



Becoming an AI-fueled organization

Deloitte's State of AI in the Enterprise, 4th Edition

About the Deloitte AI Institute

The Deloitte AI Institute helps organizations connect all the different dimensions of the robust, highly dynamic, and rapidly evolving AI ecosystem. The AI Institute leads conversations on applied AI innovation across industries, using cutting-edge insights to promote human-machine collaboration in the Age of With™.

The Deloitte AI Institute aims to promote dialogue about and development of artificial intelligence, stimulate innovation, and examine challenges to AI implementation and ways to address them. The AI Institute collaborates with an ecosystem composed of academic research groups, start-ups, entrepreneurs, innovators, mature AI product leaders, and AI visionaries to explore key areas of artificial intelligence including risks, policies, ethics, future of work and talent, and applied AI use cases. Combined with Deloitte's deep knowledge and experience in artificial intelligence applications, the institute helps make sense of this complex ecosystem and, as a result, delivers impactful perspectives to help organizations succeed by making informed AI decisions.

No matter what stage of the AI journey you're in—whether you're a board member or C-suite leader driving strategy for your organization, or a hands-on data scientist bringing an AI strategy to life—the Deloitte AI institute can help you learn more about how enterprises across the world are leveraging AI for a competitive advantage. Visit us at the Deloitte AI Institute for the full body of our work, subscribe to our podcasts and newsletter, and join us at our meetups and live events. Let's explore the future of AI together. [Learn more.](#)

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Foreword: Becoming an AI-fueled organization

RAPIDLY TRANSFORMING, BUT not fully transformed—this is our overarching conclusion on the market, based on the fourth edition of our State of AI in the Enterprise global survey. Very few organizations can claim to be completely AI-fueled, but a significant and growing percentage are starting to display the behaviors that can get them there.

To us, this is exciting and has reinforced our belief that now is one of the most opportunity-rich periods in the history of AI technology. Organizations are swiftly building capabilities and reaching enterprise scale: In fact, more than a quarter of our survey respondents have reached full-scale deployment of five or more types of AI applications within their organization.¹ This widespread enterprise experimentation has set a solid foundation for many, making way for what we believe could be a bumper crop of meaningful advancements and impact over the next few years. This is especially true for those who are already beginning to use AI to solve some of their most business-critical and challenging problems.

Within just the last 18 months, AI capabilities have advanced considerably, maturing from what was often experienced as a bothersome critic—telling workers what to do or pointing out their mistakes—to more frequently serving as a copilot, independently executing on insights and trends surfaced through the power and speed of cloud-based data hosting and computation. Today, some supply chains are managing themselves.

Algorithms can independently balance financial portfolios. Support centers often know customers' problems before they call.² And these are still early days.

In combination, these developments help enable businesses to increasingly liberate themselves from the time constraints of human rhythms. Core business operations can meet customer needs at a faster pace, while freeing up time and energy for the workforce to use new tools to discover innovative avenues for value creation. Conversely, for those organizations lagging in AI capability development, it could pose an ever-increasing risk to their competitive viability in the not-too-distant future. The massive global disruptions over the last year have only accelerated these trends beyond our most aggressive predictions.³

Fortunately, we've learned in recent years about which practices can accelerate transformation, and this knowledge can help fast-track outcomes. The findings in this report aim to support organizations in navigating through the growing pains, in whichever stage they may find themselves on the journey to becoming an AI-fueled organization.

The Age of With is no longer on its way—it has arrived. We hope you'll join us as this story continues to unfold.

— **Jason Girzadas, managing principal of
Businesses, Global, and Strategic Services,
Deloitte LLP**

Executive summary: Constantly transforming, never fully transformed

SINCE 2017, DELOITTE has documented the increasing adoption of AI across the enterprise. The third edition, published in 2020, declared that we had entered the “age of pervasive AI.”⁴ Pervasive AI adoption, however, does not mean that AI is being used to its full potential. And so, with the fourth edition of our global *State of AI in the Enterprise* report, we explored the deeper transformations happening inside organizations that are using AI to drive value. In other words, we wanted to know:

What are today's most AI-fueled organizations doing differently to drive success?

AI-fueled organizations leverage data as an asset to deploy and scale AI systematically across all types of core business processes in a human-centered way. They use the power of rapid, data-driven decision-making to enhance workforce and customer experiences to achieve competitive advantage and continuously innovate.⁵

“Becoming an AI-fueled organization is to understand that the transformation process is never complete, but rather a journey of continuous learning and improvement.”

— Nitin Mittal, Deloitte AI coleader, principal, Deloitte Consulting LLP

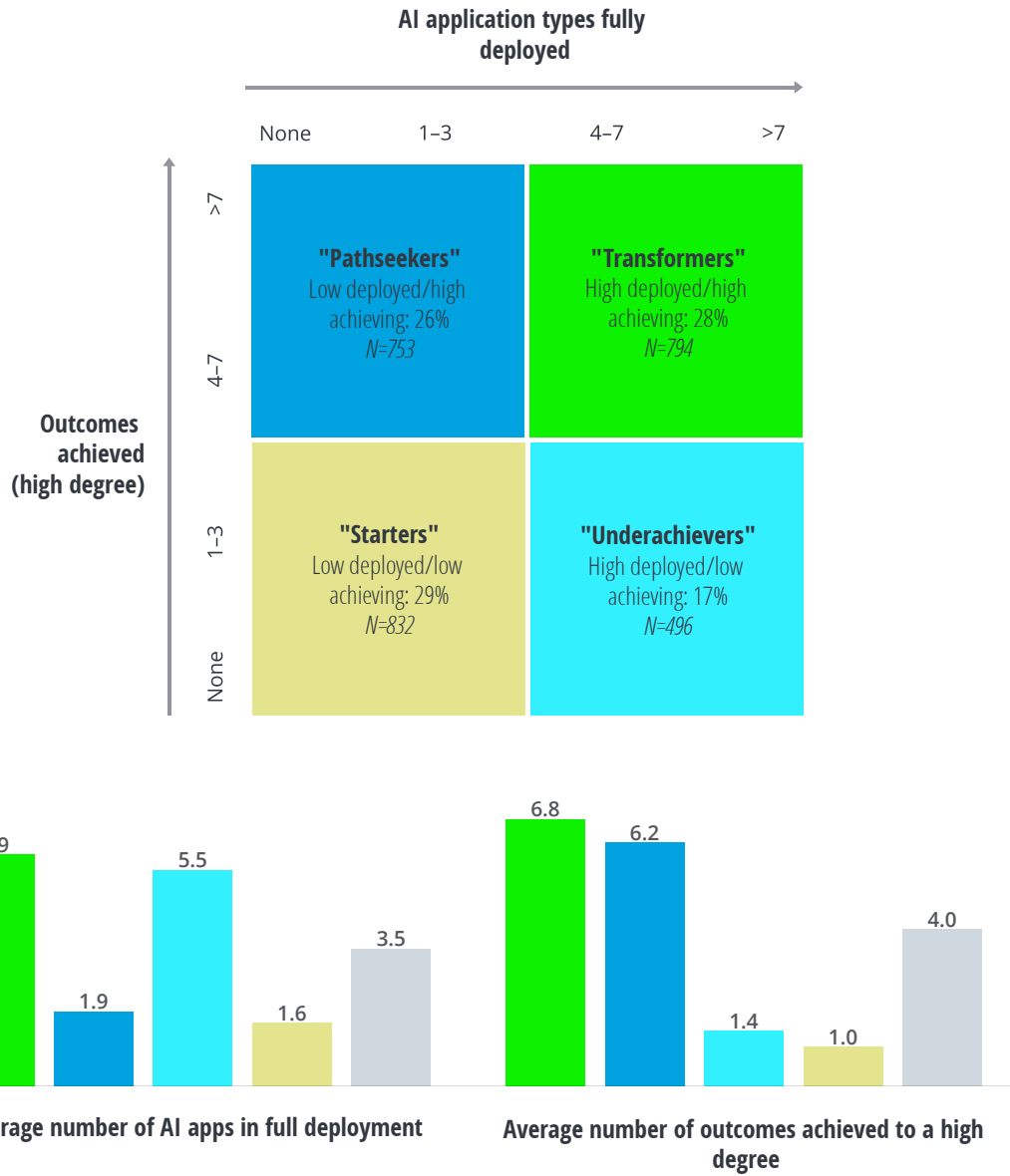
To learn how organizations across the globe are progressing toward this vision, we surveyed 2,875 executives from 11 top economies who have purview into AI strategies and investments within their organizations. We asked them about a wide variety of behaviors—from their overarching AI strategy and leadership, to their technology and data approaches, and how they are helping their workforce to operationalize AI. Then, to understand which behaviors lead to the greatest outcomes, we analyzed the survey responses based on how many types of AI applications a company has deployed full-scale and the number of outcomes achieved to a high degree (figure 1).



FIGURE 1

An organization's AI maturity can be profiled based on the number of applications deployed and outcomes achieved

Transformers Pathseekers Underachievers Starters Total



Source: The State of AI 4th Edition data analysis.

This analysis revealed four key profiles:

- **Transformers** (*High outcome and high deployed—28% of survey respondents*): Transforming but not fully transformed, this group has identified and largely adopted leading practices associated with the strongest AI outcomes. They average 5.9 out of 10 possible full-scale deployments of different types of AI applications, and 6.8 out of 17 possible outcomes achieved to a high degree. They are the market leaders on their way to becoming AI-fueled organizations.
- **Pathseekers** (*High outcome and low deployed—26% of survey respondents*): Pathseekers have adopted capabilities and behaviors that are leading to success, but on fewer initiatives. They are making moves but have not scaled to the same degree as Transformers. They average 1.9 out of 10 possible full-scale deployments of different types of AI applications, and 6.2 out of 17 possible outcomes achieved to a high degree.
- **Underachievers** (*Low outcome and high deployed—17% of survey respondents*): A significant amount of development and deployment activity characterizes this group; however, they haven't adopted enough leading practices to help them effectively achieve meaningful outcomes. They average 5.5 out of 10 possible full-scale deployments of different types of AI applications, and 1.4 out of 17 possible outcomes achieved to a high degree.
- **Starters** (*Low outcome and low deployed—29% of survey respondents*): Getting a late start in building AI capabilities seems to characterize this group. They are the least likely to demonstrate leading practice behaviors. They average 1.6 out of 10 possible full-scale deployments of different types of AI applications, and 1.0 out of 17 possible outcomes achieved to a high degree.

By analyzing these groups—the Transformers in particular—the behaviors most associated with

strong outcomes became evident. They fell into the following categories: **Strategy, Operations, Culture and change management, and Ecosystems.**

Analysis of survey data and executive interviews revealed that success is built upon the foundation of a clear strategy that is communicated and incentivized from the highest leadership—but that is not enough. With that clear strategy in place, two inter-related leading practices typically work together to support AI adoption and scale across the enterprise: operations and culture plus change management. And finally, the support of a robust set of ecosystem partners was shown to provide the technical foundations and outside perspectives needed to deliver and perpetually innovate at scale.

Our analysis also revealed not just what those leading practices were, but how much of an effect they had on organizational achievement:

- **Strategy leading practice: AI-fueled organizations view AI as a key element of business differentiation and success, and they set an enterprisewide strategy that is championed from the top.** *Organizations with an enterprisewide strategy and leadership who communicate a bold vision are 1.7 times more likely to achieve outcomes to a high degree.*
- **Operations leading practice: AI-fueled organizations establish new operating models and processes that drive sustained quality, innovation, and value creation.** *Organizations that document and enforce MLOps processes are approximately two times as likely to achieve their goals to a high degree. They are also about two times as likely to report being extremely prepared for risks associated with AI and nearly two times as confident that they can deploy AI initiatives in a trustworthy way.*

- **Culture and change management leading practice: AI-fueled organizations nurture a trusting, agile, data-fluent culture and invest in change management to support new ways of working.** *Organizations that invest in change management to a high degree are 1.6 times as likely to report that AI initiatives exceed expectations and more than 1.5 times as likely to achieve their desired goals, compared to the rest.*
- **Ecosystems leading practice: AI-fueled organizations orchestrate dynamic ecosystems that help build and protect competitive differentiation.** *Overall, organizations with more diverse ecosystems were 1.4 times as likely to use AI in a way that differentiates them from their competitors.*

“By embracing AI strategically and challenging orthodoxies, organizations can define a road map for adoption, quality delivery, and scale to create or unlock value faster than ever before.”

— *Irfan Saif, Deloitte AI coleader, principal, Deloitte & Touche LLP*

In the following report, we explore each leading practice in detail, sharing critical and often overlooked actions that leaders can take to avoid pitfalls on their transformation journey.



Strategy: What should your north star be?

CORE LEADING PRACTICE: SET A CLEAR ENTERPRISEWIDE STRATEGY AT THE TOP THAT ENABLES LEADERS TO HARNESS AI CAPABILITIES TO DRIVE NEW OPPORTUNITIES AND COMPETITIVE ADVANTAGE.

Key findings:

- **Set and communicate a bold vision.** Organizations with an enterprisewide strategy and leaders who communicate a bold vision are 1.7 times as likely to achieve outcomes to a high degree.
- **Look for ways AI can help achieve a differentiated strategy.** Only 38% of respondents believe their use of AI differentiates them from competitors.
- **Communicate your strategy transparently.** Tell your workforce and the market about your strategy and the implications and trade-offs along the way.

Pitfalls to avoid:

- **Don't ask data scientists or IT to drive your AI strategy.** Senior business leaders should drive it based on the core business strategy in partnership with data scientists.
- **Don't overindex on efficiency goals.** Balance efficiency targets with growth- and innovation-oriented goals.

ONE OF THE most frequently cited leading practices for AI transformation is the need for a bold, enterprisewide strategy that is set and championed by an organization's highest leadership. Our research confirmed this: Transformers are more than three times as likely to have an enterprisewide strategy in place, and well over twice as likely as Starters to report their leaders communicate a vision for AI. However, only 40% of our total survey respondents completely agreed that their company has one in place. Meanwhile, even though a significant majority (66%) of respondents view AI as critical to success, only 38% believe their use of AI differentiates them from competitors. What should organizations do differently to strengthen their approach?

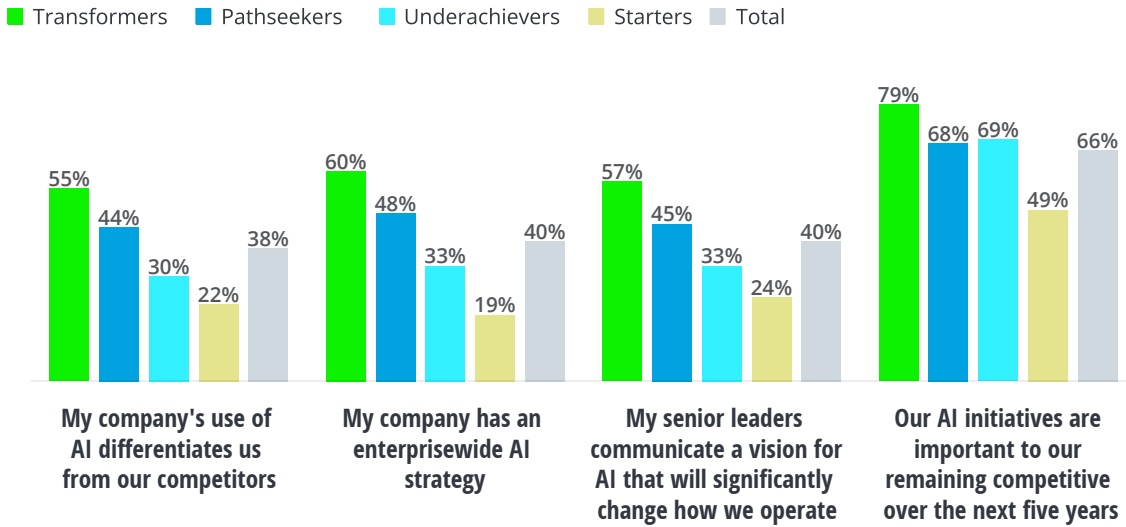
Lost in AI use cases: Leaders can forget to put their business strategy first

To many leaders, it comes as a surprise to learn that the investment needed to develop AI solutions cannot realize a return through the deployment of single, disconnected use cases, or even a handful.⁶ This is why it's so important to have an AI strategy that is connected and coordinated across the enterprise, in tight alignment with the overarching business strategy. All too often, however, business leaders get the planning process out of order, focusing too much on use cases or abdicating leadership of the AI strategy to IT or data sciences. This can be a slippery slope, diminishing the organization's ability to use AI to create new ways

FIGURE 2

Leading AI strategy practices

Percentage of respondents who selected "completely agree" or "very important" to these statements about strategy



Source: State of AI 4th edition data analysis.

of competing for customers, launching products, accelerating time-to-market, securing supply chains, and beyond.

same key performance indicators (KPIs) that have been crafted to incentivize and grow competitive advantage.

To many leaders, it comes as a surprise to learn that the investment needed to develop AI solutions cannot realize a return through the deployment of single, disconnected use cases, or even a handful.

The strongest AI strategies tend to begin without ever mentioning AI. Instead, they should begin with the organization's north star: the core business strategy. From there, the process requires tight collaboration with engaged leaders across all business divisions and the focus of workers at all levels. Ultimately, AI strategy should function as the fuel to the business strategy, aligning to the

In a now famous example from the early 2010s, Jeff Bezos mandated that every leader across Amazon plan for how they would use AI and machine learning (ML) to help the company compete and win. This imperative drove unparalleled innovation and was cited as the catalyst for the Amazon's rise to become an AI leader today.⁷ Many of the strongest AI strategies start in this same way: by pushing clear

objectives down to business leadership, so they can identify gaps and opportunities within their divisions and work backward from there to [apply AI as a solution](#).

These local plans should then be brought back to the top, so that mutual goals and initiatives can be aligned and unified with the core business strategy.

This step is often critical: It's only when AI has been integrated and proliferated throughout the enterprise that it can deliver the combination of efficiency- and value-creating outcomes needed to fuel ongoing returns.

Balance your goals: Overindexing on efficiency can lead to missed opportunities

It's through the combination of both efficiency- and value-creation targets that organizations typically achieve the most success. "When digitally transforming a company, you want greater degrees of efficiency," remarks Rajeev Ronanki, SVP and chief digital officer at Anthem. "But there is a second order of business: What new business opportunities, what capabilities does AI open up that allow for servicing adjacent or maybe entirely new areas?"

Our survey results reinforced this, demonstrating that lower-achieving organizations (Starters and Underachievers) tended to focus more on efficiency or "cost out" goals, while high-achieving organizations (Transformers and Pathseekers) were more likely to emphasize growth-oriented goals, such as: improving customer satisfaction, creating new products and offers, and entering new markets. In other words, high-achieving organizations are more likely to maintain an eye toward the art of the possible and a growth mindset, which allow them to take advantage of opportunities often missed by those who overindex on efficiency or supporting business as usual.

"Envision what is possible in your business, whether it's been done before or never been done before."

— *Michelle Lee, VP of Amazon Machine Learning Solutions Lab*

"You have to go both for impact and build the foundations in parallel, and that is the most challenging part," advises Najat Khan, PhD, chief data science officer and global head of strategy & operations for Janssen Research & Development. "You have to pick the right questions, and have what I call a diversified portfolio of questions to drive impact, ensuring that you can demonstrate early value to build momentum for achieving longer-term, sustainable impact."

AI-fueled organizations can create durable competitive advantage when the CEO and C-suite collectively harness data, advanced analytics, and AI to shape strategic possibilities for both the near and long term in support of their corporate strategy.

Communicate the vision: Publicly signaling transformation can build market value

Chief executives of high-achieving organizations typically serve as the AI communicator-in-chief. According to our survey data, those organizations that communicate a clear vision are 1.5 times as likely to achieve desired outcomes compared to those who do not. The most effective leaders tend to use their platform not only to communicate and champion their plans; they also clarify the implications and trade-offs required along the way. This is often essential for maintaining focus and ensuring that decisions made at all levels of the organization remain aligned to the vision.

Leaders should also remember that value can be created by influencing perceptions of the market and investors.

Communicating the company's vision publicly can amplify success, signaling to capital markets and the competitive talent market that an organization is investing in a bold and exciting future.⁸ If it's not

important enough to merit such a forceful signal toward change, it's highly likely that the gravitational pull toward the status quo could dampen outcomes for even the strongest strategy.

Remain dynamic: Perpetually iterate your AI strategy

Finally, developing an enterprisewide AI strategy that's set up to fuel a differentiating core business strategy is not a one-and-done exercise. Organizations should develop dynamic ways of assessing their strategy to ensure it remains responsive to ever-changing market and

technology developments. As the organization's core business strategy and AI capabilities mature over time, leaders should continually sharpen their goals, moving beyond staying competitive to increasingly using AI and ML as competitive differentiators.

For more AI strategy recommendations:

- [*An innovation strategy powered by tech*](#)
- [*The AI Dossier: Top uses for AI in every major industry – now and in the future*](#)
- [*A new language for digital transformation*](#)

Operations: How do you bring transformation into everyday work?

CORE LEADING PRACTICE DRIVE ONGOING QUALITY, INNOVATION, AND VALUE CREATION THROUGH NEW OPERATING MODELS, ROLES, AND PROCESSES.

Key findings:

- **Reimagine business workflows and roles.** Organizations that have undergone significant changes to workflows or added new roles are more than 1.5 times as likely to achieve outcomes to a high degree.
- **No excuses: Document and follow MLOps.** Organizations that document and follow MLOps processes are twice as likely to achieve their goals to a high degree. They are also approximately two times as likely to report being extremely prepared for risks associated with AI and nearly two times as confident that they can deploy AI initiatives in a trustworthy way.

Pitfalls to avoid:

- **Business leaders should allocate more time to solution design.** Effectively redesigning processes and how AI tools fit into workflows requires thoughtful attention.
- **Don't underestimate the unique maintenance needs of AI solutions.** Establish and document robust MLOps procedures to ensure ongoing quality and ethical delivery.

TECHNOLOGY CANNOT DELIVER transformative results unless organizations reimagine how work gets done. Most leaders today understand this intellectually; however, survey results show a disconnect in putting it into action: Across a variety of operational activities—both on the business side and within IT or data science teams—only about one-third of those surveyed report that they have adopted leading operational practices for AI. This includes adhering to a well-calibrated MLOps framework,

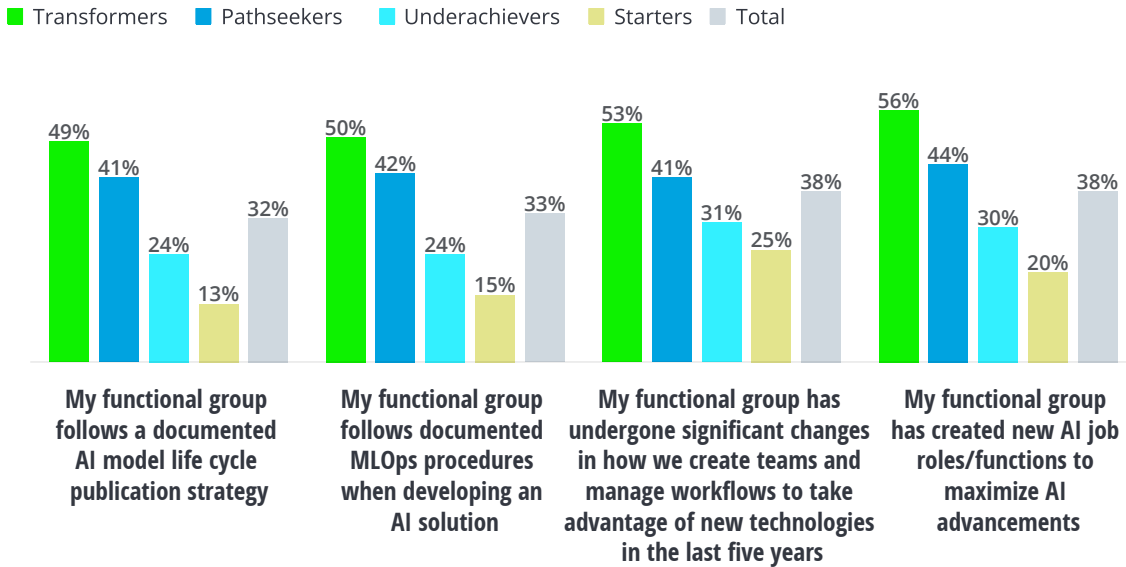
documenting AI life cycle publication strategies, and updating workflows, roles, and team structures across the business.

To ensure quality AI solution development, enterprise adoption, and the most successful outcomes, organizations should rethink their operations from two key perspectives: across the business workflow, and within their IT and data science team processes.

FIGURE 3

Leading AI operations practices

Percentage of respondents who selected "completely agree" to these statements about operations



Source: The State of AI 4th Edition data analysis.

A call for leaders: Business stakeholders should take ownership of AI-fueled solutions

A successful AI solution should be conceived and designed to fit within a new workflow created to improve value delivery. To do this effectively, business stakeholders should take a lead role, but unfortunately, many misunderstand how to do this effectively.

This causes them to allocate too little time to rethink the broader operational shifts needed to support successful adoption of a value-creating solution. All too often, AI and ML development teams are put in charge without a clear view into the business processes they are tasked with transforming.

When this happens, Michelle Lee, VP of Amazon Machine Learning Solutions Lab, observes, “They then experience organizational inertia, because either the use case being addressed wasn’t important enough, or there is an unwillingness to adopt a new and an unproven method.”

Dr. Tian He, vice president and the head of JD Logistics AI and Data Science, underscores that “Most people learning especially machine learning and deep learning just came out of school, and they know the AI skills ... They’re technicians. But you need to understand the business.”

“We’ve seen a lot of AI projects where people have implemented amazing models, but they’ve never seen the light of day because the business rejects the process changes that go along with it.”

— Rajen Sheth, VP of Google Cloud AI and Industry Solutions

Only with an engaged partnership between the business and AI and ML development teams, can a new way of working emerge. Even when business leaders understand their role, a lack of AI fluency can inhibit their ability to collaborate effectively with the AI and ML development teams. Some organizations have found success in creating new roles to help translate between business stakeholders and model development teams. In these circumstances, an individual well-versed in both business and analytics can serve as the bridge between overarching business strategic goals and AI technical requirements.⁹ Our survey demonstrates that efforts in creating new roles like this can pay off. High-achieving surveyed organizations (Transformers and Pathseekers) were significantly more likely to create new roles and functions to maximize AI advancements.

MLOps: New capabilities require new processes

In the early days of enterprise AI, initiatives took place within localized teams and were contained within business divisions. Models were frequently built on data scientists' desktops and required relatively simple and smooth processes to maintain.¹⁰ Today, models are being deployed in the cloud and running mission-critical workloads. As organizations reach this scale, the level and complexity involved in perpetually developing, training, testing, deploying, monitoring, and maintaining models have caught many organizations by surprise: Only 33% of all survey respondents completely agree they have MLOps processes in place.

Not all data scientists are skilled in taking on an engineering or operational mindset to manage this at scale. This is why a strong collaboration across data scientists, engineering, application developers,

and operational managers is important to align the necessary processes for AI and ML to take hold.

While developing these processes is generally the responsibility of IT and data science leadership, all stakeholders and senior leaders should be concerned that these processes and standards are in place and observed across the organization. They are key to ensuring the ongoing quality of models that are fueling critical business processes. Data from our survey bear out just how important: Organizations that strongly agreed that MLOps processes were followed were twice as likely to achieve their goals, compared to the rest. Furthermore, these surveyed organizations were also approximately two times more likely to report feeling extremely prepared for risks associated with AI, and nearly twice as confident that they can deploy AI initiatives in an [ethical, trustworthy way](#).

Rethinking ops: A catalyst for AI transformation

Establishing the appropriate structures, roles, and working relationships across an organization can be one of the most important steps in bringing an AI transformation to life: “If I were to give one piece of advice to a C-suite-level person looking at how to get this right in their organization, I would say, ‘Look at the organizational structure, because that can really facilitate the change,’” advises Phil Thomas, executive vice president of Customer Insights Data & Analytics at Scotiabank. “That for us was a massive accelerant in our journey—getting the org structure right and creating a culture of being a data-driven organization that’s accepting of the use of AI.”

For more AI operations recommendations:

- [ML Oops to MLOps](#)
- [Taking AI to the Next Level](#)

Culture and change management: Why is valuable change so elusive?

CORE LEADING PRACTICE BUILD A TRUSTING, AGILE, DATA-FLUENT CULTURE AND INVEST IN CHANGE MANAGEMENT TO SUPPORT NEW WAYS OF WORKING.

Key findings:

- **Data fluency pays off.** High-achieving organizations (Transformers and Pathseekers) are nearly three times as likely to trust AI more than their own intuition, compared to low-achieving organizations (Starters and Underachievers).
- **Prioritize change management.** Organizations that invest in change management to a high degree are 1.6 times more likely to report that AI initiatives exceed expectations and more than 1.5 times as likely to achieve their desired goals.
- **Fear can be an indicator of positive change** if paired with supportive culture and change management.

Pitfalls to avoid:

- **Don't take a one-size-fits-all approach to change management.** Tailor your efforts to key audiences and ensure a variety of resources are available to support new behaviors.
- **Don't expect change management to fix a poorly designed transformation.** Thoughtfully designing a new solution from the beginning can set the foundation for positive change.

OVER THE PAST few decades, the pace of business and technology change has quickened, requiring workers to adapt, perpetually learn new skills, and make decisions amid growing ambiguity. For many organizations, these shifts have challenged a critical facet within their organization: their culture.

Executive interviewees repeatedly emphasized how the cultural characteristics of their organizations either facilitate or hinder their AI-transformation efforts. This aligned with a [2019 Deloitte Survey](#) that found that organizations with the most data-driven cultures were twice as likely to significantly exceed business goals.¹¹

Through interviews and survey data analysis, we found the organizations with the strongest AI outcomes tend to display some common characteristics, including high levels of organizational trust, data fluency, and agility. And to get there, investment in change management has been key to successful AI transformation:

“Not to say that technical model building is easy, but the biggest challenge is culture change.”

— *Phil Thomas, executive vice president of Customer Insights Data & Analytics at Scotiabank*

Organizations that invest in change management are 1.6 times as likely to report that AI initiatives exceed expectations and more than 1.5 times as likely to achieve outcomes than those that don't. A recent study also made clear that by providing workers with clear direction and support, change management can boost both trust and engagement.¹²

Ingredients of an AI-ready culture: Trust, data fluency, agility

Trust: Surprisingly, surveyed high-achieving organizations (Transformers and Pathseekers) report more than twice the amount of fear compared to low-achieving organizations (Underachievers and Starters). Typically, when we consider AI-related fear, the focus is on job loss or

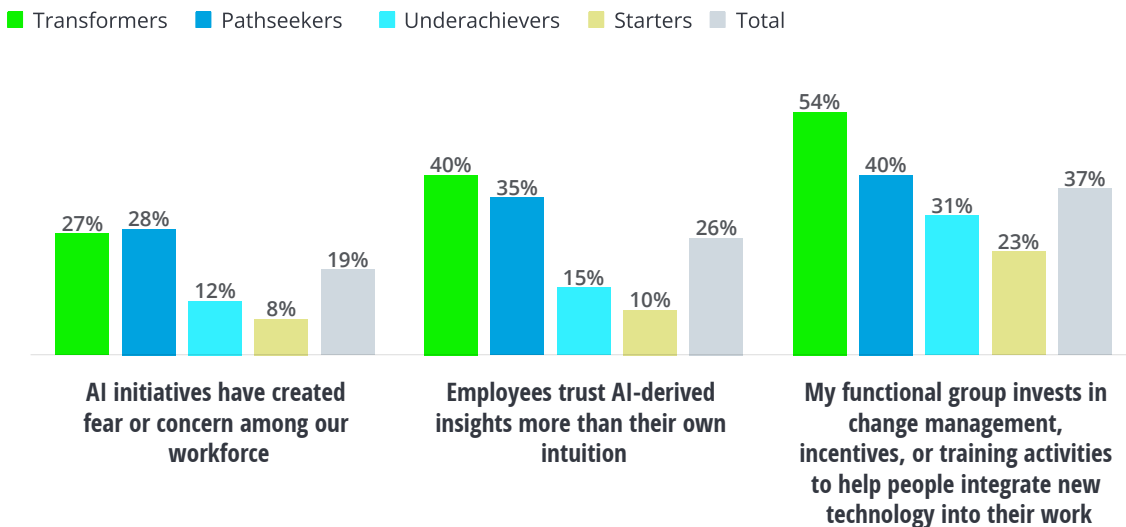
machines replacing humans. But high-achievers also reported little desire to reduce employee headcount as well as high investment in training and change management. When viewed through this lens, fear may be a positive indicator that an organization's AI vision is bold. This can bear fruit when paired with other supportive actions and cultural characteristics to drive success. A culture that trusts, even if they fear, demonstrates agility. Change management can help build that trust.

Executive interviews confirmed this interpretation, calling out a variety of behaviors, such as collaboration, relationship-building, and training, which may collectively point to higher levels of trust within the organization. Trust is based on competence and intent:¹³ If employees believe in the organization's ability to build capable AI systems and its intent to use technology for their benefit—not detriment—then trust can grow.

FIGURE 4

Leading culture and change management practices

Percentage of respondents who selected "completely agree" to these statements about culture and change management



Source: The State of AI 4th Edition data analysis.

“It’s really about working together, building collaborative, trusted partnerships,” advises Eileen Vidrine, chief data officer at the US Department of the Air Force. In organizations where that may be lacking, it’s imperative to support trust- and relationship-building to break down silos.

Data fluency: “In order for there to be AI success, people will have to change their relationship with data,” says Andrew Beers, chief technology officer at Tableau. Part of this, of course, involves building advanced technical data capabilities; however, that’s often a smaller piece of the puzzle than leaders realize. More foundational tends to be raising the base level of data literacy across all levels of the organization. This means encouraging everyone to build the critical thinking skills needed to ask the right questions, and then find the right data to solve problems in their everyday work.

“It’s our responsibility as a society, and our responsibility as business leaders to create new talent with AI skills—not only for the engineers and data scientists, but also for every single role in an organization, no matter how ‘technical.’ That’s how we raise the level of AI proficiency for all of our people, and frankly for society at large. And that’s when modernization will happen.”

— *Dan Helfrich, chairman and CEO, Deloitte Consulting LLP*

Developing data-literacy skills builds confidence and a deeper trust in models and AI, which in turn can help set organizations up for positive outcomes. High-achieving organizations from our survey (Transformers and Pathseekers) were approximately three times more likely to trust AI more than their own intuition, compared to low-achieving organizations (Starters and Underachievers). Naturally, trusting AI doesn’t mean blindly following model outputs. Tulia Plumettaz, director of data science at Wayfair

emphasizes this point: “We have a widespread culture of experimental validation. We don’t accept an answer of, ‘The model said so.’ No. Model outcomes are continuously scrutinized through live testing and validation.” In other words, data-focused organizations tend to require a more profound understanding of data. Workers should be incentivized to explain and justify model decisions; this serves to drive more creative insights as well as faster detection of model errors if and when they arise.

Upskilling is important in this effort. “Talent is really one of the big challenges that we see,” observes Ong Chen Hui, Biztech Group cluster director at Infocomm and Media Development Authority of Singapore. She continues, “it’s not strictly the AI scientists. We also see that, in adjacent competencies needed to support AI, there

is a talent shortage there also.” Most organizations understand the importance of including training or reskilling to support an AI transformation—in fact, nearly three quarters of all surveyed organizations did not report a strong preference for hiring externally over reskilling their current workforce.

Agility: AI-fueled organizations typically do more than trust data; they demonstrate a willingness to quickly turn insights into action

and rapid experimentation. Anthem’s Ronanki agrees, commenting on the degree of change this can require for organizations that have grown prioritizing safer and more secure investments: “A lot of [the challenge] is getting comfortable with the fail-fast, pivot mindset when you take on and do new things,” he notes. “With AI investments and digital transformation in general, you need experimentation and learning from failures. It’s a big change.”

Building an AI-ready culture: The need for change management

AI in particular is significantly altering the way work gets done, requiring a redefinition of work,¹⁴ and subsequently which skills and capabilities the human workforce needs to deliver value.¹⁵ “Data science touches every single therapeutic area, business unit, and the different functions,” says Janssen’s Khan. “Therefore the change journey that comes with it is significant. It can be uncomfortable at first, certainly not optional, and completely worthwhile to have collective transformational impact on the patients we serve.”

This level of change necessitates support to help the workforce adjust, which our survey data reinforced: Transformers invest in change management at nearly twice the rate of Starters and Underachievers. Not only does AI support workers in adopting key skills and behaviors, it can also be an important trust builder by demonstrating that the company values them.

Many organizations go astray even before they initiate a change management initiative. If business sponsors haven’t taken the time to work closely with AI solution developers to carefully plan how new technology will improve workers’ experience and ability to deliver value, a change management program will not fix the inefficiencies or undesirable behaviors that poorly conceived processes unintentionally introduce.

Once confident in the transformation design itself, successful change management comes down to whether the transformation goals and requirements have been made clear, relevant, and achievable for the many different audiences within an organization. The better a change program is at

addressing these elements for all workers, the more likely desired change is to take hold. A strong program typically spends time identifying a complete set of behaviors it wants to promote, which are then used to create a multilayered program of communication, training, support resources, incentives, and “nudges”¹⁶ that ultimately drive the creation of new norms. In other words, you can’t change people’s beliefs by just telling them to think differently—but you can share information, educate, incentivize, and support them to behave in different ways. This, over time, can change their beliefs.

Most organizations underinvest in these activities: Only 37% of survey respondents reported significant investment in change management, incentives, or training activities to help their people integrate new technology into their work, often resulting in a slower, less successful transformation.

Even when designed well, organizations should keep in mind that the most successful transformations are typically based on workers’ consent and buy-in, and this takes time. Leaders should seek ongoing measurement of KPIs, using them to track progress and iteratively hone the change program. Adding support where behaviors aren’t taking hold and celebrating achievements along the way is often key to ultimately arriving at a culture that can drive AI-fueled success.

For more change management recommendations:

- [Analytics and AI-driven enterprises thrive in the Age of With: The culture catalyst](#)
- [Humanizing Change: Developing more effective change management strategies](#)
- [Nudging for Good](#)

Ecosystems: How should you orchestrate your partnerships?

CORE LEADING PRACTICE ORCHESTRATE DYNAMIC ECOSYSTEMS THAT HELP BUILD AND PROTECT COMPETITIVE DIFFERENTIATION.

Key findings:

- **Build broad and diverse partnerships.** *Eighty-three percent of the highest-achieving organizations surveyed (Transformers and Pathseekers) create a diverse ecosystem of partnerships to execute their AI strategy.*
- **Use partners to improve your perspective on the market.** *Organizations with diverse ecosystems are significantly more likely to have a transformative vision for AI, enterprise-wide AI strategies, and use AI as a strategic differentiator.*

Pitfalls to avoid:

- **Beware of vendor lock.** *Too few external partnerships can make it difficult to part ways with vendors if needed in the future.*
- **Don't sacrifice your competitive position.** *Build differentiating capabilities in-house to protect your competitive advantage.*

NO COMPANY HAS all the needed talent, algorithms, data sets, or breadth of perspective in-house to innovate perpetually with AI. That's largely why most of today's AI-fueled organizations establish robust technology ecosystems: Through a diverse set of means, they build, partner, license, and access the elements needed to execute their strategy over the long term.

“Ecosystems are dynamic and coevolving communities of diverse actors who create and capture new value through increasingly sophisticated models of both collaboration and competition.”

— *Eamonn Kelly, managing director of Businesses, Global, and Strategic Services, Deloitte LLP¹⁶*

When an ecosystem strategy is robust and well-orchestrated, it offers an organization the flexibility, stability of resources, and informed perspectives needed to navigate and compete in an everchanging market. Survey data reinforced this point: Eighty-three percent of high-achieving organizations (Transformers and Pathseekers) use at least two or more types of ecosystem partners—a significantly higher percentage than low-achieving organizations (Starters and Underachievers). Organizations with more diverse ecosystem relationships also reported stronger preparedness to address AI risk and more confidence in delivering AI ethically.

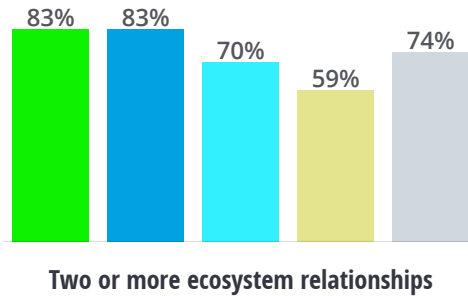
Most business leaders today understand the importance of building strong ecosystems. However, a common misconception can weaken business leaders' approach and diminish long-term value: Many mistakenly believe that simple and streamlined ecosystem strategies are more efficient and thus stronger.

FIGURE 5

Leading ecosystem practice

Percentage of respondents with multiple ecosystem relationships

Transformers Pathseekers Underachievers
Starters Total



Source: The State of AI 4th Edition data analysis.

Time to diversify: Simple and streamlined tech ecosystems introduce risk

While it may seem counterintuitive, simple and streamlined ecosystems frequently introduce more risk than those that are diverse and complex. Understandably, many leaders attempt to minimize the time and expense of managing multiple relationships, and so they choose to work with the fewest partners needed to meet their goals. As AI and ML tools become more deeply embedded into an organization's core operations, it's important to expand this view. Concentrating resources on too few vendors or partners can lead to overdependence,¹⁷ so much so that an organization could become virtually unable to move to a new vendor in the future. In other words, when too many critical business processes rely on a single vendor's platform and models, it can become extremely difficult to disentangle from them without significant disruption. This can ultimately stymie innovation and growth.

"It needs to be part of the conversation at the beginning and through the whole life cycle about

trying to optimize interoperability and avoiding what I would call 'vendor lock' as much as possible," advises the US Department of the Air Force's Vidrine.

A healthier ecosystem approach typically identifies a base platform and looks for a variety of opportunities to integrate different vendors, including those that may be emerging or niche. When this approach is executed well, it not only protects from overdependence, but can also result in a higher level of differentiation, flexibility, and access to expanded perspectives on the market. Survey data reinforced this, showing that organizations with more diverse ecosystems were much more likely to have transformative visions for AI and use AI as a strategic differentiator.

Of course, thoughtful orchestration of these relationships is required to achieve such outcomes. Deciding *how* to leverage each one is just as important as who and how many. "Emergent technology domains, like artificial intelligence, are evolving too fast and in too many directions for most companies to keep pace. This demands a more fluid and hybrid approach—buy, lease, invent, experiment, and partner with a variety of external organizations that compliment and extend your company's competitive edge," advises Keith Strier, vice president of worldwide AI initiatives at Nvidia.

Which elements your organization decides to build in-house versus buy or license externally is an important strategic exercise that can't be overvalued. Each decision should come down to one central question: How does each relationship support and protect your organization's ongoing competitive differentiation in the market?

For more ecosystem recommendations:

- [Business ecosystems come of age](#)
- [Ecosystem-driven portfolio strategy](#)
- [In a world of ecosystems, what's your strategy?](#)

Our AI-fueled future: The pathway is clear

ORGANIZATIONAL PROGRESS HAS always depended on humans' ability to imagine a new vision for the future and identify the opportunity available within it. We seem to be rapidly approaching the day when AI could independently and reliably illuminate creative and strategic opportunity, releasing us from the confines of our limited perspectives. As we advance further into that AI-fueled future, those organizations that lay the foundations now will likely be rewarded manifold.

Rapidly transforming, but not yet fully transformed, has been the underlying theme of this report—very few organizations in the market have achieved mature AI-fueled transformations across the enterprise. Even among Transformers, who are leading the way, there is room to improve: Forty-five percent don't have a significantly differentiated AI approach, 50% report partially mature MLOps procedures, and 46% aren't investing significantly in change management efforts to drive deeper enterprise transformation. Most of today's leaders have plenty of work to do to ensure strong foundations are set:

1. Start with your enterprisewide strategy.

Ask: Have your organization's leaders set a core, overarching business strategy and incentivized AI development enterprisewide to achieve the vision?

- Set bold, enterprisewide goals for AI that tightly align to the core business strategy
- Remember the art of the possible; don't let "cost out" goals cause you to miss big opportunities
- Champion the plan and transparently communicate about required trade-offs across all levels of the organization and even externally

2. Update your operations and document new ways of working.

Ask: Are your business leaders (not just data sciences teams) driving the AI agenda? And are they allocating adequate time to design applications in a way that the business can adopt and deliver transformational results?

- Ensure business sponsors are taking the lead in AI-fueled initiatives
- Redesign roles, processes, and workflows to integrate and encourage adoption of AI tools
- Set enterprisewide standards for AI and ML solution development to promote high-quality, ethical application design and delivery

3. Evaluate your culture in the Age of With.

Ask: Does your organization display an AI-ready culture?

- Build organizationwide data literacy, trust, and agility
- Ensure your workforce has adequate support to learn new skills, capabilities, and ways of working through multilayered change management approaches targeted to unique audiences

4. Diversify your ecosystems.

Ask: Is your ecosystem strategy diverse, well-integrated, and supporting your ability to differentiate and remain agile?

- Design your ecosystem to always protect and drive your competitive differentiation

The pathways have been made clear. For those leaders with the ambition, these leading practices can be a road map to future—currently unimaginable—AI successes as the Age of With matures.

Methodology

TO OBTAIN A global view of how AI is transforming organizations, Deloitte surveyed 2,875 IT and line-of-business executives between March and May 2021. Eleven countries were represented: Australia (109 respondents), Brazil (218 respondents), Canada (216 respondents), China (219 respondents), France (188 respondents), Germany (218 respondents), India (225 respondents), Italy (97 respondents), Japan (110 respondents), the United Kingdom (218 respondents), and the United States (1,057 respondents).

All participating companies have adopted AI technologies and are AI users. Respondents were required to meet one of the following criteria: responsible for AI technology spending or approval of AI investments, developing AI technology strategies, managing or overseeing AI technology implementation, serving as an AI technology subject matter specialist, or making or influencing decisions around AI technology.

To complement the blind survey, Deloitte conducted qualitative telephone interviews with 17 AI experts from various industries.

Analysis model. To identify “AI-fueled” leader groups, we developed an analysis model defining four profiles of organizations based on the frequency of full-scale AI deployments and the

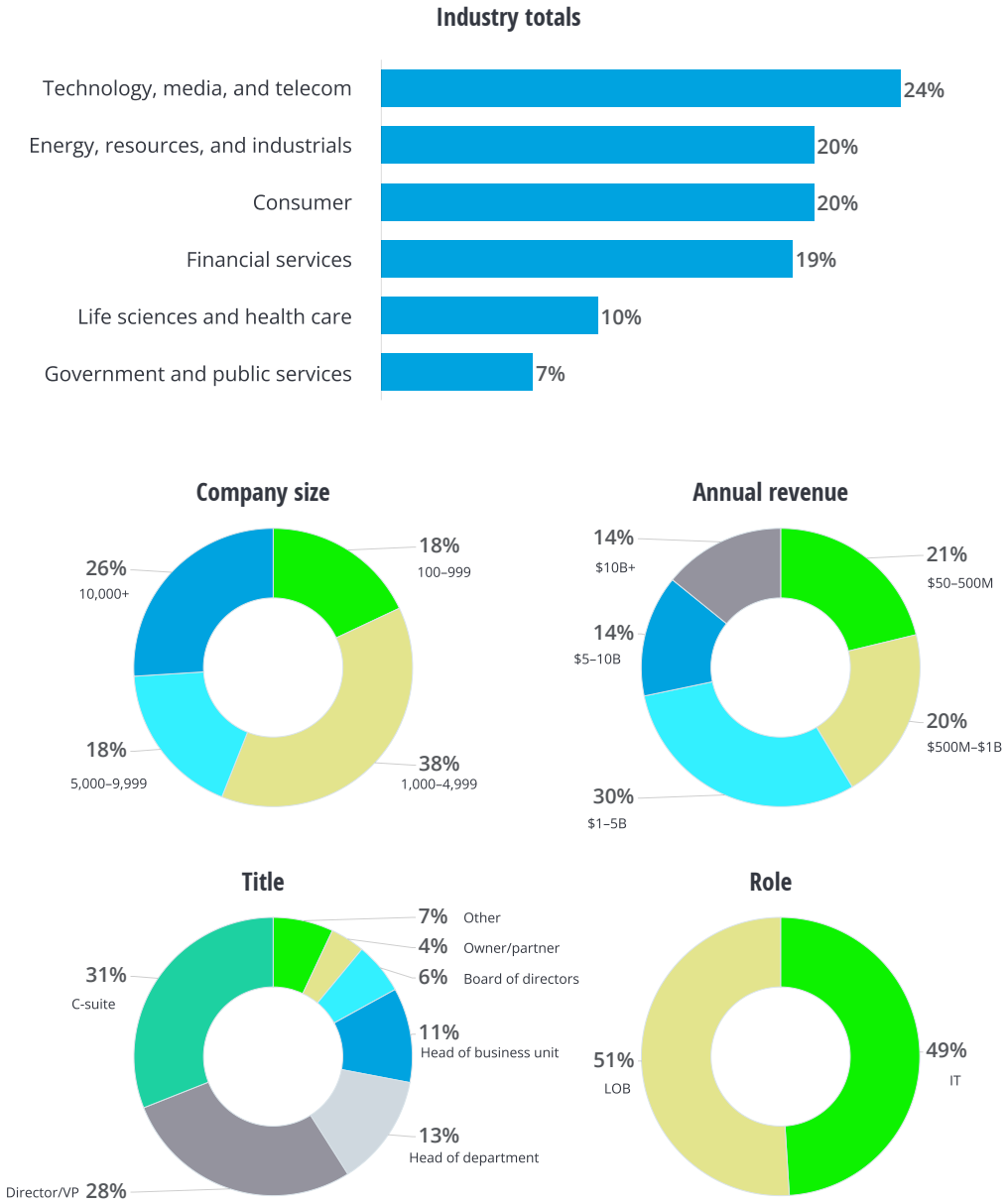
outcomes achieved through AI initiatives. For full-scale AI deployments, we calculated the cumulative frequency of respondents who selected “deployed” (achieved at least one full-scale deployment) among the 0–10 types of AI applications. Similarly, we calculated cumulative frequency by counting the number of outcomes achieved to a “high degree” among the 0–17 potential outcomes achieved by respondents. This established the following profile groups of respondents:

- **Transformers:** (28%, N=794) have achieved four or more high full-scale AI deployments and at least four outcomes to a high degree their AI initiatives. They are considered the leader group, the most “AI-fueled,” within our survey respondents.
- **Pathseekers:** (26%, N=753) have achieved fewer than four high full-scale AI deployments but still achieved at least four outcomes to a high degree through their AI initiatives.
- **Underachievers:** (17%, N=496) have achieved more than three high full-scale AI deployments but still achieved fewer than three outcomes to a high degree through their AI initiatives.
- **Starters:** (29%, N=832) are still developing or exploring AI deployments and have deployed fewer than four high full-scale AI deployments. They have achieved fewer than four outcomes to a high degree through their AI initiatives.

FIGURE 6

Global respondent profile

2,875 IT and business executives



Source: The State of AI 4th Edition data analysis.

Endnotes

1. Unless otherwise cited, data in this report comes from the State of AI 4th Edition survey fielded between March and May 2021.
2. Mike Bechtel, *Seeing the forest for the trees, and the forests beyond: The future of AI*, Deloitte, accessed September 27, 2021.
3. Frank Konkell, "Survey: Pandemic accelerating AI adoption," Nextgov, March 26, 2021.
4. Beena Ammanath, Susanne Hupfer, and David Jarvis, *Thriving in the era of pervasive AI: Deloitte's State of AI in the Enterprise, 3rd Edition*, Deloitte Insights, 2020.
5. Deloitte definition of an AI-fueled organization.
6. Deloitte analysis (Dave Kuder interview).
7. Steven Levy, "Inside Amazon's artificial intelligence flywheel," Wired, February 1, 2018.
8. Deloitte analysis.
9. Deloitte, "An innovation strategy powered by tech," accessed September 27, 2021.
10. Rohit Tandon and Sanghamitra Pati, *ML-Oops to MLOps*, Deloitte, accessed September 27, 2021.
11. Tom Davenport et al., *Analytics and AI-driven enterprises thrive in the Age of With: The culture catalyst*, Deloitte Insights, July 25, 2019.
12. Paul J. Zak, "The neuroscience of trust," *Harvard Business Review*, January 1, 2017.
13. Deloitte, *The future of trust: A new measure for enterprise performance*, 2021.
14. John Hagel, John Seely Brown, and Maggie Wooll, *Redefine work: The untapped opportunity for expanding value*, Deloitte Insights, 2018.
15. John Hagel, John Seely Brown, and Maggie Wooll, *Skills change, but capabilities endure: Why fostering human capabilities first might be more important than reskilling in the future of work*, Deloitte Insights, August 30, 2019.
16. Shrupti Shah et al., *Nudging for good: Using behavioral science to improve government outcomes*, Deloitte Insights, June 24, 2019.
17. Eamonn Kelly, *Business ecosystems come of age—Part of the Business Trend Series*, Deloitte University Press, April 16, 2015.
18. Justice Opara-Martins, Reza Sahandi, and Feng Tian, "Critical analysis of vendor lock-in and its impact on cloud computing migration: a business perspective," *Journal of Cloud Computing* 5, no. 4 (2016).

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