

NarrativeScience



Outlook on Artificial Intelligence in the Enterprise 2016

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Artificial intelligence (AI) isn't new. It has been around for decades, but AI technologies are only making headway now due to the proliferation of data and the investments made in storage, tracking, and analytics technologies.



Between 2014 and 2015 alone, for example, the number of organizations either deploying or implementing
DATA-DRIVEN PROJECTS INCREASED BY 125%, *with the average enterprise spending \$13.8 million on the effort.*



Market intelligence firm IDG also projects that the market for **BIG DATA TECHNOLOGY AND SERVICES WILL REACH \$48.6 BILLION** *by 2019.*



Our increased accessibility to vast and rich data sets combined with our willingness to work in partnership with 'smart machines' is accelerating the progress of AI-powered business applications, predominantly in data-rich sectors and business functions such as financial services, healthcare, marketing, and sales. No matter whether it takes the form of predictive analytics, natural language generation, voice or image recognition, or machine learning, **AI applications are critically important technologies that fuel innovation and are reshaping how companies do business.**

To better understand the current and future impact of AI in the enterprise, we recently surveyed over 230 business and technology executives from a variety of industries across the country. Our goal in doing so was to identify some of the key trends that are influencing how today's businesses use technology. What we learned in the process can be summarized into four key findings:

1

AI ADOPTION IS IMMINENT,
DESPITE MARKETPLACE CONFUSION

2

PREDICTIVE ANALYTICS IS
DOMINATING THE ENTERPRISE

3

THE SHORTAGE OF DATA SCIENCE
TALENT CONTINUES TO AFFECT
ORGANIZATIONS

4

COMPANIES THAT GENERATE
THE MOST VALUE FROM THEIR
TECHNOLOGY INVESTMENTS MAKE
INNOVATION A PRIORITY

In the pages that follow, we'll examine each of these findings in more detail.

1

AI ADOPTION IS IMMINENT, **DESPITE** **MARKETPLACE CONFUSION**

AI is seemingly everywhere. Examples of its presence circulate throughout our everyday lives; whether it is Amazon's recommendation system suggesting purchases before we even know we need them, IBM's Watson helping doctors diagnose cancer or applications like Siri becoming more adept at carrying out our voice-directed orders. Throw in self-driving cars and the rise of intelligent robots, and it starts to feel like everybody is already using AI.

But the reality is that despite all of the attention it has received, AI is still in its infancy when it comes to wide adoption. In fact, only 38 percent of the respondents to our survey said that they are currently using AI technologies in the workplace to do things like automate manual, repetitive tasks. The vast majority of companies haven't yet integrated AI services into their businesses in a tangible way.

Or have they?

Paradoxically, 88 percent of the group who said their organizations don't use AI technologies go on to say that their organizations use solutions that actually rely on AI techniques

including predictive analytics, automated written reporting and communications, and voice recognition and response. It appears that, in many cases, companies are benefiting from AI-powered solutions without even realizing it.



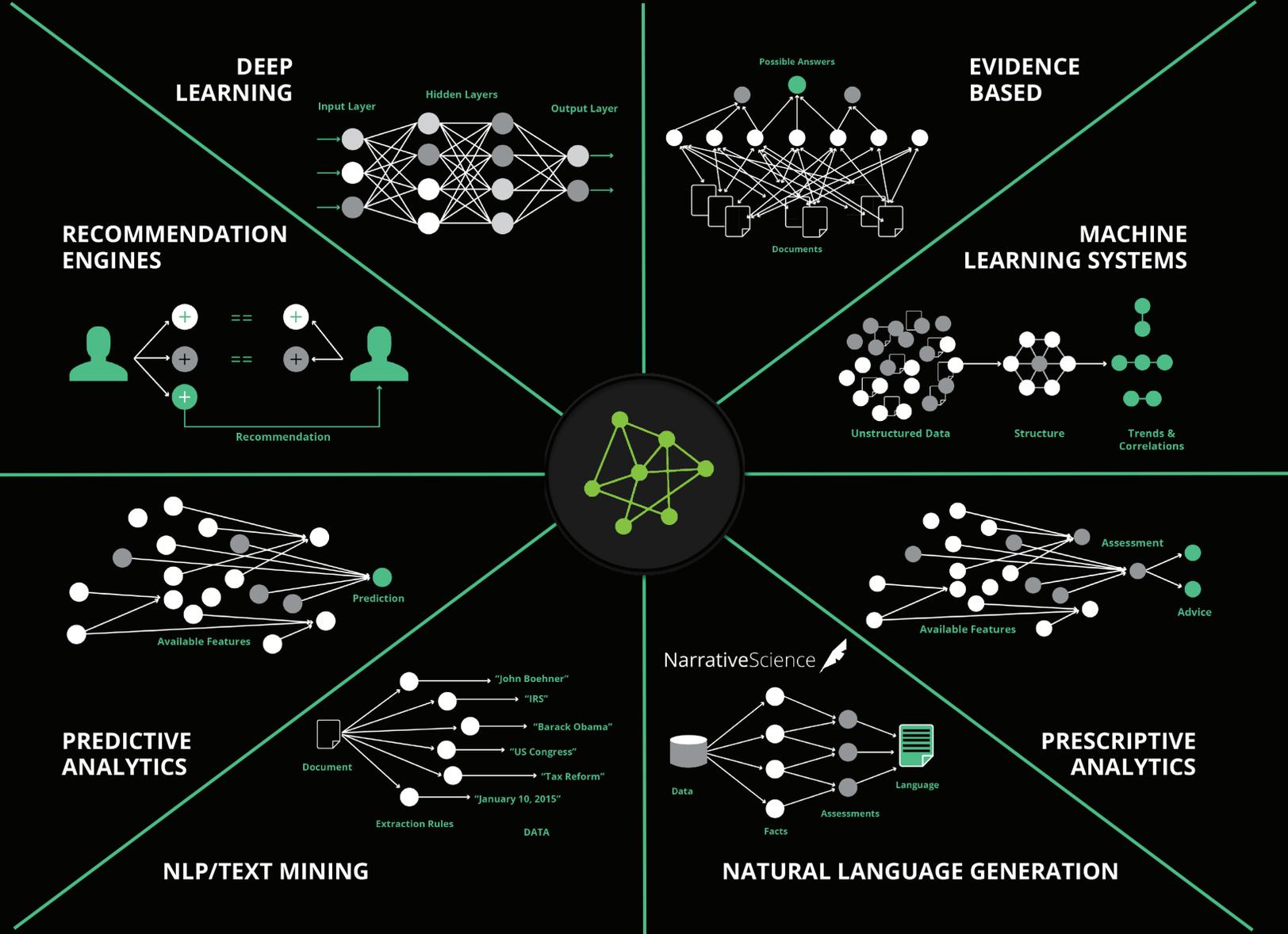
Only 38% say they're using AI technologies in the workplace.



*But 88% are using technologies that **rely on AI.***

*Companies are benefitting from AI-powered solutions **WITHOUT EVEN REALIZING IT.***

This significant disconnect underscores the fact that there is confusion when it comes to the definition of AI, and this goes to the heart of one of the key issues with AI. It has the promise of being used in so many places that a clear definition of what it is and the guaranteed ROI remains hazy. Among our survey respondents who haven't yet adopted AI, 20 percent cited a lack of clarity on its value proposition as the reason for not deploying the technology thus far.



REPRESENTATION OF THE AI ECOSYSTEM

While AI certainly isn't new, it has only been within the past few years that it has begun to really impact our lives as the data that AI typically requires to succeed has finally become available. That said, a full 20 percent of our respondents cite lack of data as a key stumbling block to the adoption of AI. But, when you consider that the world creates 2.5 quintillion bytes of data every single day,¹ it's safe to say that won't be a problem for long.

Although AI is still in its early days of adoption, it's just a matter of time before it impacts the vast majority of organizations. Among our survey respondents whose companies haven't yet deployed AI technologies, 41 percent indicated that doing so is a priority. And, 26 percent plan to deploy AI technologies within the next two years. ***This means that 62 percent of the respondents' organizations will likely be using AI technologies by 2018.***

1 "What is big data?" IBM.

2

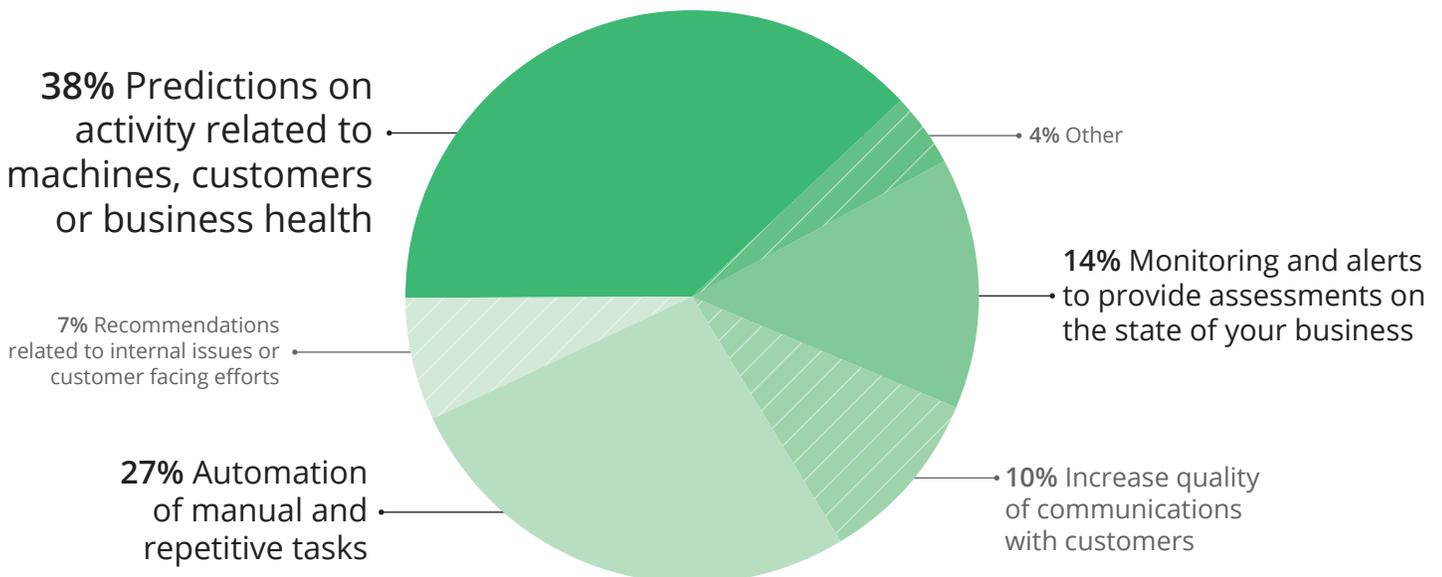
PREDICTIVE ANALYTICS IS DOMINATING THE ENTERPRISE

AI can take many different forms, from deduction, reasoning, and problem-solving applications to natural language generation and social intelligence solutions, among many others. These techniques layered together form the AI solutions that are having early success in the enterprise. Specifically, predictive analytics — which uses data mining, statistics, modeling, and machine learning to analyze current data to make predictions about the future — is the most commonly used solution among our survey respondents, cited by 58 percent of them. Automated written reporting and/

or communications and voice recognition and response were the second most popular choices with about 25% of the group using them.

The broad adoption of predictive analytics may be the result of its perceived value. In fact, when we asked our survey participants to select the most important benefit an AI solution should provide, the most common consensus was technology that can deliver predictions on activity related to machines, customers, or business health. Given the vast amounts of data required to enable predictive analytics, this finding

The Most Important Benefit that an AI-Powered Solution Should Provide



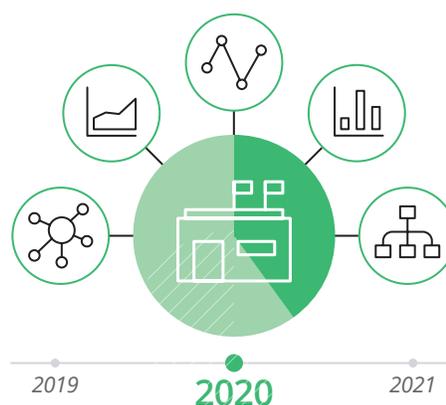
also points to the growing availability of data as companies become more sophisticated at tracking, storing, and managing it.

One of the reasons for the popularity of predictive analytics may be the tremendous potential it can offer across many different industries. In healthcare, it is being used to both anticipate and prevent costly and often unnecessary hospital readmissions.² In manufacturing, it's allowing for much more efficient supply chain management by anticipating and adjusting for potential delays resulting from such factors as inclement weather, strikes, or even geopolitical events.³

Our findings about predictive analytics align with other third-party research. According to Howard Dresner's annual Advanced and Predictive Analytics Market Study, for example, 74 percent of respondents believe that predictive analytics is either important, very important, or critical to their mission.⁴ Meanwhile, Gartner anticipates that by 2020, predictive analytics will attract 40 percent of the new investment made by enterprises in the areas of business intelligence and analytics.⁵

Although predictive analytics is one of the most prominent solutions currently being

used, other AI-powered solutions such as advanced natural language generation will play an increasingly important role. Advanced natural language generation, a subfield of artificial intelligence, is a technology that starts by understanding what people want to communicate, analyzes data to highlight what is most interesting and important, and then delivers the analysis in natural language. It is used to automate manual processes related to data analysis and reporting, as well as generate personalized communication at scale. Its authoring capabilities can also be easily integrated into other analytics platforms, producing narratives to explain insights not obvious in data or visualizations alone.



*By 2020, predictive analytics will attract **40% OF THE NEW INVESTMENT** made by enterprises.*

² "Using Data Science to Tackle Home Healthcare Readmissions Head On," SlideShare, May 19, 2016.

³ Tyson Baber, "How FusionOps is Delivering the Future Supply Chain: On-Time In-Full," georgianpartners.com, April 19, 2016.

⁴ Howard Dresner, "Advanced and Predictive Analytics Market Study (2015 Edition)," Dresner Advisory Services, LLC, August 27, 2015.

⁵ Lisa Kart, Gareth Herschel, Alexander Linden, Jim Hare, "Magic Quadrant for Advanced Analytics Platforms," Gartner, February 9, 2016.

3

THE SHORTAGE OF DATA SCIENCE TALENT CONTINUES TO AFFECT ORGANIZATIONS

We're at the beginning of a new phase of data, a phase that will have very little to do with data capture and storage and everything to do with making data more useful, more understandable, and more impactful.

Which brings us to the next finding: the shortage of data science talent continues to affect organizations. Global demand for data scientists will exceed supply by more than 50 percent by 2018.⁶ Without individuals trained at analyzing complex data to relay the high-level insights for quick decision-making, companies can easily miss out on a valuable asset.

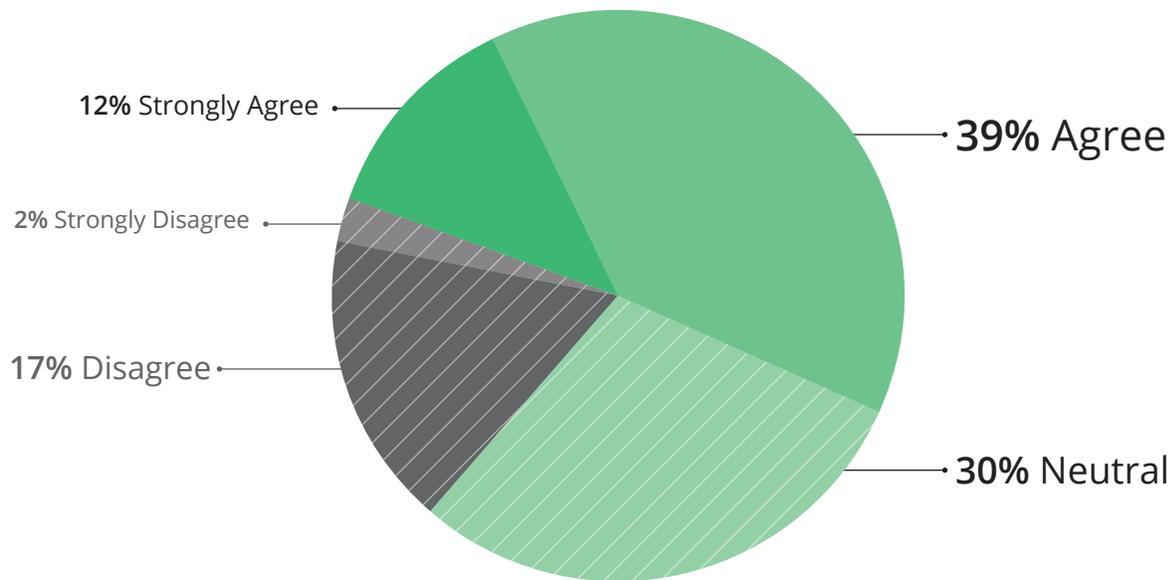


*In fact, 59 percent of our survey respondents cited a **LACK OF DATA SCIENCE TALENT AS ONE OF THE MOST COMMON CHALLENGES** they face in trying to generate value from their data.*

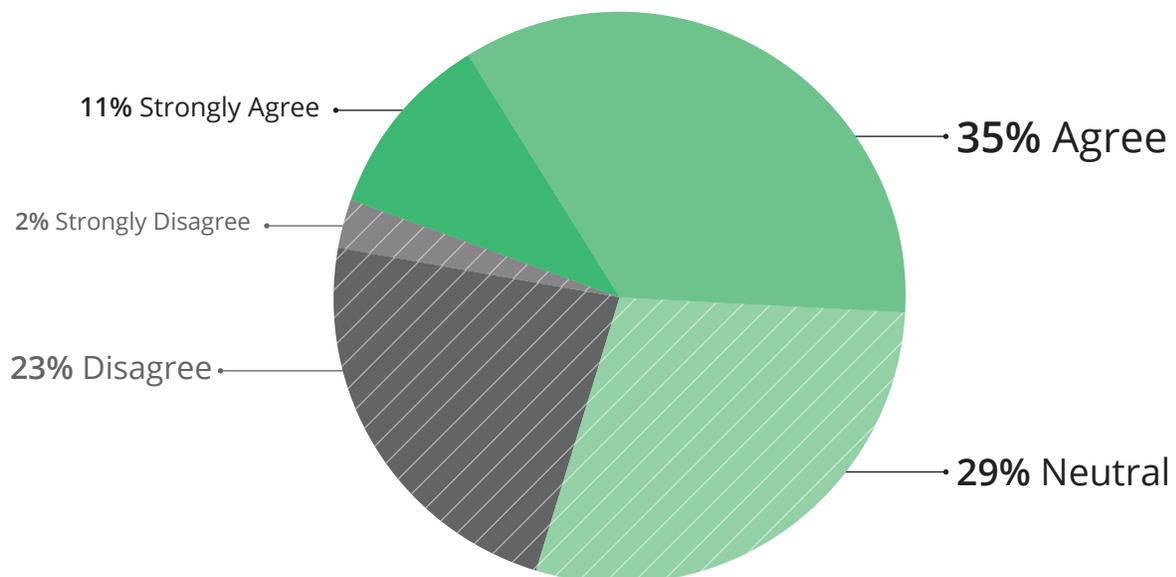
Out of all the survey respondents who have deployed big data technologies, roughly 50 percent felt that their organizations are skilled at using big data to solve business problems. Slightly fewer of them (45 percent) felt the same way about their ability to generate valuable information for their customers. Interestingly, almost all of the respondents (95 percent) who indicated that they are skilled at using big data to solve business problems or generate insights also use AI technologies. That's up from 59 percent last year and is a clear indication that many companies are turning to intelligent systems to help augment their data science capabilities in the face of a talent shortage. The commonality across all of these AI solutions is that they offer something additional humans cannot provide: the power of scale.

⁶ James Manyika, Michael Chui, Brad Brown, Jacques Bughin, Richard Dobbs, Charles Roxburgh, and Angela Hung Byers, "Big data: The next frontier for innovation, competition, and productivity," McKinsey & Company, May 2011.

My Organization is Effective at Using Big Data to Solve Business Problems



My Organization Is Effective at Using Big Data to Generate Insights for Customers



4

COMPANIES THAT GENERATE THE MOST VALUE FROM THEIR TECHNOLOGY INVESTMENTS MAKE INNOVATION A PRIORITY

Companies that truly embrace and prioritize innovation typically have a dedicated team and, in many cases, a separate budget for innovation investment. As our findings show, companies with that level of commitment to innovation are the most successful at adopting, testing, and deriving value from new technologies.

Of the business leaders surveyed for this report, 54 percent indicated that their organization has an innovation strategy, while 62 percent noted that their companies have a dedicated innovation budget. Some interesting results emerge when looking at the success of the companies that have an innovation strategy versus those without.

For example, while 63 percent of the survey respondents who have an innovation strategy believe that they are skilled at using big data to solve business problems, only 13 percent of those without a strategy feel the same way. Similarly, 37 percent of respondents who have an innovation strategy believe that their organization is effective at using the

information derived from AI to guide decision-making, versus 9 percent of respondents from organizations that lack a strategy.



Finally, 61 percent of the “innovation strategy” respondents are **APPLYING AI TO THEIR DATA TO IDENTIFY PREVIOUSLY UNIDENTIFIED OPPORTUNITIES** like process improvements or new revenue streams while only 22 percent of respondents without a strategy are taking advantage of this opportunity.

Our survey findings reveal that companies making innovation a priority are the ones getting the most value from the technologies that they’re using. For today’s business leaders, that makes a pretty compelling case for why they should organize and fund a formal innovation strategy.

Conclusion

Around the world, businesses are adopting a variety of technologies powered by AI to help them operate more efficiently and better serve their customers. In the future, AI will be used in ways that we can't even imagine, but in the near term, it is already proving its immense value by helping organizations uncover new areas for revenue, increase productivity or pinpoint operational problems before they happen. While there is currently confusion about AI and how to best use it, its widespread adoption is inevitable. We predict that as winners emerge from the hype, confusion will lessen.

And, as our analysis found, companies should institute a dedicated focus on innovation that puts them on a faster path to testing, adopting, and deriving value from these technologies. That being said, technology alone does not equal successful innovation. The most successful companies are combining a culture of open ideation with human talent and intelligent systems. While fostering an environment where ideas can be explored freely among teams is good, fostering an environment where people and intelligent systems can explore ideas together is ideal. With man-machine partnerships, companies will achieve results that reach beyond the skills of either group alone.

SURVEY METHODOLOGY

National Business Research Institute deployed the survey online from April 25th to May 27th, 2016. When deployment ended, a total of 235 completed surveys were received. Statistically, the results of the present study reach an **87 percent confidence level** with a 5 percent sampling error.

The respondents spanned a variety of industries such as healthcare, manufacturing, and financial services, and included directors, vice presidents, and members of the C-suite. This report reflects the key insights that we gathered from that survey and is supplemented with third-party research as noted throughout the document.



NarrativeScience

Narrative Science is the leader in advanced natural language generation for the enterprise. Its Quill™ platform, an intelligent system, analyzes data from disparate sources, understands what is interesting and important to the end user and then automatically generates perfectly written narratives for any intended audience, at unlimited scale. A diverse range of companies such as Deloitte, USAA, American Century Investments, MasterCard, and the U.S. intelligence community utilize Quill to increase efficiency through the elimination of time-consuming, manual processes related to analyzing data and communicating insights, freeing employees to focus on high value activities and better serving their customers.

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