

A Forrester Consulting
Thought Leadership Paper
Commissioned By IBM

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Overcome Obstacles To Get To AI At Scale

Invest In And Scale AI To Become An Industry
Leader



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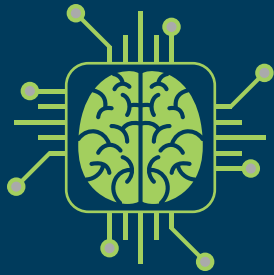
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AI will power the next age of human progress.



Firms that have scaled AI are almost seven times more likely to be the fastest-growing businesses in their industry compared to firms that have not scaled AI.

Executive Summary

In a time when AI is considered the engine that will power the next age of human progress, failure to participate is no longer a viable business option.¹ Companies that wish to digitally transform must understand that embracing the status quo will leave them struggling to keep up with competitors that recognized the opportunity before them.

Up until now, enterprises have tried some AI experimentation. But in order to compete in 2020 and beyond, firms will need to take a giant step forward. AI has the ability to create incredible value for organizations looking to decrease costs, increase productivity, and improve their customers' experiences.² But the time for timidity is over. Firms must put considerable investment into their efforts to scale AI across their enterprises if they want to be leaders in their industries.

In October 2019, IBM commissioned Forrester Consulting to explore how firms turn AI into reality. Forrester conducted an online survey with 518 global IT, data, and line-of-business decision makers with authority over their companies' data, AI, and analytics strategies to explore this topic. We found that while firms consider AI initiatives to be a top priority in digital transformations and an expected driver of important business outcomes, they struggle with a host of data challenges that prevent them from scaling AI across their enterprises and fully maximizing competitive advantages.

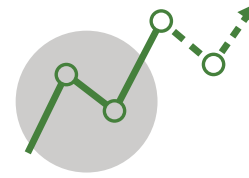
KEY FINDINGS

- › **AI is a key driver of business growth.** Surveyed firms anticipate AI initiatives to be critical to their digital transformation moving forward. It will also be a key driver of business growth, improved customer experience (CX), and increased employee experience (EX). And though enterprises are already using AI technologies today, they are now eager to scale AI use cases across their businesses.
- › **Data is a major obstacle to AI expansion.** Unfortunately, 90% of firms are having difficulty scaling AI across their enterprises, and data is a significant reason why. More than half of the respondents in this study admit that they simply don't know what their AI data needs are. Furthermore, firms struggle with ensuring data quality and data integration issues that leave them unable to connect multiple data sources. Without properly curated data, AI initiatives are destined to fall short – which leads to increased costs, missed deadlines, and regulatory risks.
- › **Industry leaders are already harnessing the AI competitive advantage.** Having already experienced benefits like improved efficiencies and revenue growth from early experimentation, firms recognize that scaling AI will allow them to stay competitive in an increasingly crowded market. What's more, we discovered that firms that have scaled AI are almost seven times more likely to be the fastest-growing businesses in their industry compared to firms that have not scaled AI.

AI Becomes A Must-Have Capability To Attain And Sustain Industry Leadership

Today's enterprise leaders agree: AI is critical to the success and health of digital business. When asked to prioritize among a slew of different strategic initiatives, over 60% of respondents consider AI-related initiatives to be some of the most critical to successful digital transformation. In fact, AI is the second-most important initiative to enterprise leaders today, second only to using data-driven insights to improve products and services. Given how critical AI is to modern, digital enterprises, we wanted to understand how firms are using AI today. Our study found:

- › **AI initiatives support overall business health.** Firms believe their AI initiatives will improve all aspects of the business, touching customers, employees, and the bottom line. The No. 1 goal for these projects is increasing revenue growth (43%), followed closely by improving employee productivity, improving CX, and increasing profitability (see Figure 1). Not surprisingly, top use cases mirror these key goals with over 70% of firms currently using or expanding their use of AI technology to support customer service interactions, operational efficiency, and business intelligence application scenarios.
- › **Firms are prioritizing training in order to undertake initiatives and develop solutions.** Sixty percent of respondents are currently training their staff for AI/machine learning (ML)/deep learning. It's notable that training takes precedence over strategically identifying use cases (55%), implementing third-party solutions (52%), and developing AI solutions in-house (37%). Without the right skills in place, teams will struggle with solutions and fail to successfully carry out use cases.



AI supports business-critical goals like revenue growth and CX improvement.

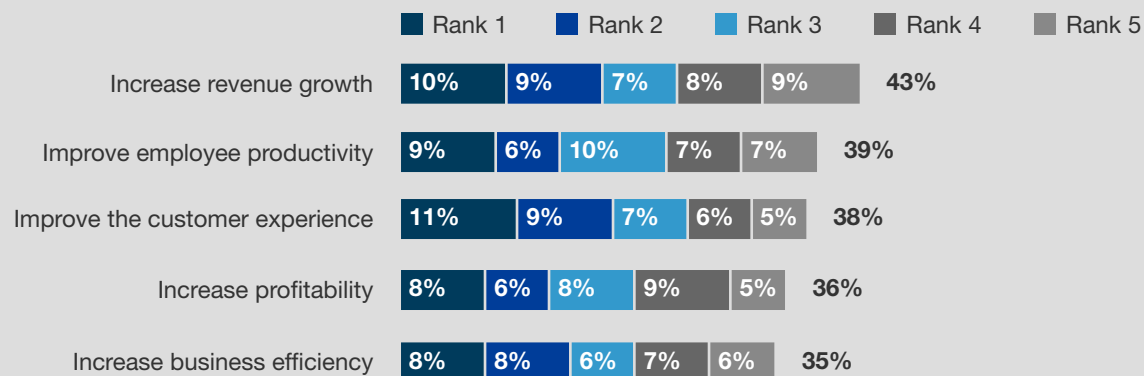
“AI improves our quality and optimizes all the processes needed for operations and customer experience.”

Decision maker with authority for their company's AI strategy



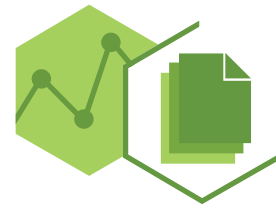
Figure 1

“What are the key goals that you plan to achieve with your AI initiatives specifically?”



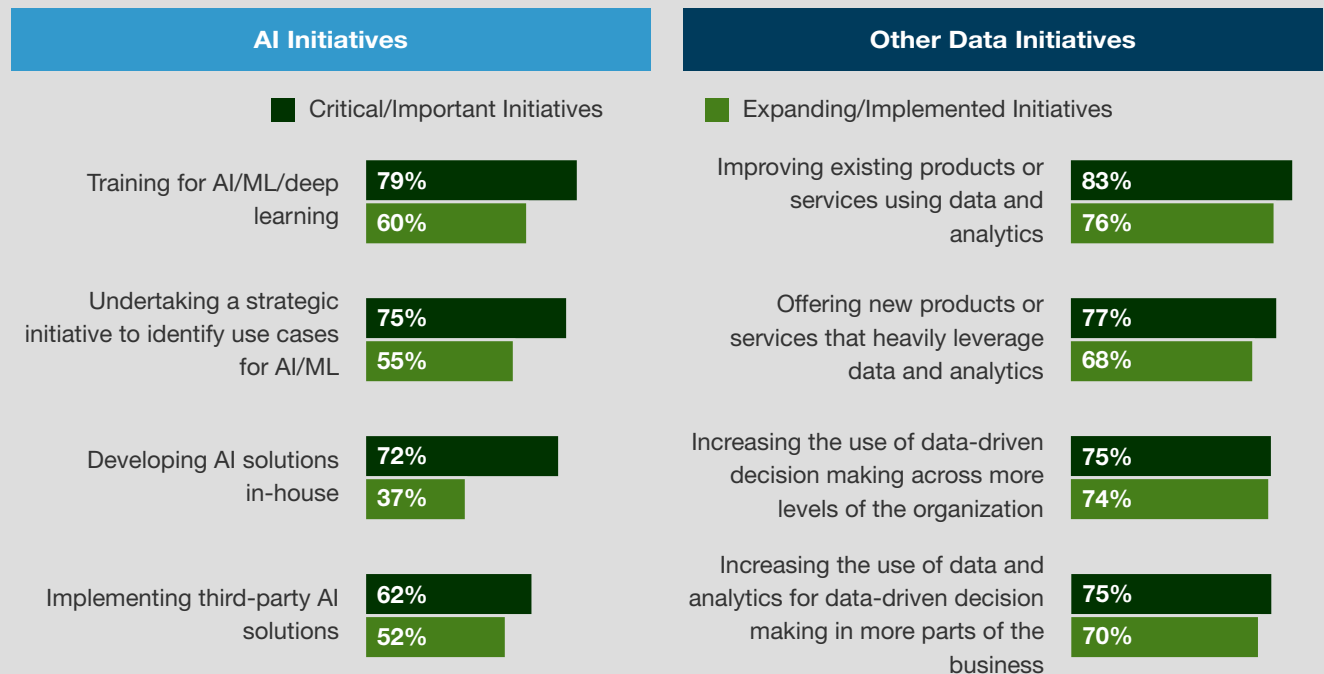
Base: 518 global data and LoB decision makers with authority over their companies' data, AI, and analytics strategy
 Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

- › **Yet there are gaps in implementing and expansion efforts.** Despite the importance of AI initiatives, firms are actually further along with their other data initiatives. The gaps in initiative undertaking are much larger for AI efforts than for the data and analytic initiatives we asked respondents about (see Figure 2). The gap is particularly significant when it comes to developing in-house solutions. Although nearly three-quarters of respondents say it's important, only 37% are currently doing it. Firms have made more progress when it comes to third-party solutions, focusing most heavily on ML, knowledge engineering, and chatbot technologies. Overall, this indicates that many firms may still be in their infancy of AI use. Though the need and desire are strong, there's still plenty of work to be done.
- › **Nevertheless, the number of AI use cases is going to increase.** Eighty percent of firms expect the number of AI use cases to increase in the next 18 to 24 months. For some, this increase will be significant: 40% expect an increase of more than 15%. To account for this growth, firms are also planning to implement more AI technologies. More than 30% of respondents say they are either implementing or planning to implement natural language understanding, AI-enhanced business intelligence platforms, and robotics technologies within the next 12 months.



80% of firms expect the number of AI use cases to increase within the next two years.

Figure 2



Base: 518 global data and LoB decision makers with authority over their companies' data, AI, and analytics strategy
 Not all responses shown.
 Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

Scaling AI Is The Next Challenge To Unlock Multiplicative Value From Data

Firms claim confidence in implementing new use cases, identifying biases in current models, and managing data for AI. But this confidence may be misplaced. Why? The majority of respondents (90%) admit to having difficulty scaling the number of AI use cases across their companies. So what exactly is causing this disconnect and ultimately holding firms back?

DATA POSES A LARGE CHALLENGE

AI systems are only as good as the data used to train them.³ Unfortunately, fewer than half of all respondent firms believe they are very successful at leveraging data for their AI initiatives. What's more, 12% admit that they are not at all successful. This is a problem because AI simply cannot succeed without data that is properly prepared and curated. One factor causing this issue may be the wide range of data types that firms currently leverage for AI, including everything from image and structured relational data to text and graph (see Figure 3). Nevertheless, enterprises' data issues tend to fall into three general categories (see Figure 4):

- › **Data quality.** Quality issues are the No. 1 data challenge for organizations (58%). This is likely compounded by a lack of well-curated data to train AI systems (45%) and by data governance issues (40%). So it's not surprising that just under half of all firms lack confidence in their ability to ensure data quality.
- › **Integration.** Lack of integration is also a key issue. Over 50% of firms struggle with data integration when it comes to both data science/ML platforms and analytics/business intelligence platforms. This is why more than one-third of respondents lack confidence in their ability to connect multiple data sources.
- › **Lack of understanding.** Perhaps the most disturbing finding from our survey is that 52% of respondents simply don't know what their AI data needs are. This is troubling. If enterprises don't know what they need, they'll suffer one of two fates: either blindly jumping into AI initiatives that are doomed to fail or, maybe worse, never trying at all.

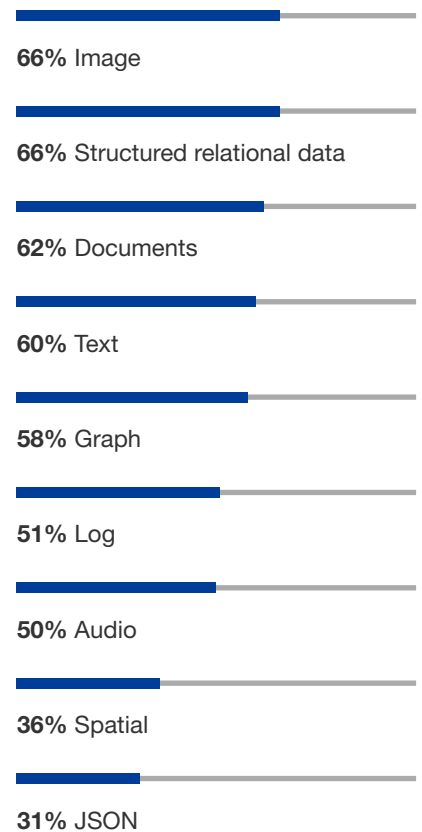
Without properly prepared and curated data, AI initiatives will fail.

A SLEW OF TALENT AND TECHNOLOGY CHALLENGES ALSO PLAGUE FIRMS

- › **Lack of skills loom large.** Firms are right to prioritize training as their top AI initiative. Three of the top four talent challenges indicate that teams lack the requisite skills to scale AI. Data engineering (71%), data science (70%), and developer skills (65%) are all in short supply. The challenge of underskilled teams is exacerbated by a general failure to adopt best practices (67%) and misalignment between analytics and data science teams. Having properly skilled employees is not only essential to the success of AI initiatives, it is also critical to help firms realize their goals to improve employee productivity.

Figure 3

Types of data used for AI initiatives



Base: 518 global data and LoB decision makers with authority over their companies' data, AI, and analytics strategy

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

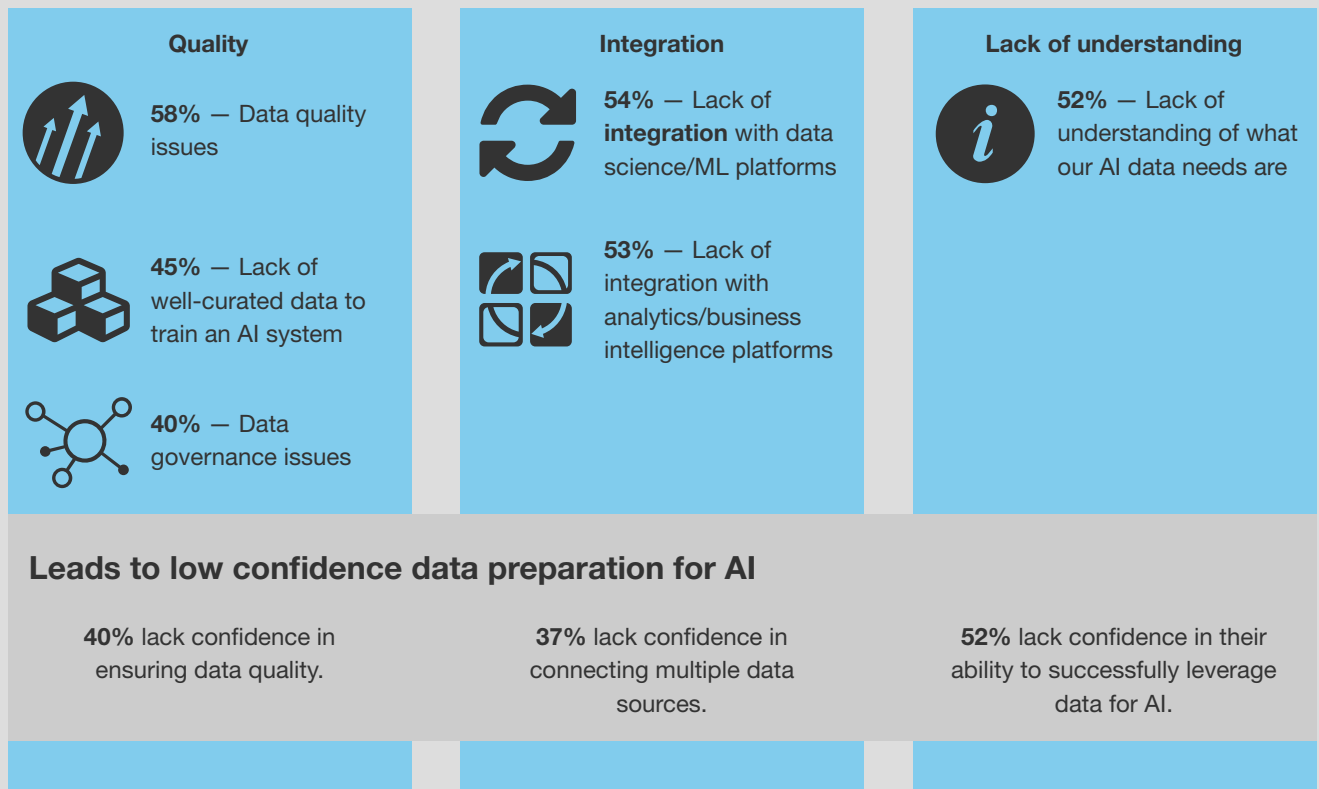
Red flag: More than half of those responsible for their firm's AI strategy don't understand what their AI data needs are.

› **Firms lack the right tools and struggle with open source.** Skills aren't the only thing in short supply: Firms also face a dearth of proper tooling. Of respondents surveyed, 58% note the lack of tools and platforms to develop advanced analytics and machine learning models, 50% need solutions to operationalize these models, and another 50% lack the solutions to monitor models in production. Open source also poses a problem: 56% of respondents say they don't have proper support for open source ML programming models and framework, and another 50% struggle with the effort required to implement and maintain open source machine learning platforms.

This plethora of challenges is vast. As a result, firms are facing increased costs, timelines, and regulatory risks to AI projects. Fifty-six percent of surveyed respondents note that the AI project cost more than expected, 41% said the project was delivered late, and 36% have experienced increased regulatory risk.

Figure 4

Top Data Challenges For AI



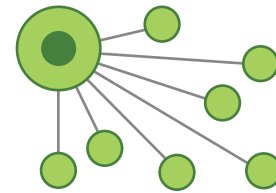
Base: 518 global data and LoB decision makers with authority over their companies' data, AI, and analytics strategy
 Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

To Become Industry Leaders, Firms Must Answer The AI Imperative

Despite the variety of data, people, and technology challenges, enterprises must forge ahead with their AI initiatives. Why? Because it's critical to their very survival. We found that:

- › **Firms are already experiencing the benefits.** Enterprises are seeing AI initiatives deliver on key business goals (see Figure 5). Of firms surveyed, 62% see better customer experiences, 60% experience increased revenue growth, and 58% have increased their profitability. Firms are also seeing data benefits: 64% see more efficient data management and 59% experience improved analytic efficiency. Many other business benefits are also on the horizon, from improved employee productivity to increased customer acquisition and retention.
- › **Opting out isn't an option.** Firms recognize that AI will give them the ability to competitively differentiate. Fifty percent of companies believe scaling AI will allow them to stay competitive, and 39% believe it will make them leaders in their industry. Because of this, opting out of AI isn't an option. As one respondent said: "AI is something every industry in the world is investing in. And if you're not investing in AI too, you're never going to keep up."

Because of this AI imperative, most firms we surveyed plan to continue to invest in AI technologies over the next 18 to 24 months, focusing the largest investment in areas where they are currently behind. AI-enhanced business intelligence platforms and robotics will see the largest increases overall, although everything from natural language generation to machine learning will see more investment generally.



89% of enterprises decision makers agree: Scaling AI leads to competitive differentiation.

Figure 5

“What business benefits have you experienced from being able to scale AI use cases across the enterprise?”



Base: 518 global data and LoB decision makers with authority over their companies' data, AI, and analytics strategy
Not all responses shown.

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

FIRMS THAT SUCCESSFULLY SCALE AI ARE LEADERS IN THEIR INDUSTRIES

Firms still have some way to go to ensure AI success and maturity: Forrester found that 62% of enterprises are just getting started delivering on AI.⁴ Nevertheless, a subset of firms has managed to successfully outline a process for scaling AI today.

- › **AI maturity relies on scalable process.** Of firms surveyed, 43% have a defined, repeatable, and scalable AI process that has delivered a wide range of demonstrable projects. AI maturity is important because it helps organizations to optimize and automate processes across the enterprise, allowing them to gain efficiencies and deliver better outcomes. As one survey taker said, “AI improves our quality and optimizes all the processes needed for operations and customer experience.”
- › **AI leaders are industry leaders.** Firms that have scaled AI are nearly seven times more likely than firms that have not scaled AI to be the fastest-growing organizations in their industries (see Figure 6). On the other hand, those that have not scaled AI are 1.4x more likely simply to be average in terms of revenue growth rate compared to competitors.

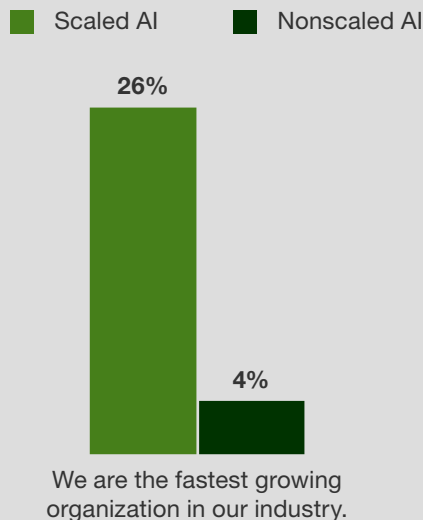
“Productivity improvements, cost reductions, and security improvements can be achieved through the use of AI.”

Decision maker with authority for their company’s AI strategy



Figure 6

“How does your revenue growth rate compare to your competitors?”



Base: 518 global data and LoB decision makers with authority over their companies’ data, AI, and analytics strategy; 223 with a repeatable process for scaling AI, 295 with no repeatable process for scaling AI
Not all responses shown.
Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

Those that have developed a repeatable, successful process for scaling AI are leaders in their industries.

Key Recommendations

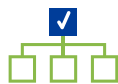
AI is a critical source of competitive advantage. And the fastest path to industry-leading AI solutions is to formulate and execute a strategy to scale AI use cases – from 5 to 50 to 500. Forrester’s in-depth survey yielded several important recommendations:



Get your data house in order. AI technology such as machine learning is data-driven. The cleverest algorithms are ineffectual without use case-relevant, rich enterprise data. To scale AI, you must have comprehensive data management capabilities to continuously source data from enterprise applications, manage and govern securely, and make it easily accessible to AI engineering teams. Many enterprises may think they already have comprehensive data management capabilities, but those were often designed to satisfy business intelligence requirements, not AI. There is overlap, but there are also substantial differences. Choose data management capabilities that meet unique requirements for AI as articulated by your AI engineering teams.



Build a pipeline of consequential AI use cases. Scaling AI means having use cases that are real and ready to implement. Create AI pioneer teams populated with business, technology, and AI professionals to examine critical business processes and customer interactions for AI opportunities. Prioritize use cases based on technical feasibility and impact on your enterprise’s industry leadership. Using an industry leadership impact lens will ensure that the AI use cases you implement will be relevant to digital transformation relative to the competition, rather than just improving upon your existing business processes.



Grow AI engineering teams. Data scientists are central to turning data into intelligent AI models. However, an oft-heard complaint from data scientists and businesses alike is failure to operationalize AI models. That’s because implementing transformative AI use cases requires a broader team (an AI engineering team) consisting of data scientists, business analysts, developers, operations professionals, and project managers. Creating cross-functional AI engineering teams that collaborate from the beginning of use case implementation will raise technical issues that can be addressed in parallel to model development.



Analyze AI-impact personas. AI influences the future of work. Like all technology, AI will automate some processes, augment employee capabilities, and lead to the creation of entirely new roles for workers. For each AI use case, create personas to represent existing employees and customers likely to be impacted by AI solutions. Analyze how the AI solution will impact the role from each persona’s point of view. Use this analysis to help people understand how technology will improve the company, the customer experience, and their role.

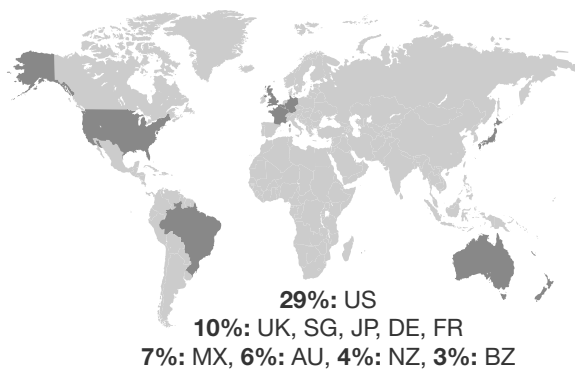


Get the board onboard. Ultimately, executives and boards will remain responsible for the actions and inactions of an enterprise. Most understand the transformative necessity of AI in their industry. But they might not understand the scope and investment required to do AI at scale. Educate them on the success of initial use cases but lay out the fuller technology and organizational requirements to implement AI use cases at scale.

Appendix A: Methodology

In this study, Forrester conducted an online survey of 518 IT, data, and line-of-business decision makers in the US, the UK, Germany, France, Singapore, Japan, Australia, New Zealand, Mexico, and Brazil to evaluate the ways in which enterprises invest in and attempt to scale AI use cases. Forrester offered respondents an incentive as a thank you for time spent on the survey. The study began in October 2019 and was completed in November 2019.

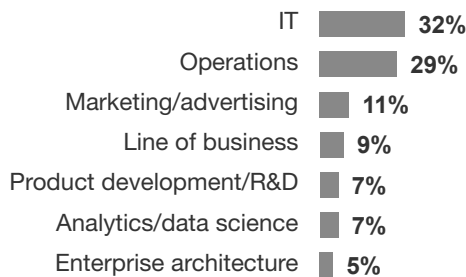
Appendix B: Demographics



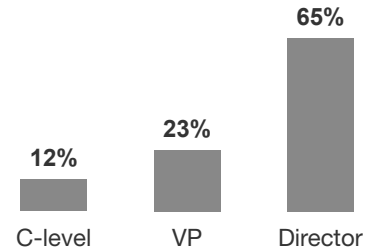
COMPANY SIZE



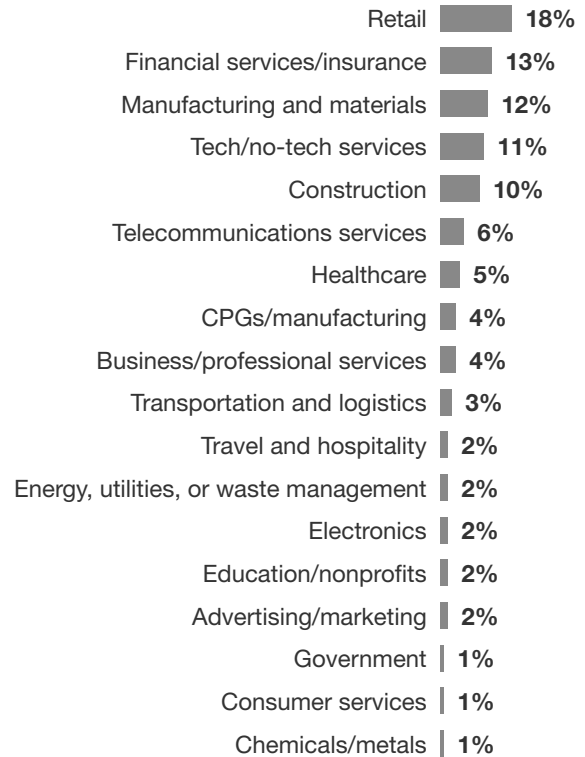
DEPARTMENT



TITLE



INDUSTRY



Base: 518 global data and LoB decision makers with authority over their companies' data, AI, and analytics strategy

Note: Percentages may not total 100 because of rounding.

Source: A commissioned study conducted by Forrester Consulting on behalf of IBM, October 2019

Appendix C: Supplemental Material

RELATED FORRESTER RESEARCH

“The Future Of Machine Learning Is Unstoppable,” Forrester Research, Inc., April 25, 2019.

“Predictions 2020: Artificial Intelligence,” Forrester Research, Inc. October 30, 2019.

“Forrester Infographic: AI Experiences A Reality Check,” Forrester Research, Inc. May 17, 2019.

Appendix D: Endnotes

¹ Source: “The Future Of Machine Learning Is Unstoppable,” Forrester Research, Inc., April 25, 2019.

² Source: “Predictions 2020: Artificial Intelligence,” Forrester Research, Inc., October 30, 2019.

³ Source: “Forrester Infographic: AI Experiences A Reality Check,” Forrester Research, Inc., May 17, 2019.

⁴ Ibid.