether by providing ever more personalized experiences or formulating entirely new business models that rely on real-time data collection and analysis, such as predictive maintenance and usage-based pricing. "You just

need to look at the business models of other businesses ... Amazon, Google ... all these businesses are using data to drive their business models," says one U.K.-based financial services executive.

Yet another concern voiced by respondents is acquiring analytics talent. In the midst of a growing talent gap when it comes to STEM (science, technology, engineering and mathematics) professions, 40% of respondents say they struggle to acquire and retain data analytics professionals. This is particularly true for small and midsize enterprises that need to compete with deeper-pocketed organizations for sparse talent.

Turning to AI for Answers

AI encompasses a broad spectrum of technologies and use cases, and is in the very early stages of adoption. For some businesses, AI refers to automation-based use cases, with robots performing pick-and-pack processes in a warehouse/distribution center, for example. In other cases, it might be customer service "bots" handling routine inquiries, freeing up human agents for complex, tougher problems that require the human touch.

Elsewhere, AI is taking on more of a strategic and data-oriented role, serving up personalized messages to customers that reflect their value to the company or where they are in the buying process. And in still others, perhaps an AI-powered engine combs through reams of data at the point of sale to make a "next-best action" recommendation in real time, based on the customer's need in that moment.

What is clear from the survey results is that this next-gen technology is seen among respondents as a game-changer for processing data, with the potential to significantly enhance processes across industries (**SEE FIGURE 4**). What's more, nearly 80% of respondents say they have been asked to explore next-gen technologies such as AI (**SEE FIGURE 5**).

83%
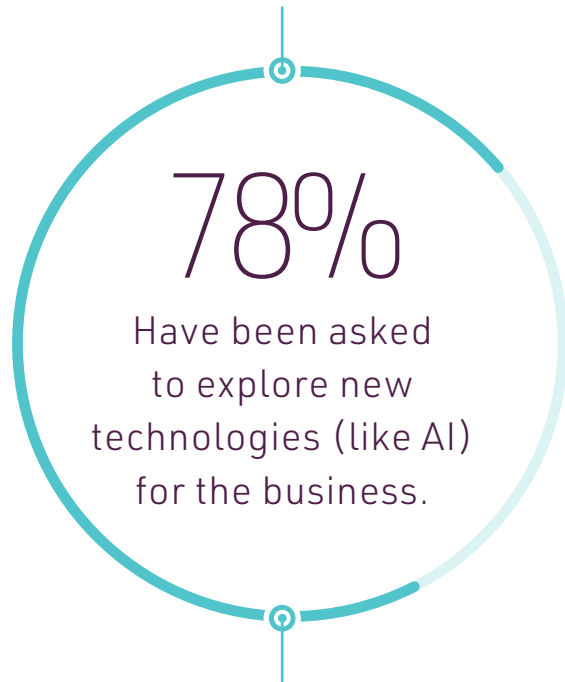agree AI will be a game changer in the way we think about and process data.
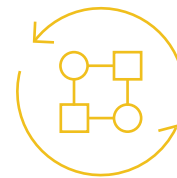
83%
agree AI will significantly enhance processes across industries (e.g. self-driving safety, improved healthcare).

▲ **FIGURE 4**

"We've looked at a way of trying to become much more efficient as a business by automating processes through robotic technologies."

UK, FINANCIAL SERVICES

78%

Have been asked to explore new technologies (like AI) for the business.

"We are actively partnering with a number of tech companies in order to access AI capabilities because we don't have any in-house and think it is important for our analytics."
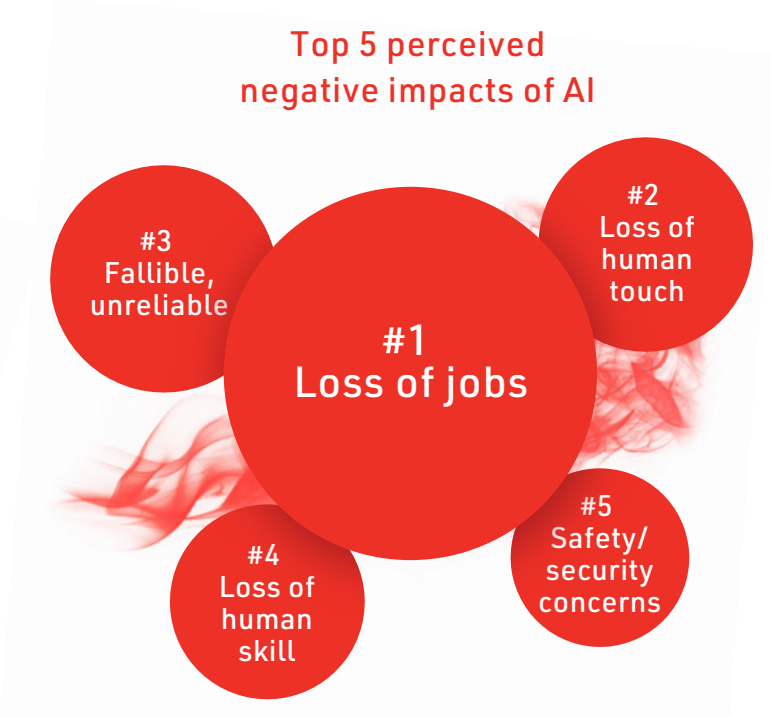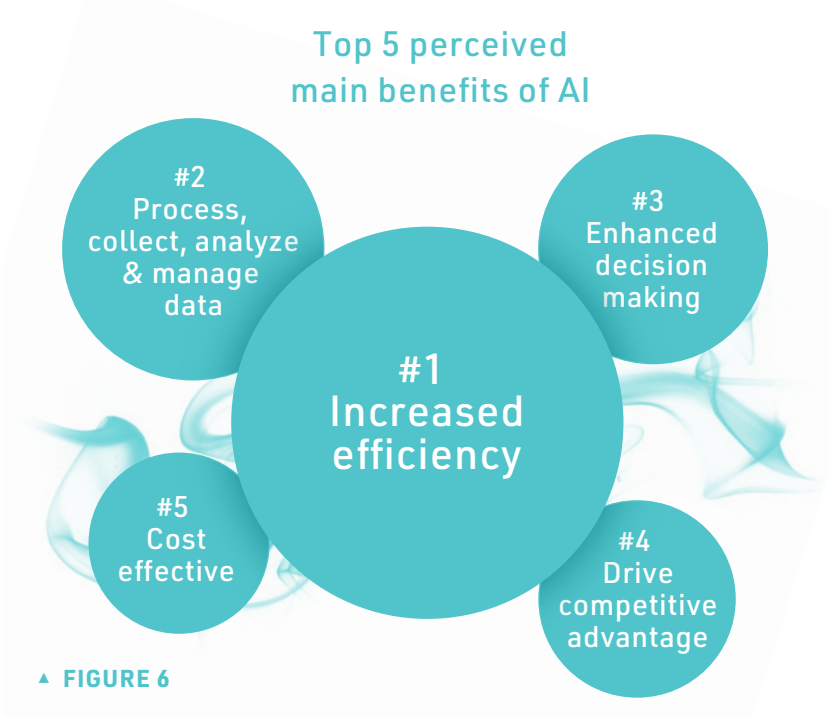
UK, OIL / GAS / ENERGY

For some, the promise of AI continues to center on automation. "Without a doubt, in the not-so-distant future, artificial intelligence will certainly replace tasks that are repetitive, mechanical, and don't require much thinking," says a respondent from the manufacturing industry in Japan. And a respondent from the Spanish financial services sector said, "The automation of processes by AI provides more accurate diagnoses, and therefore increases our capacity to produce something that is good."

In addition, the survey revealed that desired benefits extend into process enhancement and efficiency, including where that applies to data and data intelligence.

In fact, the number one benefit of AI cited by respondents is efficiency (SEE FIGURE 6). "If it is well implemented, it will really help to improve the company's performance and speed up processes," a Spanish-based technology company said. Efficiency—which leads to speed—is a key promise of AI, particularly when it comes to data analytics.

As businesses are finding, it is not enough to simply "do data analytics"—you need to develop actionable insights and to effectively execute on them, in ways that are better and faster than the competition. Because it can take on manual tasks, respondents also believe AI will free them to focus on strategic initiatives that more directly affect customers and clients.

Top 5 perceived main benefits of AI

#2 Process, collect, analyze & manage data

#3 Enhanced decision making

#1 Increased efficiency

#5 Cost effective

#4 Drive competitive advantage

▲ FIGURE 6

Top 5 perceived negative impacts of AI

#3 Fallible, unreliable

#2 Loss of human touch

#1 Loss of jobs

#4 Loss of human skill

#5 Safety/ security concerns

Leaders with lower involvement levels are less likely to explore new possibilities like AI

87% Agree
Full involvement

75% Agree
Partial involvement

◄ "We could think about how we can sell more effectively to customers."

"We could dedicate more time to thinking creatively about the business challenges we (and our clients) face." ►

88% Agree
Full involvement

74% Agree
Partial involvement

86% Agree
Full involvement

79% Agree
Partial involvement

◄ "Automation would allow more time to focus on innovation within my business."

Addressing the AI Mindset Gap

Not everyone is equally enthusiastic about the promise of AI. Among study respondents, there was a discrepancy of opinion between leaders who are less involved with sourcing, using, and managing data and those with a greater level of data-related responsibilities. In other words, the closer the role is to the data, the more important AI becomes.

Leaders with higher involvement levels, for example, are more likely to be exploring the possibilities of next-gen technologies like AI. Consequently, these leaders are more likely to appreciate the potential advantages this technology could offer, such as enabling their organizations to more effectively sell and service their users, freeing up workers to think more creatively about the business challenges they face, and reducing rote tasks so workers can turn their focus to innovation (SEE FIGURE 7).
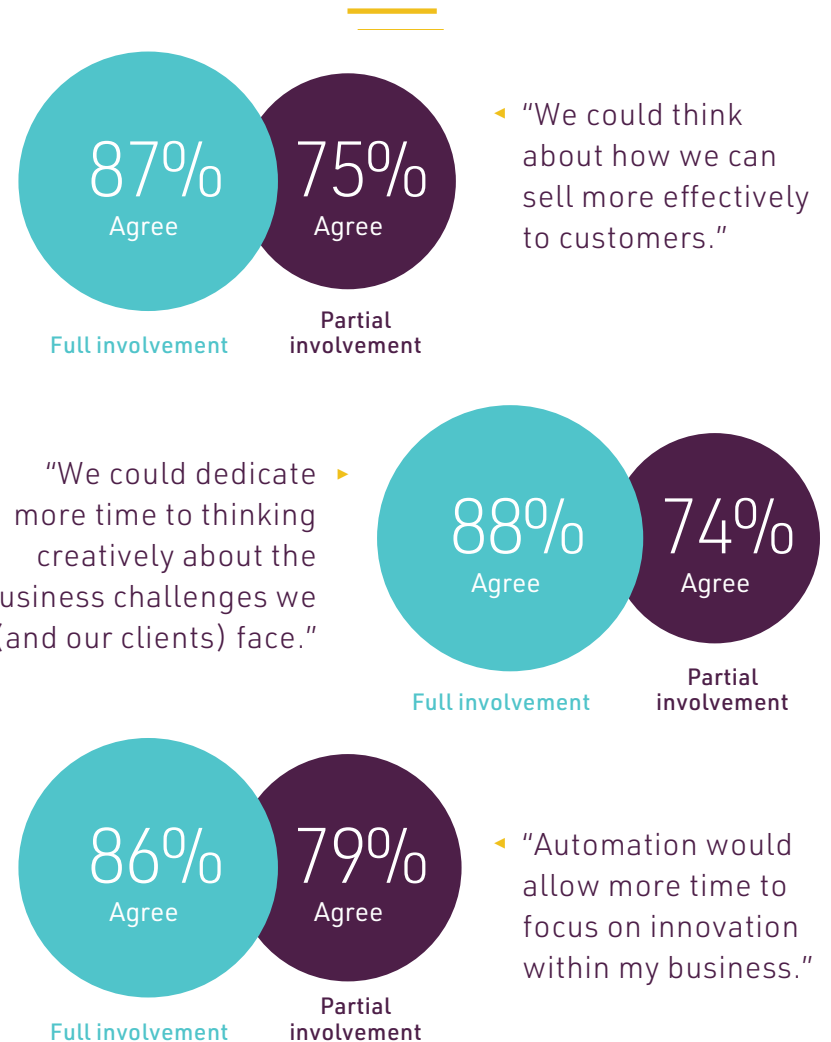
The attitudes represented by the lower-involvement group could slow AI adoption for organizations that fail to address this apparent mindset gap. To minimize this risk, it is essential for organizations to gain a greater understanding of why the discrepancy exists, and to work to fill the gap. It makes sense that, by definition, leaders who are more fully involved with data are more strategically focused—whereas those less involved with data are more operationally focused, which is where AI challenges are most pronounced. This latter group may be more aware of these challenges (see section below), and should be consulted regarding their awareness and knowledge of these concerns.

Furthermore, survey results suggest that the more that leaders understand the value of data, the more potential value they see in AI. Enterprises would do well, then, to educate workers at all levels about the many ways in which data fuels business growth, and the need for next-gen technologies like AI to accelerate and enhance data analytics processes.

Jumping the AI Hurdles

Beyond education, organizations also need to identify and address the practical challenges of AI adoption. Survey respondents reported being most concerned about the issues around budget and resource allocation for AI adoption, preparing the technology infrastructure to handle AI-driven data analytics, and acquiring the resources and admittedly scarce talent to develop an AI competency (SEE FIGURE 8).

▼ FIGURE 8
Top 3 barriers that hinder AI adoption

53%	43%	41%
Cost/ Budget	Data infrastructure	Resource and talent
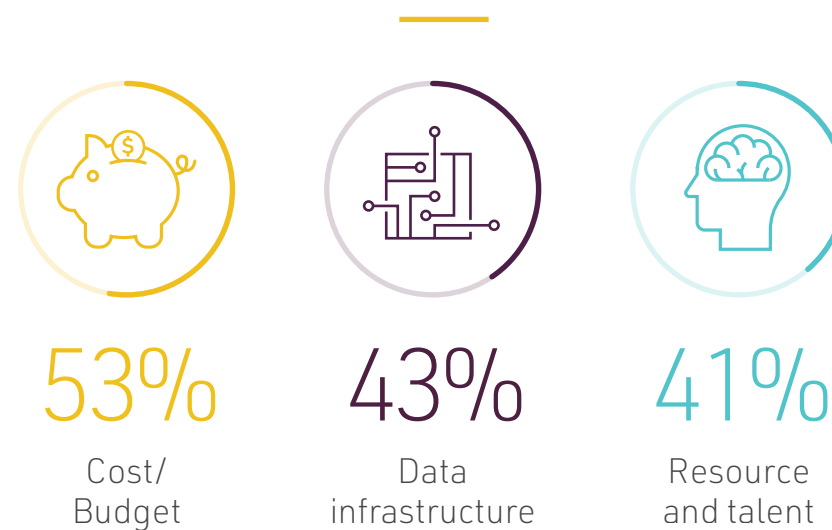
All of these are practical concerns that must be addressed with any new technology, and AI is no exception. The key for organizations will be to explore the actual use cases where the benefits of AI will be most pronounced, whether it is at a basic automation level or applied to data analytics processes. They can then determine the return on investment they can expect to develop as a way to make the business case. To acquire the needed skills, organizations will likely embark on a hybrid strategy of hiring and training, and connecting with expert, external partners. "We are actively partnering with a number of tech companies in order to access AI capabilities because we don't have any in-house," says a respondent from the U.K. oil and gas sector.

Another concern the study addresses is the impact of AI on the current workforce. Here again, a discrepancy of opinion exists between leaders who are more involved with data and those who are less so. The former group is more likely to believe that AI will help people do their jobs better or move to higher-skilled jobs because they have superior data at their disposal (88%, versus 77% of those with less involvement). This group is also more likely to see how AI could enable individuals to work on things they are passionate about (47%, versus 29% of those with less involvement).

The key here is to gain a greater understanding of how humans and machines will collaborate in an AI-driven world—how humans will support the work of machines, and how machines will support the work of humans. Where study respondents seem to agree is that humans will always play a vital role in AI and data analytics, and that there will be a continued need for human intervention. Indeed, most respondents (73%) believe there will be a limit to how far data can take organizations without human intervention. An even higher percentage (83%) believes human intelligence will continue to be required to interpret data and make decisions.

As AI adoption grows, balancing the human-machine equation will become a key driver of success for these initiatives. A likely scenario will be that—rather than automating entire jobs—AI will enhance human work by automating manual and rote tasks, handling unmanageable data volumes and varieties, and accelerating discovery of insights. With the increased efficiency, human workers will then be free to pursue more strategic, innovative, and customer-focused tasks. Most respondents feel there will always be a role for humans.
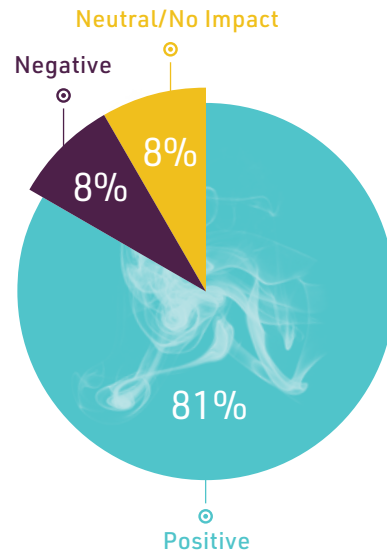
> "
> This will always be dependent on a human element because a colloquial expression analyzed by both a system and by a human being will give substantially different answers.
>
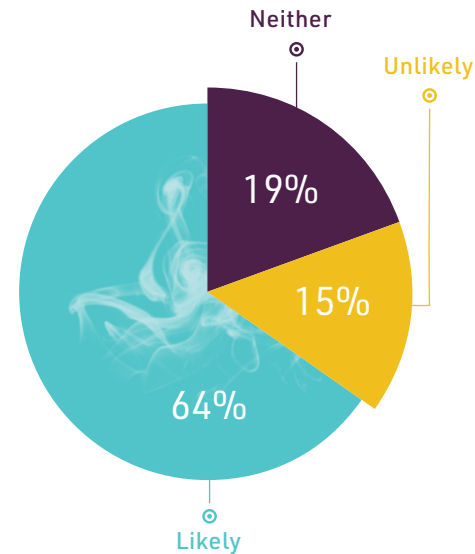> **RESPONDENT, GERMAN TECHNOLOGY INDUSTRY**

81%

believe AI will have
a positive impact
on their industry
in the future.

Negative
Neutral/No Impact
8%
8%
81%
Positive

64%

are likely to
consider investing
in AI solutions
in the future.

Neither
Unlikely
19%
15%
64%
Likely

The Future of AI is Bright

The survey results showed that the perceived future impact of AI is overwhelmingly positive, with a clear majority of respondents (81%) believing that AI will have a positive impact on their industry in the future (SEE FIGURE 9). Already, this optimism is turning into investment plans, with more than three-fifths of respondents saying they will likely allocate budget to AI solutions in the future (SEE FIGURE 10).

This optimism extends to applying AI to business processes, where organizations believe AI will boost efficiency, enhance processes, and free workers to focus on innovation, creativity, and customer-focused initiatives. "With the help of AI, our company can improve the customer experience, augment employee performance, automate work processes, and develop intelligent agents to help with a lot of

repetitive business processes," says a respondent from a U.S.-based technology company. And a respondent from the Russian manufacturing industry said, "AI is going to make shopping more personal for the shoppers and simplify things for the retailers. In the next few years, this technology will be playing a significant role in the retail industry."

It is still early in the story of AI, but it is clear that the data-driven future is at hand. Organizations that work to address AI challenges and educate workers at all levels on both the promise and the reality of AI, as well as the value of data, will derive the maximum value from their data stores—value that will drive better business performance and an optimal customer experience.

Research Methodology

The research was conducted online by MIT Technology Review Insights between February 20, 2018, and March 29, 2018. The survey targeted senior executives who are fully or partially responsible for sourcing or using data, or managing those who source or use data in their organization. Respondent industries included Automotive (10%), Manufacturing (19%), Healthcare (8%), Financial Services (20%), Government / Education (11%), Communications/ Media (5%), Oil/ Gas/ Energy (8%), Technology Hardware /Software (19%).

Regions covered were as follows:

- Americas (Argentina, Brazil, Canada, Colombia, Mexico, U.S.)

- Europe, Middle East, and Africa (EMEA) (Benelux, including Belgium, Netherlands, Luxembourg; France, Germany, Italy, Spain, Switzerland, Russia, U.K., South Africa, United Arab Emirates)

- Asia Pacific and Japan (APJ) (Australia, China, Hong Kong, Indonesia, Japan, New Zealand, Singapore, South Korea)

A total of 2,357 questionnaires were completed, along with eight qualitative in-depth interviews.

Definitions

Data: "For the sole purpose of this survey, when data is referenced, the definition is any data created by the organization that would benefit from segmentation and analysis."

Artificial Intelligence (AI): "AI is technology that appears to emulate human performance typically by learning, coming to its own conclusions, appearing to understand complex content, engaging in natural dialogs with people, enhancing human cognitive performance (also known as cognitive computing) or replacing people on execution of non-routine tasks."