

Accelerating AI Deployments — Paths of Least Resistance

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By Analysts [Melissa Davis](#)

Initiatives: [Artificial Intelligence](#)

AI must be put on the speedway to production. Data and analytics leaders should use this research collection to remove the most common barriers to production and accelerate from AI prototypes to scalable solutions.

Additional Perspectives

- [Summary Translation: Accelerating AI Deployments — Paths of Least Resistance](#)
(11 August 2020)

Overview

Opportunities and Challenges

- Enterprises continue to struggle to move from artificial intelligence (AI) proofs of concept to scalable implementations that realize business value — with just over half achieving success according to recent studies. ¹
- Acquiring AI talent is not a major barrier to success, as evidenced in Gartner's 2020 AI in Organizations Survey. Instead, organizations that deploy a diversity of talent are the most successful in bringing their proofs of concept to production deployment.
- Integration complexity, security and privacy concerns are among the most significant barriers to production deployment.

What You Need to Know

- Increase your chances of successfully deploying AI into production by strictly measuring the business value and outcomes from AI initiatives across the enterprise. Tightly align AI investments with strategic priorities.
- Achieve success in operationalizing AI techniques by building multidisciplinary teams, and involving both business domain experts and IT early and often in the proof of concept stage and throughout the entire implementation.
- Build competencies to integrate AI solutions within the organizations to address the complexity of embedding and integrating AI with other applications and the infrastructure. Involve middleware specialists, application integration specialists, and other IT teams such as DevOps.

Strategic Planning Assumptions

Through 2023, the machine learning engineer will be the fastest growing role in the artificial intelligence space.

By 2023, 85% of artificial intelligence solutions provided by vendors will focus on concrete domains and industry verticals.

By the end of 2024, 75% of enterprises will shift from piloting to operationalizing artificial intelligence, driving a 400% increase in streaming data and analytics infrastructures.

Insight From the Experts

Accelerating Artificial Intelligence — The Speedway to Production



Melissa Davis, Sr Director Analyst

AI presents organizations with numerous opportunities to improve business outcomes and to create new innovative solutions. The health and economic disruption caused by COVID-19 has increased the need for faster results. It is critical that data and analytics leaders are able to show value from AI investments.

There is increased pressure to accelerate AI deployments from proofs of concept (POCs) to scalable production implementations. The aim is to realize the value of these deployments and deliver on their promise, while managing inflated expectations. However, Gartner has found that, over the past two years, only 53% of POCs have actually made it beyond the lab into productions, taking an average of 9 months. So how can organizations remove the barriers and accelerate their AI deployments from POC into production? This research collection provides guidance on how to successfully deploy AI solutions that scale beyond the POC into production, delivering and optimizing the business value.

Kind Regards,

Melissa Davis

Executive Overview

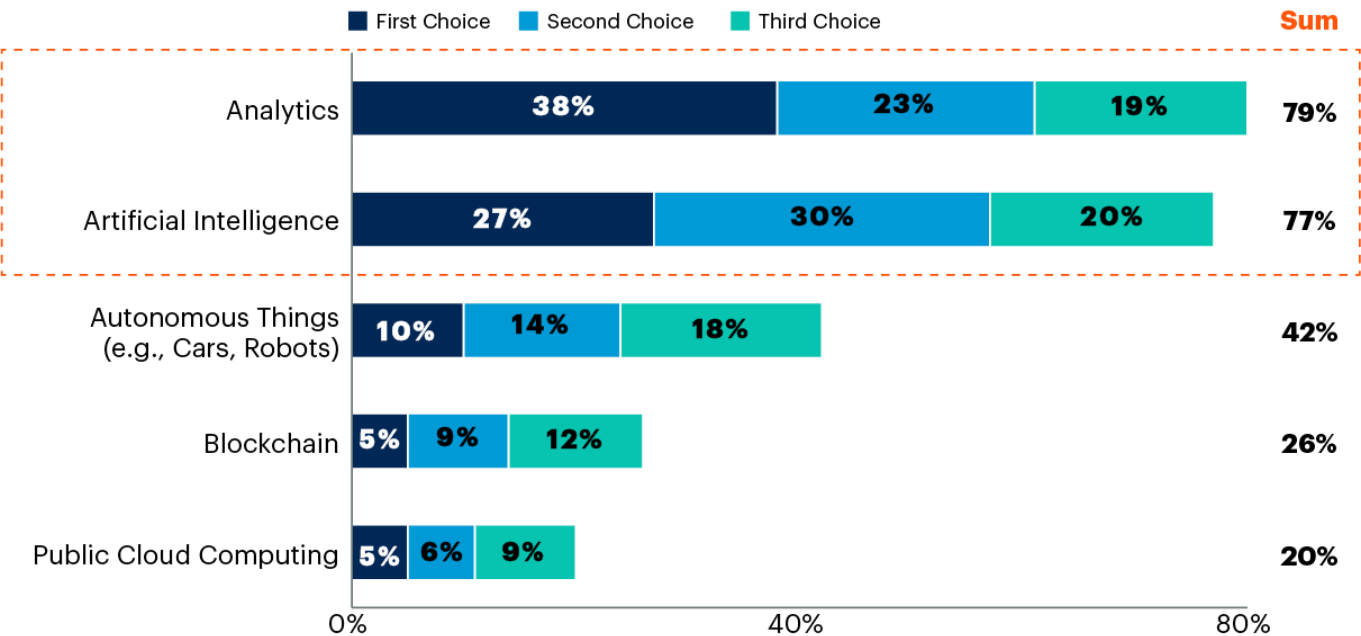
Definition

Success in scaling AI solutions from proof of concept to production will be achieved by relentlessly measuring business outcomes and value, diversifying skills, and tackling integration complexities.

According to a recent Gartner survey (Gartner’s View From the Board of Directors 2020), analytics and AI stand out as the technologies believed to be the biggest game changers (see Figure 1). ²

Figure 1: Analytics and AI Stand Out as the Technologies Believed to Have the Biggest Impact on the Industry

Top 5 Technologies Believed to Be the Biggest Game Changers
Percentage of Respondents



n = 130
Source: 2020 Gartner View From the Board of Directors Survey
Q: Which of the top 3 technologies do you believe will be the biggest game changers for your industry?
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AI has moved from hype to reality for many organizations, and has been proven to deliver tangible and measurable business value. However, organizations still struggle to deliver AI beyond POCs and into production. Gartner’s 2020 AI in Organizations Survey found that a lack of talent is not the main barrier for successful deployment of AI techniques (see Figure 2).

Figure 2: Accelerating Artificial Intelligence Proofs of Concept Into Production

Accelerating Artificial Intelligence Proofs of Concept Into Production



Achieving
Business Value



Building Multidisciplinary
Teams



Tackling Infrastructure
Complexity

Source: Gartner

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The paths to scale AI solutions from POC to production fall into three main categories:

1. Achieving the business value from AI use cases. To do this, data and analytics leaders should follow these best practices:

- Align AI investments to strategic objectives, relentlessly measuring business value and outcomes.
- Start small with a few use cases that matter and will show value. Drop the outliers.

2. Establishing diverse, multidisciplinary teams. To do this, data and analytics leaders should follow these best practices:

- Engage with both the business and IT early on during POCs and throughout the project life cycle.
- Build multidisciplinary roles in the AI team. Include business domain experts and software engineers, and machine learning operationalization (ModelOps), and other disciplines – not just the data science and other AI gurus.

3. Scaling AI solutions from POC to production infrastructures. Data and analytics leaders should follow these best practices:

- Tackle the system integration, security and privacy issues by engaging with ModelOps and DevOps, data security and other enterprise IT teams.

Use this collection of research to address the inhibitors within your organization and to clear the way for the AI speedway to production.

Research Highlights

Practices to Identify and Optimize Business Value From Use Cases

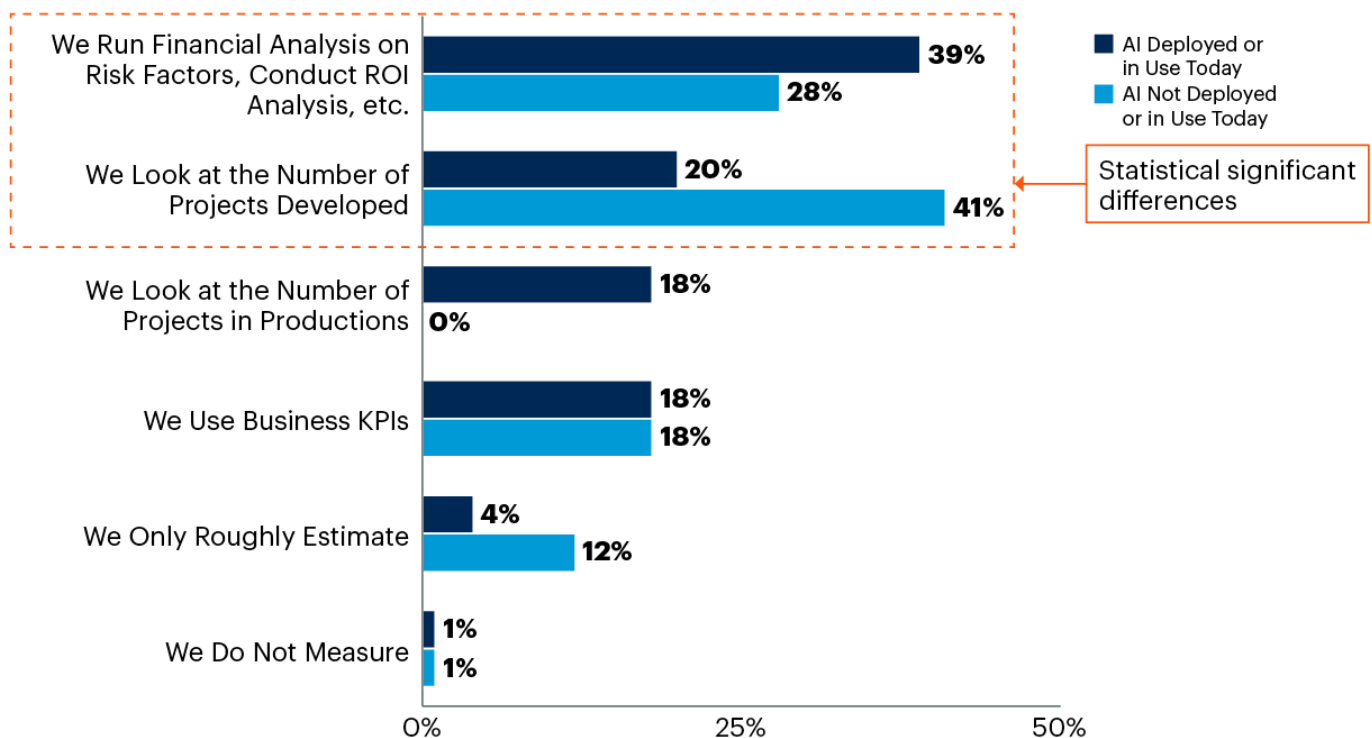
Relentlessly measure the business value and outcomes of AI initiatives.

The highest level of business value is achieved when AI initiatives are tightly aligned with strategic priorities. See Figure 3.

Figure 3: Organizations That Successfully Deploy AI Strictly Measure Results and Outcomes

Measurement of Artificial Intelligence Initiatives Success

Percentage of Respondents



n = 212 (deployed or in use today); 395 (not deployed or in use today)

Source: 2020 Gartner AI in Organizations Survey

Q: How does your organization measure or plan to measure the success of its AI initiatives?

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Gartner provides several frameworks and toolkits to prioritize use cases and optimize the business value of AI and data and analytics (D&A) investments (see [“How to Optimize Business Value From Data and Analytics Investments ... Finally”](#)). Begin with a noncore use case to demonstrate success. Pick a couple of individual AI projects at most, dropping the long shots. Best practices include:

- Start small. Prioritize core use cases that have real value to the company. Do not engage in a large complex project. AI is hard enough.

- Choose the use cases based on the most promising areas for AI across your industry or business process domain (such as marketing, sales and supply chain). See [“Tool: Sample Use Cases to Help Prioritize AI Investment.”](#)
- Measure the maturity of AI solutions using the Gartner maturity model to better scale and operationalize AI projects. Target AI projects based on your organization’s AI maturity. See [“Leverage Gartner’s Artificial Intelligence Maturity Model to Scale Your AI Projects.”](#)
- Quantify the value by having a system in place for measuring the value generated by the model. For case study examples, see [“Continuously Market-Tested Data & Analytics Strategy \(UrbanShopping*\),”](#) [“How to Reveal the Business Value of Imperfect Data With AI \(Avon\)”](#) and [“Simple, Powerful Machine Learning Pilot \(Iron Mountain\).”](#)

The following research collection provides additional guidance on building the AI business case and finding inspiration in use cases across several business processes and industries.

Related Research

[“Build the AI Business Case”](#)

Use this e-book to learn how to create a business case for AI in your organization, how to harness current trends in the robotics space, and the importance of using good data to implement AI.

[“Five Ways Artificial Intelligence and Machine Learning Deliver Business Impacts”](#)

Not all artificial intelligence and machine learning strategies are created equal, but they are becoming critical for differentiation and sometimes survival. This research is intended to guide data and analytics leaders in identifying which category will deliver maximum impact for their organization.

Business Process Use Cases:

[“Turbocharge Your Marketing and Personalization With 3 AI Algorithms”](#)

Marketing leaders responsible for analytics need to stay abreast of artificial intelligence advances to skillfully guide their teams. Use this research to understand three new AI approaches to improve your team’s ability to predict future outcomes, unearth model insights and test more effectively.

[“Use AI to Improve B2B Sales Revenue and Optimize Costs”](#)

Sales organizations must optimize costs caused by COVID-19, while adjusting to the changed sales environment. Application leaders supporting CRM sales technologies should implement AI technologies within B2B sales to align cost optimization targets and to drive revenue growth.

[“How to Use AI to Improve the Customer Experience”](#)

Artificial intelligence continues to transform the customer experience by providing a deeper understanding of customer behavior. Data and analytics leaders should engage with customer experience leaders to identify use cases that align with and extend existing customer experience (CX) initiatives.

[“Find Inspiration in 10 Use Cases of Artificial Intelligence in the Supply Chain”](#)

Artificial intelligence carries great potential to revolutionize supply chain processes. This research offers supply chain leaders 10 AI use cases across various functions to inspire their own AI journey.

[“AI Use Cases in Human Capital Management Technology”](#)

Application leaders focused on human capital management (HCM) technology have begun experimenting with AI as a way to deliver innovation and to improve HR efficiency and the employee experience. Use this research to evaluate market readiness, understand the most common use cases and prioritize investments.

Industry Use Cases:

[“Understand the Value of AI for Healthcare Delivery Organizations”](#)

There are a lot of AI applications being developed across healthcare. Many have transformational potential. Most are still nascent and it is too early to adopt them. CIOs can use this research to determine what AI use cases offer potential value today and what actions they should take.

[“Toolkit: Artificial Intelligence Use Cases for Insurance”](#)

Insurers mentioned AI as the top “game-changing” technology in the 2020 Gartner CIO Survey. This customizable Toolkit enables CIOs to identify use cases for this advanced technology across the value chain, helping to realize the potential that it holds in driving business success.

[“Toolkit: Artificial Intelligence Use Cases for Banking and Investment Services”](#)

Banks rightly view artificial intelligence as a game changer, yet only a small percentage of banks have deployed it in production. This customizable Toolkit enables CIOs to identify use cases for this advanced technology that hold the potential to deliver real-world business value.

Establishing Diverse, Multidisciplinary Teams

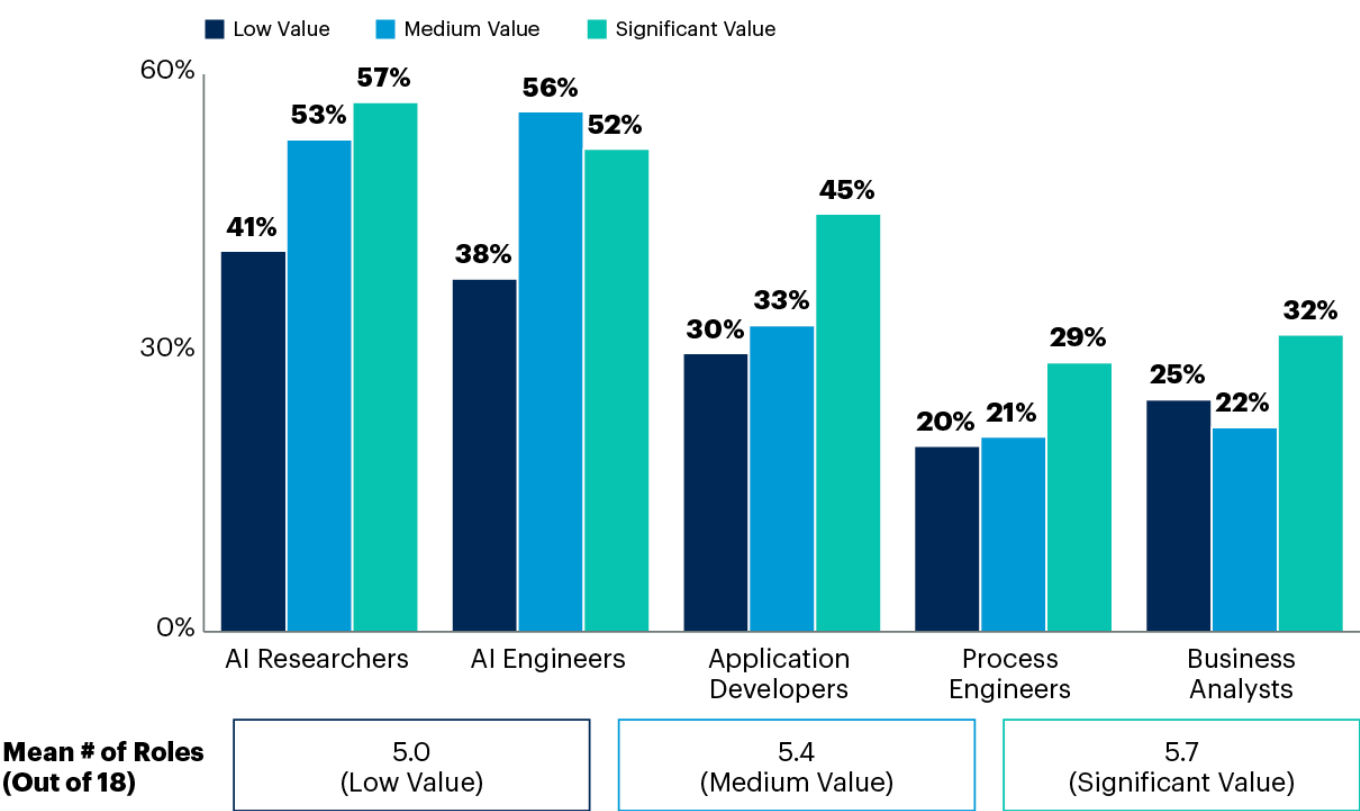
Deploy a diversity of talent to successfully scale proofs of concept to production deployment.

Of respondents to Gartner’s 2020 AI in Organizations Survey, 70% reported that a lack of AI talent is not a major barrier to successful AI deployments (see Figure 4). ¹

Figure 4: Organizations That Successfully Deploy AI Techniques Use a Wider Variety of Roles

Roles That Are Included in AI Interdisciplinary Teams by Value AI Brings to the Organization

Percentage of Respondents; Multiple Responses Allowed



n = 198 (low value); 188 (medium value); 177 (significant value)
Source: 2020 Gartner AI in Organizations Survey
Q: Who typically takes part in the AI interdisciplinary teams? How would you rate the overall value that AI brings or will bring to your organization?
Note: Only showing roles for which there are differences by value.
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AI teams that only have data scientists tend to fail. The best performing teams include business domain experts – especially early on in the POC stage – as well as other IT roles (such as developers and data engineers).

Those organizations successful in operationalizing AI techniques also educate their peers and foster trust in AI techniques across the entire organization — from every day users to the executives. This is a critical element of success.

The following research outlines best practices for building the most effective multidisciplinary teams, and for fostering trust in the results.

Related Research

[“How to Organize AI Talent”](#)

Organizations are gearing up their multidisciplinary teams to implement a variety of artificial intelligence techniques in ever more business areas. CIOs need to identify which capabilities, roles and skills go together, and which organizational designs to pursue for AI.

[“Staffing Data Science Teams: Mapping Capabilities to Key Roles”](#)

Organizations struggle with managing talent and mapping capabilities to key roles in data science projects. To overcome this challenge, data and analytics leaders should embrace a full spectrum of skills in order to sustain and scale data science capabilities.

[“Artificial Intelligence Architect: A Key Role to Operationalize and Scale Your Initiatives”](#)

AI initiatives often stall due to poor architectural choices, and a lack of preparedness and scalability in production. Enterprise architecture and technology innovation leaders can overcome these challenges by creating an AI architect role. Learn about the role and how to get started.

[“Machine Learning Engineer — A Role That Bridges the Gap Between Data Science and IT”](#)

Organizations struggle to operationalize AI initiatives due to lack of skills, process, tooling and know-how in deploying machine learning models in production. Technology innovation leaders can better address these challenges by creating a machine learning engineer role. This research defines the role, identifies its responsibilities and outlines how to get started.

[“Case Study: Internal Data Science Team Development \(Eastman\)”](#)

Data science talent is infamously difficult to find. Rather than hiring externally, Eastman took analysts from across the business and protected their time so they could learn data science. This case study shows data and analytics leaders how to build their own data science team with resources they already have.

[“Improve the Machine Learning Trust Equation by Using Explainable AI Trust Frameworks”](#)

Organizations looking to harness the power of machine learning models are exposed to regulatory scrutiny and algorithm risk as they adopt ML-driven AI solutions for key business functions. This research provides data and analytics technical professionals with crucial elements of ML explainability.

“Build AI-Specific Governance on Three Cornerstones: Trust, Transparency, and Diversity”

Enterprises need artificial-intelligence-specific governance to reduce risks and tolerate the ambiguity intrinsic to AI’s predictive nature. Data and analytics leaders must focus on trust, transparency and diversity to define AI governance in light of their aims and opportunities.

“Build Trust in AI Through Explainability”

“Fear of the unknown” is the key issue slowing down AI adoption, according to a Gartner survey. However, finance leaders can use explainable AI to overcome their teams’ and stakeholders’ hesitation to deploy AI-powered solutions.

Scaling AI Solutions From Proof of Concept to Production Infrastructures

To scale solutions, data and analytics leaders must build competencies to integrate AI solutions within the organization’s infrastructure.

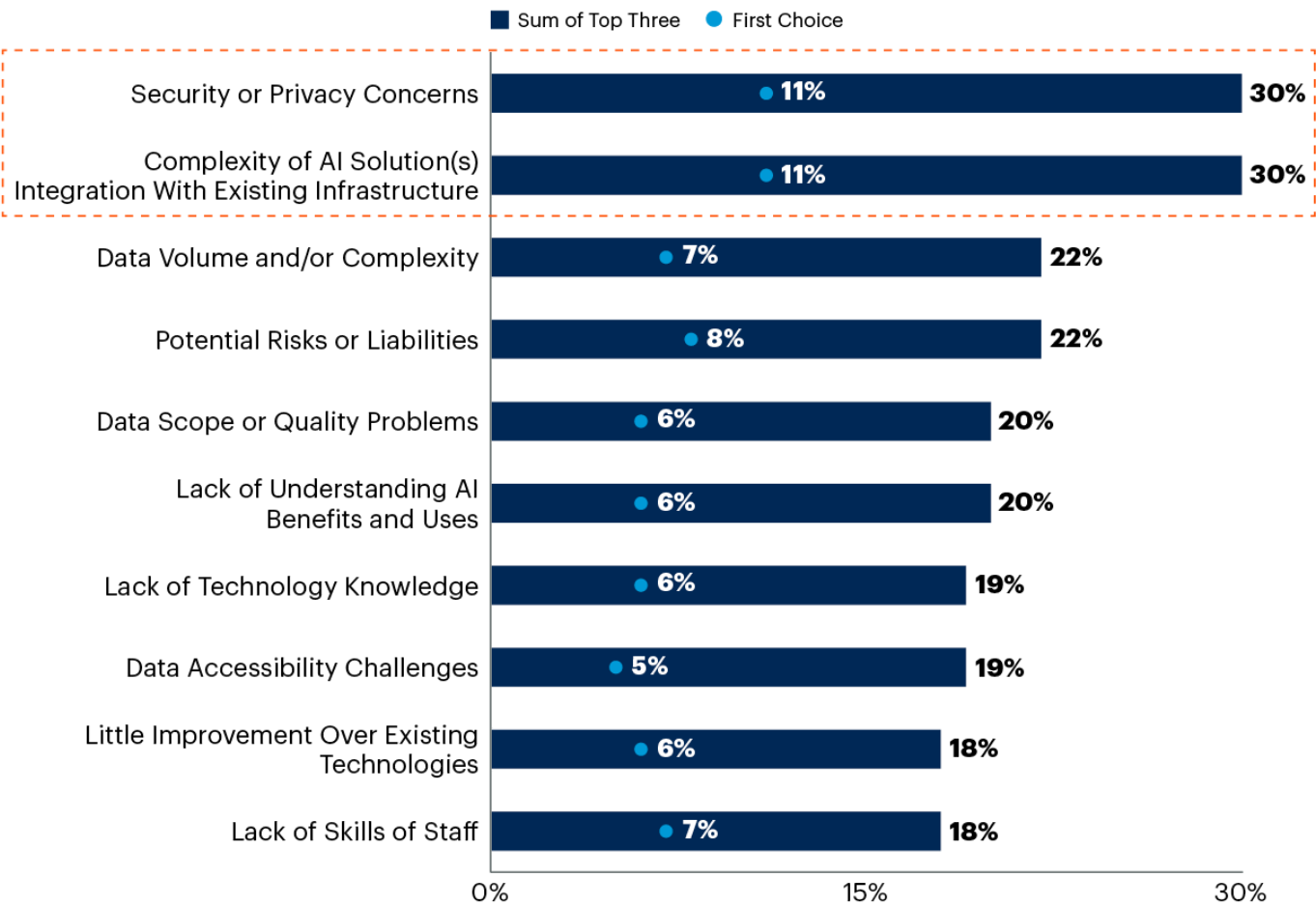
Top challenges with scaling production AI solutions include:

- Complexity and difficulty integrating into production environments
- Security and privacy concerns

Figure 5 shows some of the top challenges identified by respondents to Gartner’s 2020 AI in Organizations Survey.

Figure 5: Organizations Point to Integration, Ecosystem Complexity, Security and Privacy Concerns as the Main Barriers to Deployment

Top 10 Barriers to Artificial Intelligence Implementation
Percentage of Respondents



n = 601
Source: 2020 Gartner AI in Organizations Survey
Q: What are the top 3 barriers to the implementation of AI techniques within your organization?
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Operationalize AI techniques by involving middleware specialists and application integration specialists, and other IT application teams including DevOps and MLOps to tackle the integration complexities. In Gartner’s 2020 AI in Organizations Survey, respondents reported that IT DevOps has the most responsibility for maintaining and updating AI solutions and models. ¹

The following research provides guidance for integrating AI solutions into the production environment, and addressing security and privacy concerns.

Related Research

“Key Actions to Take to Prevent Machine Learning Failure Due to COVID-19-Related Data Drift”

This research explores the effects of black swan events (like the COVID-19 pandemic) on ML projects and how to cope. Ongoing data drift has caused significant decay of machine learning models. Data and analytics leaders can use this research to learn which options are available to remedy this and what this implies for project reprioritization.

[“Boost Your Training Data for Better Machine Learning”](#)

Not having access to enough quality training data is one of the biggest showstoppers for machine learning projects. Data and analytics leaders responsible for machine learning initiatives can overcome this situation by following the nine techniques described in this research.

[“Use Gartner’s 3-Stage MLOps Framework to Successfully Operationalize Machine Learning Projects”](#)

Organizations struggle to integrate AI solutions with existing production applications, wasting time and money on data science projects that are never put in production. Data and analytics leaders can greatly reduce the risk of such failures with three stages that create a framework for MLOps.

[“Accelerate Your Machine Learning and Artificial Intelligence Journey Using These Three DevOps Best Practices”](#)

Artificial intelligence and machine learning initiatives are maturing across organizations, but enterprise architecture (EA) and technology innovation leaders continue to face significant challenges in moving them to production. This research provides best practices on how and where DevOps can help in accelerating operationalization.

[“How to Build Machine Learning and Artificial Intelligence Into Production Applications”](#)

Building ML- and AI-enabled applications requires that you adopt new patterns and processes to support the probabilistic nature of ML and AI models. Application technical professionals should use this guidance framework to bring ML and AI capabilities to their applications.

[“A Guidance Framework for Operationalizing Machine Learning”](#)

Operationalizing the ML pipeline remains a significant challenge for early adopters and organizations with multiple ML and AI projects. This document provides data and analytics technical professionals guidance on establishing a continuous delivery and management life cycle to grow AI.

[“Top Ten Strategic Technology Trends for 2020: AI Security”](#)

Dealing with the security challenges generated by artificial intelligence will become critical. Enterprise architecture and technology innovation leaders must examine how to protect their AI-powered systems and defend against the malicious use of AI and machine learning by attackers.

[“Human Controls for AI Dangers \(SignatureValueBank\)”](#)

Rather than guarding against artificial-intelligence-based attacks, data and analytics leaders should instead collaborate with security leaders to guard against the threats caused by the AI applications running within their organizations.

Gartner Associates Supporting This Trend



Melissa Davis, Sr Director Analyst



Erick Brethenoux, VP Analyst

Acronym Key and Glossary Terms

AI	artificial intelligence
DevOps	a business-driven approach for delivering solutions using agile methods, collaboration and automation
ML	machine learning
ModelOps	machine learning operationalization

Evidence

¹ The 2020 Gartner AI in Organizations Survey was conducted online during November and December 2019, among 607 respondents from organizations in the U.S., the U.K. and Germany. Quotas were established for company size and for industries, to ensure the sample had good representation across industries and company sizes. Organizations were required to have already developed artificial intelligence (AI) or intend to deploy AI within the next 3 years. Respondents were screened to:

1. Be part of the organization's corporate leadership or report into corporate leadership roles.
2. Have a high level of involvement with at least one AI initiative.
3. Have one of the following roles when related to AI in their organizations:
 - Determine AI business objectives
 - Measure the value derived from AI initiatives
 - Manage AI initiatives development and implementation.

The study was developed by Gartner analysts and Gartner's primary research team.

The results of this survey do not represent global findings or the market as a whole. They are simple averages for the countries, industries and company size segments covered by this survey.

² Gartner's View From the Board of Directors (published February 2020): Results presented are based on a Gartner study to understand how boards of directors (BoDs) view the impact of technology on their businesses and their assessment of their organizations' readiness to deal with the technology disruption. The primary research was conducted online during July and August 2019 among 133 respondents in the U.S., EMEA and APAC.

Companies were screened to be midsize, large or global enterprises. Respondents were required to sit on a BoD. If they served on multiple boards, respondents answered for the largest company, defined by its annual revenue, for which they were a board member.

The study was developed collaboratively by Gartner analysts and the primary research member whose focus was on digital business.

Results do not represent "global" findings or the market as a whole but reflect sentiment of the respondents and companies surveyed.

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