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Winning With AI

Pioneers Combine Strategy, Organizational Behavior, and Technology

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Executive Summary

After several decades of progress, AI technology is now poised to become a significant source of value for a wide range of businesses. In the 2019 *MIT Sloan Management Review* and Boston Consulting Group (BCG) Artificial Intelligence Global Executive Study and Research Report, 9 out of 10 respondents agree that AI represents a business opportunity for their company.

In addition, a growing number of leaders view AI as not just an opportunity but also a strategic risk: "What if competitors, particularly unencumbered new entrants, figure out AI before we do?" In 2019, 45% perceived some risk from AI, up from an already substantial 37% in 2017. This shift suggests an increasing awareness of and concern with competitors' use of AI. In China, perceived risk from AI is even higher.

Significant challenges remain, however. Many AI initiatives fail. Seven out of 10 companies surveyed report minimal or no impact from AI so far. Among the 90% of companies that have made at least some investment in AI, fewer than 2 out of 5 report obtaining any business gains from AI in the past three years. This number improves to 3 out of 5 when we include companies that have made significant investments in AI. Even so, this means 40% of organizations making significant investments in AI do not report business gains from AI.

The crux is that while some companies have clearly figured out how to be successful, most companies have a hard time generating value with AI. As a result, many executives find themselves facing a set of AI realities: AI is a source of untapped opportunity, it is an existential risk, and it is difficult. Above all, it is an urgent issue to address. How can executives exploit the opportunities, manage the risks, and minimize the difficulties associated with AI? How should they navigate all three factors?

Our findings — based on a survey of more than 2,500 executives and 17 interviews with leading experts — provide a data-driven view of what organizations that succeed with AI are doing and what

real success with AI looks like. Companies that capture value from their AI activities exhibit a distinct set of organizational behaviors. They:

- Integrate their AI strategies with their overall business strategy.
- Take on large, often risky, AI efforts that prioritize revenue growth over cost reduction.
- Align the *production* of AI with the *consumption* of AI, through thoughtful alignment of business owners, process owners, and AI expertise to ensure that they adopt AI solutions effectively and pervasively.
- Unify their AI initiatives with their larger business transformation efforts.
- Invest in AI talent, data, and process change in addition to (and often more so than) AI technology. They recognize AI is not all about technology.

The net effects of these behaviors, and their underlying commitments, are to address difficulties generating value with AI, manage unavoidable competitive and implementation risks from AI, and effectively exploit AI-related opportunities.

Addressing Difficulties

To a large extent, difficulties with generating value from AI show up in the data as organizational rather than technological. Companies that focus solely on the production of AI (data, technology, tools) are less likely to derive value than those companies that actively align business owners, process owners, and AI owners. Leaders enable their organizations to *consume* AI as much as to *produce* AI.

AI efforts led by C-level executives and closely coordinated with the company's broader digital transformation are more likely to generate value than those that are led by other executives or unintegrated with digital transformation. Companies that treat AI as a "technology thing" struggle to deliver value: An IT focus on AI tends to generate less value than a broad strategic focus.

Those companies that obtain business value from AI build internal teams and rely less on outside vendors; they selectively import experienced AI talent for technical leadership roles; and they upskill their existing workforce to enable AI literacy and understanding of how to manage with AI. Despite talent scarcity, companies of all sizes across industries report similarly positive outcomes when they make these three talent investments.

Managing Risks

Our research surfaced two broad ways that companies are managing risks that emerge either directly or indirectly from their and others' AI deployments. First, companies that have obtained value from AI are more likely to manage proactively: They make bigger, sometimes riskier, investments. These aren't gambles, however, but rather, calculated strategy.

Second, in fast-moving market environments, strategic alignment becomes more challenging and more critical to get right. Misalignment, accordingly, becomes a greater and more common risk. Successful leaders pay attention to AI but as one tool in a broader strategic context; this, combined with a focus on organizational ability to consume AI, mitigates the risk of strategic misalignment. Some interviewees describe reinforcing alignment benefits once AI is successfully at work, pointing to successful AI applications that produce integrated customer perspectives, new metrics, and cross-functional behaviors that enable work to be done more effectively.

Exploiting Opportunities

Companies that derive value from AI are more likely to integrate their AI strategy with their overall corporate strategy. Organizations that are most effective at obtaining value from AI more likely generate value from AI-driven revenue, rather than from cost savings alone. Most executives believe that the highest future value from AI will be on the revenue and growth side rather than on the cost side.

Genuine success with AI — over time — depends on generating revenue, reimagining organizational alignment, and investing in the organization's ability to actually use AI across the enterprise. None of this

is easy to achieve. It is clear, however, that a growing number of executives have determined that finding the right approach to AI is in their company's best interests. This report highlights several practical considerations and steps executives should take to reconsider their corporate strategy with an eye toward what can be achieved with AI — not only by their own organizations but by their competitors.

Introduction: AI, a Strategic Necessity at Aetna

At Aetna, the U.S.-based insurer recently acquired by CVS, artificial intelligence is playing an increasingly important role in both refining and extending its business model. Aetna already uses AI to design provider networks, prevent fraud, and discover overpayments — traditional applications of analytics within the insurance industry. But, as Ali Keshavarz, Aetna's vice president and head of analytics, says, this is just the beginning of what the company is planning to do with AI.

Aetna is now pursuing strategic initiatives to create more customer value with AI. In one Medicare-related offering, product designers used an AI-based method to customize benefit design. This approach led to 180% growth in new member acquisition.

More significantly, Keshavarz adds, Aetna is using AI to advance its broader strategy to become the health care portal for its customer base. "We want to become the first place people go to when they are thinking about their health," he says. "That could be something like you have a rash and you don't know what's going on. You want to get a quick diagnostic of what's happening. Can we be more and more of the front door for that?"

One area where AI is going to be really important, Keshavarz says, is to enhance customer engagement, both in terms of directly connecting with customers and simplifying their user experience by automating manual processes for billing and claims. With over 300,00 employees and more than 1,000 vendors, the

ABOUT THE RESEARCH

This report presents findings from a two-phase research effort between *MIT Sloan Management Review* and Boston Consulting Group. We fielded a global survey in spring 2019, attracting 2,555 total respondents representing 29 industries and 97 countries. We then interviewed 17 executives leading AI initiatives in large organizations in a broad range of industries, including insurance, software, banking, manufacturing, health care, pharmaceuticals, retail, and mining.

As a starting point for analysis, we divided the total survey population into the following four subgroups based on their revealed AI maturity, a combination of their relative understanding of AI tools and concepts and levels of adoption of AI applications:

- **Pioneers (20%):** organizations that both understand and have adopted AI. These organizations are on the leading edge of incorporating AI into both their offerings and their internal processes.
- **Investigators (30%):** organizations that display knowledge of AI technologies and applications but that are not deploying AI beyond the pilot stage. Their investigations into what AI may offer emphasize looking before leaping.
- **Experimenters (18%):** organizations that are piloting or adopting AI without deep understanding. These organizations are learning by doing.
- **Passives (32%):** organizations with no AI adoption and little understanding of the technology.

Our analysis included noting any significant variations in response by maturity group. In particular, this report notes differences in Pioneers' responses. It also looks in detail at organizations' reported business impact from AI. Business impact was assessed by the degree to which survey respondents reported and predicted realizing business value from AI in the form of cost reduction and/or revenue generation.

As for the term *artificial intelligence* itself, it can mean different things to different people. The survey included the definition of AI in the *Oxford English Dictionary*: "AI is the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages."

post-merger company needs to rely on greater levels of automation to align the company's disparate functions and processes to achieve its "front door" strategy. Aetna's experience with AI — integrating AI capability-building with corporate strategy, using AI to reduce costs and grow revenue, and improving organizational alignment — is typical of leading AI practitioners in various industry sectors.

These leading practitioners, which *MIT Sloan Management Review* and Boston Consulting Group have been tracking for the past three years, also take a distinctive approach to deriving business value from AI. (See "About the Research," page 3, for details about the research methodology.) This report offers practicable insights into the tactics these companies use to manage risks from AI, overcome difficulties exploiting AI opportunities, and integrate AI into corporate strategy.

As we have done in previous years, we categorized survey responses into four levels of AI adoption success and sophistication. In this report, we highlight how the most advanced companies — Pioneers — diverge from other groups. We discuss Pioneers' strategic investments in AI (in terms of technology, projects, and talent), their commitments to coordinate the production of AI with its use, or consumption, in the enterprise, and their ability to align their organizational behaviors around new capabilities and new sources of value from AI. In addition, this report includes insights about how Chinese businesses' AI applications and attitudes toward technology diverge from those in organizations elsewhere worldwide.

Strategy With AI

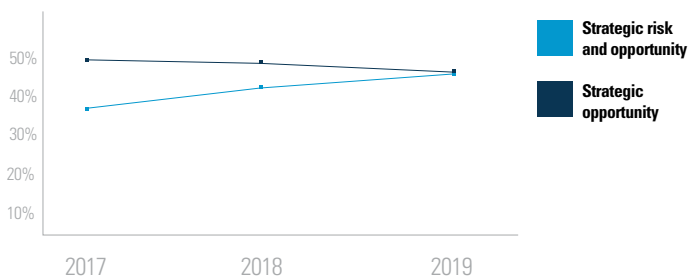
Executives increasingly perceive AI as a competitive risk, not just an opportunity. In 2019, 45% of survey respondents perceive some risk to their business from AI, up from 37% in 2017. (See Figure 1.) In China, the perception of risk from AI is even more dramatic: 71% of Chinese respondents view AI as both a risk and an opportunity to their enterprises. (See "China: Extra Risk, Extra Urgency," page 5, for more ways in which Chinese responses varied from those of the rest of the survey's global population.)

Risk from AI comes in several forms and from different directions. Existing competitors that use AI to work smarter and faster may exacerbate existing threats. Or nontraditional competitors that use AI to disrupt adjacent industries and unsettle otherwise stable market environments may create new threats.

Shivaji Dasgupta, managing director of Deutsche Bank, for example, notes a growing concern that there will no longer be "a level playing field" thanks to AI, especially in a highly regulated industry like banking. New competitors from industries not bound by rules imposed on incumbents are already creating competitive risks. Take Apple with its Apple Pay and recently launched Apple Card and Amazon with its Amazon Cash. With massive amounts of data, the ability to apply AI and other technologies to capitalize on that data, and their loyal customer bases, the tech giants' respective moves into financial services pose formidable threats to traditional banking and financial services companies.

FIGURE 1: COMPANIES REMAIN OPTIMISTIC ABOUT OPPORTUNITY, BUT PERCEPTION OF RISK INCREASES

While respondents continue to see artificial intelligence as a strategic opportunity, an increasing number also recognize it as a strategic risk.



(Strategic risk and opportunity includes respondents who agree or strongly agree that AI is both a strategic risk and opportunity or *a strategic risk)*

CHINA: EXTRA RISK, EXTRA URGENCY

In the spring of 2019, *MIT Sloan Management Review* and Boston Consulting Group conducted a separate survey of Chinese executives in an effort to gain better insight into the understanding and adoption of AI in China. We translated our global survey into Chinese and surveyed 300 executives across industries in China. We then compared the responses of Chinese Pioneers with those of all Pioneers in our global survey.

Greater perception of risk. While a heightened sense of risk from AI marks the mood of companies globally, this shift is more pronounced among Chinese respondents. Fully 71% of all Chinese respondents see AI as a strategic risk and opportunity to their enterprise, up from 41% in 2018. (See Figure 2.)

Higher revenue hopes. Chinese Pioneers are more likely than Pioneers in the overall sample to expect AI to drive revenue (65% versus 46%), while the percentage of Chinese Pioneers who expect cost savings is comparable to that of global peers (23% versus 25%).

Broader applications. Pioneering Chinese companies display more expansive visions and strategies for AI. Compared with the global population, they are more than twice as likely (79% versus 37%) to have broad objectives for AI, applying it to all three areas we asked about: efficiency and cost savings, revenue growth, and the development of new products and services.

Well-founded expectations. Chinese Pioneers base their expectations for the future on what they have experienced so far: There is a similarity between their observed impact from past investments (23% on cost and 65% on revenue) and the impact they anticipate from future efforts (25% on cost and 65% on revenue).

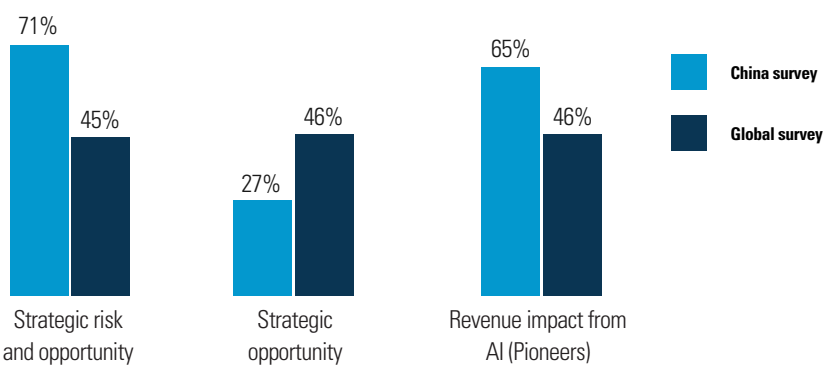
Higher investment levels. Chinese companies distinguish themselves by investing more than their global counterparts in AI overall: in AI talent (84%), technology (93%), and the data (81%) and processes (75%) required to train AI algorithms.

More external talent. Chinese Pioneers rely more heavily on outside companies than their global peers (64% versus 20%), even as they invest in hiring and training.

More big bets. When it comes to specific AI projects, Chinese Pioneers have a greater appetite (61% versus 45%) for big bets — projects with dramatic potential impact but over longer time horizons and with greater associated risk.

FIGURE 2: RISK INCREASES, REVENUE IMPACT REMAINS

Chinese companies see AI as more of a strategic risk than their global peers, while their observed revenue impact from AI outpaces their global counterparts.



(Strategic risk and opportunity includes respondents who agree or strongly agree that AI is both a strategic risk and opportunity or *a strategic risk)*

As more executives pursue benefits from AI, many leaders are realizing that a rise in AI-equipped competitors brings strategic risks.

Strategy That Integrates AI

With more executives perceiving both opportunity and risk from AI, the development of AI capabilities now has a sense of urgency. But efforts to rebrand existing processes with a spiffy new label of "now with more AI!" aren't enough. Nor is tasking some technology staff to deliver a technical solution to a perceived AI threat. Merely developing a strategy for AI is not enough. Our research shows that tying a strategy for AI to the company's overall strategy is essential.

As Ranjeet Banerjee, worldwide president of medication management solutions at global medical technology company Becton, Dickinson and Company, puts it, "What problem are we trying to solve? Where do we have a right to play and win? And how important is that win from a strategic and a financial perspective?" That level of strategic thinking is "the first lens that we try to put on this," he says. "And then we go back and say, 'OK, what technologies do we need?' This cannot be done randomly. If you don't start with your strategy, it'll be all over the place." With many possible AI applications across the enterprise, AI-specific strategies that aren't aligned to the overall business strategy inevitably lead to scattered, ineffectual efforts.

At Roche Diagnostics, CIO Werner Boeing agrees, noting, "AI is not, in itself, a separate agenda. It is a subset of the tooling and the capabilities and methods we're using" to pursue strategic objectives. Approaching AI as one of many possible tools offers Roche the flexibility to take advantage of AI capabilities as needed without the constraint of a predefined AI-focused agenda.

Aligning AI and strategy requires organizations to look backward from strategy, not forward from AI. Jeroen Tas, Royal Philips' chief innovation and strategy officer, explains that AI is integrated into corporate strategy by working "our way backward" from the company's overall strategy for customer health. It then identifies how AI can support this. Philips isn't starting with AI and looking forward to where it can support the strategy; rather, it finds areas in which the strategy needs support and looks for the best way to provide it. Philips focuses specifically on how AI can provide better consumer experiences, better health outcomes, improved care provider experience, and lower costs of care.

This approach can help executives reimagine AI's effects on business models, not just on projects or initiatives. Steve Guise, CIO of Roche Pharmaceuticals, explains how AI is transforming the company's business model. "If you want to realize personalized health care, the current model for delivery of drugs to market won't work in the future," he says. The old approach to new drug discovery, he points out, means that pharmaceutical companies spend a billion dollars to get one marketable drug to emerge from the pipeline. Two or three are launched per year. But Roche Pharmaceuticals' vision of the future would entail launching more like 30 products a year. "Therefore, if you want to deliver on personalized health care, you have to find a way of getting that exponential improvement," Guise says. Roche Pharmaceuticals executives believe that applying AI to drug discovery will help the company achieve that kind of transformational change. When organizations keep the focus on strategy, executives may be in a better position to appreciate ways that AI can influence entire business models.

When organizations keep the focus on strategy, executives may be in a better position to appreciate ways that AI can influence entire business models.

That doesn't mean organizations need to apply AI to major corporate objectives from the outset. Many

leaders start with less ambitious goals as precursors to bigger ones or as ways to achieve early wins and gain momentum. Take global insurer Generali, which has already amassed considerable experience developing its AI capability. David Cis, chief operating officer at Generali Italia, reports having eight use cases already past the pilot stage and "in production" at enterprise scale with hundreds of thousands of transactions having been automated. He sees plenty of other opportunities to make dramatic gains in automation and productivity; in addition, the company is turning its attention to the core of the insurer's commercial processes. "Certainly, we see many areas where the business model can be radically changed," he says. AI's role in supporting strategy can expand with early wins and a build-up of positive experiences.

How are organizations integrating AI into their broader strategy? Two approaches that stood out in our research were integrating AI with strategic digital initiatives and focusing AI on revenue generation (rather than cost reduction).

Integrating AI and Digital Initiatives

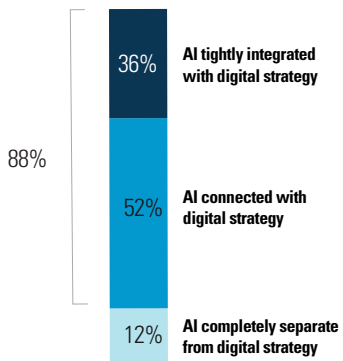
Digital transformation is currently an important aspect of many organizations' strategies. Various data and digital initiatives typically contribute to the large-scale effort to redesign work processes, systems, and structures that don't capitalize on modern information and communication technologies. One sign that a company is incorporating AI into its strategic efforts is that management integrates AI with strategic digital initiatives. For one financial services organization we interviewed, building an AI capability was tightly integrated into its overall strategic transformation effort. One executive noted, "Digital transformation was really the end goal and never really separate from our adoption of AI."

Pioneers are more likely to connect AI with digital initiatives. In terms of strategy, about 80% of Pioneers connect or tightly integrate their AI and digital initiatives. Forging this connection has clear benefits: 74% of Pioneers that connect their AI and digital initiatives as a matter of strategy generate some form of business impact, either in terms of revenue generation or cost reduction. Companies that connect or tightly integrate AI and digital initiatives are 12 percentage points more likely to see revenue impact, and 20 percentage points more likely to have seen either cost or revenue impact. As Figure 3 shows, the vast majority (88%) of survey respondents reporting business impact from AI either connect or tightly integrate their AI initiatives with their digital strategy, indicating a strong correlation between AI integration and value gained.

At Schneider Electric, chief digital officer Hervé Coureil advances a digital framework with four key themes — digital offerings, customer experience, operations, and cybersecurity — noting, "AI is a platform in each of the four themes." This digital transformation framework provides the structure in which AI solutions are considered, prioritized, and designed to function more efficiently and intelligently than traditional frameworks. Schneider also organized its digital team around business capabilities important to the company — so that, for example, a high-ranking member of the digital team might be wholly focused on customer man-

FIGURE 3: ORGANIZATIONS SEEING VALUE FROM AI INTEGRATE AI WITH BROADER DIGITAL STRATEGY

Companies that derive value from AI are more likely to integrate their AI strategy with their overall corporate strategy.



(Percentage of respondents reporting impact from AI)

agement and the ways in which digital investments could enhance Schneider's capability in that domain. Therefore, integrating AI with the digital strategy allows the company to benefit from this same capability role structure, which would be hard to put in place solely for AI.

In our survey data, differences in focus on revenues versus costs correlate with different levels of optimism about the future. Across all maturity groups, respondents who report only cost reductions to date are less optimistic about achieving further savings with AI than those who have seen revenue gains: Only 44% of those who have had cost reductions expect the same results in the coming five years, while 72% of respondents who have seen revenue growth tend to expect that success to continue in the same time frame. (See Figure 4.)

Aiming for Revenue

Companies can use AI for cost cutting and productivity benefits. But advanced AI users focus on revenue generation opportunities to a far greater extent than less advanced users. Pioneers are twice as likely as Experimenters to use AI to boost revenues (53% compared with 24%).

Aetna's Keshavarz notes that while there is a lot of "low-hanging fruit from a straight ROI perspective, the more transformative idea" is to create large revenue opportunities from services that will "help guide people through their health and navigate the health care system." He underscores that "largely, the Aetna-CVS merger was about that opportunity. And so, using AI to help further that is the bigger opportunity."

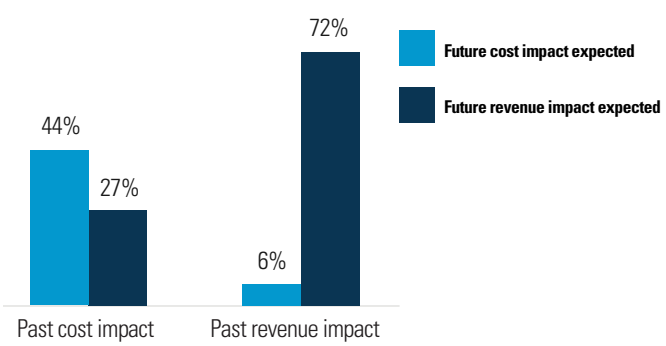
It may be easier to earn some early wins with AI through cost reductions and productivity improvements, but Pioneers are moving past lowering expenses and focusing more on growing revenues. Conversely, organizations with experience using AI for revenue gains see the potential for more in the future.

Deutsche Bank's Dasgupta describes an impressive revenue-side achievement: For one consumer credit product in Germany, AI makes a real-time decision on whether or not to extend a loan to a customer as the customer is filling out the loan application. "This has generated a lot of interest among consumers," he reports — so much that, for that specific product, loan issuance shot up 10- to 15-fold in eight months after the AI-powered service was launched. (Dasgupta's theory on why: In Germany, an individual's credit rating is damaged by applying for a loan but not receiving it. Deutsche Bank's new AI solution removes that risk for customers by telling them whether or not they will be approved for a given amount before they hit "apply." The largest gains haven't come from better serving those customers who would have applied for loans anyway. Rather, the benefit comes from reaching those who would not have applied in the first place.)

The potential of AI is particularly important in contexts where non-cost factors dominate. At Hyundai Motor Group, JeongHee Kim, who leads the AI research lab, notes, "Productivity is really important, but our first goal for AI is to improve the customer's value." The company would rather use AI to create better in-vehicle environments or improve safety performance than to cut costs with greater efficiencies.

FIGURE 4: LIMITS OF A COST-FOCUSED AI STRATEGY

Organizations that have seen revenue impact from AI see the potential for more.



THE 'TECH TRAP' FOR AI

Leaders cited throughout this report highlight the importance of aligning organizational behavior and strategy in order to generate business value with AI.

Our survey data illustrates what happens when AI is treated primarily as a technology opportunity rather than as a strategic initiative that calls for new organizational behaviors. Companies with AI initiatives housed under the chief information officer — where IT technology typically lives — are only half as likely to obtain value from AI as companies with AI initiatives managed or led by a different C-level executive. Companies with CIOs in charge of AI have seen value in 17% of cases versus 34% for companies that house AI directly under the CEO. When other C-level executives lead a company's AI efforts (for example, a chief digital officer), AI-related value is generated at an even higher rate (37%). (See Figure 5.)

These results do *not* imply that CIOs are worse at leading AI initiatives than other leaders. A meaningful segment of CIOs (including those quoted in this report) serve as strategic business partners, are empowered to invest in new talent, and have embraced new ways of working across the organization. These CIO leaders are enabling their companies to capture meaningful value from AI.

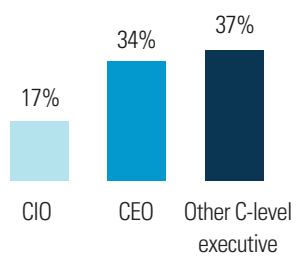
The key point is: Companies that view AI through a narrow technology lens — which may occur when AI initiatives are assigned to IT — tend not to consider the transformational approaches required to obtain sustained business value with AI. On average, companies with CIOs in charge of AI are less likely to be investing extensively in process, more likely to rely on outsourcing, and more likely to have difficulty hiring and retaining AI talent than other businesses in the survey. For example, companies with CIO-led AI initiatives are 20% more likely to rely primarily on outsourcing than other companies. Outsourcing, which signals that AI is being treated as a traditional IT technology solution, delivers AI-related value to only 12% of respondents who report using this approach.

Perhaps unsurprisingly, organizations with higher AI maturity are less likely to house AI initiatives under the CIO. Yet even among Pioneers, those with CIOs in charge of AI have seen value achievement at eight percentage points lower than the average, and up to 18 points lower than Pioneers who house AI under other executive types. Similar results hold for Investigators and Experimenters.

CIOs and the IT organizations they lead must be critical players and partners with the broader business in developing, deploying, and maintaining AI-driven solutions. With the right level of investment, empowerment, and connection to the business, CIOs can be effective leaders in driving AI value. But organizations that expect AI initiatives to be plug and play akin to traditional IT services, and who rely on technology as the sole source of value, are likely to put value achievement at risk.

FIGURE 5: VARIATION IN VALUE ACHIEVED

C-level executives in charge of AI initiatives report value at varying degrees.



(Percentage of executives leading AI efforts reporting value generation)

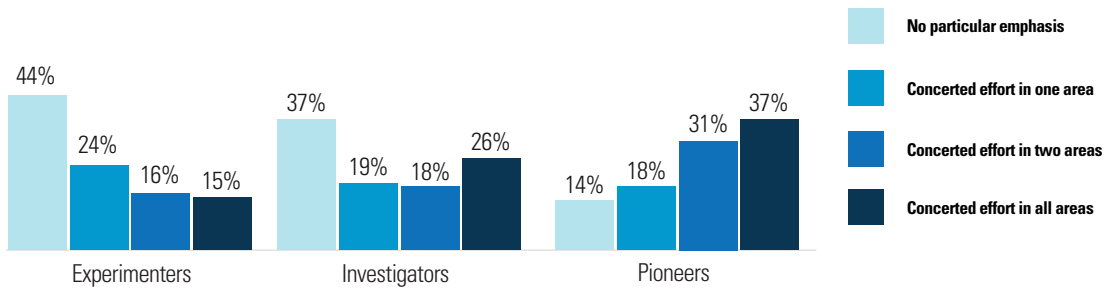
Making AI Investments Count

Shifting from questions of strategy to matters of execution, respondents made clear that value from AI does not come automatically or quickly. A substantial percentage of respondents report that their organizations have not yet realized value despite investing efforts and resources. Why is it so hard to realize value from AI? In many cases, data issues have delayed progress. Scaling solutions beyond the proof-of-concept phase to outperform previous approaches in day-to-day operations also turns out to be surprisingly challenging. Across the whole survey population, 65% are not yet seeing value from the AI investments they have made in recent years. Even among Pioneers — those who show the highest maturity on understanding and use of AI — 30% have yet to see business value materialize. Of the less mature organizations, 80% have yet to see it. Most survey respondents (93%) expect value from AI.

Arun Narayanan, chief data officer at global mining company Anglo American, doesn't hesitate when asked how important the company's top management con-

FIGURE 6: LEADERS APPLY AI IN MULTIPLE AREAS

Respondents were asked to what extent their organization's AI initiatives drive efficiency and cost savings, drive revenue growth, and create new products and services.



(*Some charts do not total 100% due to rounding)*

siders AI to its overall strategy: "On a scale of 1 to 100, they think it's worth 300. They are extremely convinced that it is the way of the future." Many organizations are inspired in their hopes by the successes of others already reaping value. AI Pioneers are doing that in several ways.

Applying and Scaling AI Throughout the Business

Three years into our annual research effort, it is clear that AI is not only spreading in use across Pioneering organizations but also becoming more pervasive across industries, from mining to retail to health care and beyond. Out of three major possible applications of AI — cost reduction, revenue generation, and new product development — most of the Pioneers are applying AI in at least two ways. (See Figure 6.)

But it isn't simply that Pioneers apply AI in more ways: Their ability to extract more value out of AI also comes from applying it pervasively across the various functions, units, and geographies of their organizations. Generali's Cis notes that "as of now, we haven't found a case that we were *not* able to automate or semi-automate."

At the fashion retailer Gap Inc., Sebastian DiGrande heads up strategy, data and analytics, digital, and customer efforts, and works closely with the company's chief financial officer on the initiative management process. Based on what they have discovered so far, he predicts, "There's going to be opportunity for AI to play a role in almost everything we do." Roche Diagnostics's Boeing explains the three huge sectors of work his team mapped out when the company embarked on its digital transformation agenda: "One is the internal value chain, the second is the customer experience, and the third is products and digital enhancement of products through services. In each of those three segments, we use AI." Boeing cites applications in predictive maintenance, in customer engagement, in administrative tasks that feed into business planning, and in solving complex scientific problems. "So, it's all over the place, if you want," he says. These organizations would have trouble finding places where AI does *not* apply.

Taking More Risk and Scaling More Solutions

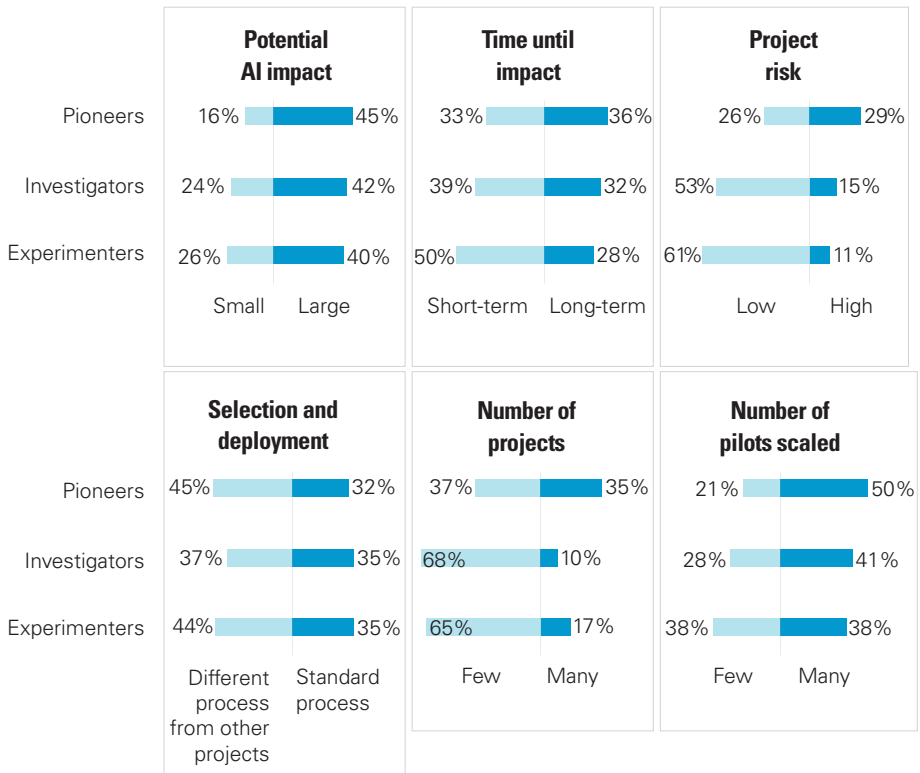
AI Pioneers embrace projects with greater risks, and these have yielded higher returns. (See Figure 7, page 11.) Of organizations across maturity groups that

have invested in high-risk projects, 50% have seen value to date. However, among those that invest primarily in low-risk projects, only 23% have seen gains. What's more, despite the greater risk, Pioneers also manage to scale more projects on average. Aetna's Keshavarz says that of his group's many projects, the group has identified 12 as major initiatives. He has set an overall goal of "a billion dollars of impact each year across all our project areas." One interpretation of this is that Pioneers choose their projects strategically, making focused selections of use cases for these new AI technologies.

Among Pioneers, 35% have invested in 20 or more AI projects, double that of Experimenters and Investigators. But the quantity of applications is not the point. Rather, Pioneers focus on projects with the potential for transformative impact — and they accept that doing so entails greater uncertainty than less transformative projects. Among Pioneers, 29% characterize their projects as high risk, at a rate roughly twice that of Experimenters and Investigators. These percentages vary little according to company size or industry, appearing instead to be a function of AI maturity.

FIGURE 7: PIONEERS UNDERTAKE MORE PROJECTS WITH GREATER RISK

While Pioneers report slightly greater impact and longer horizon, differences in risk and number of projects are much greater.



(Charts do not total 100% due to omission of neutral responses)

Leaders generally design their portfolios considering a combination of value, readiness of execution, and complementarity or similarity of use cases, though with different emphasis on criteria.

Some speak to a need for balance given the broad range of AI applications. Banerjee says, "You can just map it on a two-by-two and say, look, these are huge problems with huge payback — and you pick a few of those." Then you balance those out, he says, with "some quick wins. We don't ignore those — especially the quick wins that can be done at very low incremental complexity or resource intensity."

Others emphasize that AI is nascent in organizations and that early AI efforts may ripple through later projects. Generali's Cis describes his ideal portfolio in different terms, suggesting a preference for "meta-cases" of AI applicability — tools that, once created to solve a single problem, can be adapted to many other analogous problems across the enterprise. His group's efforts skew toward developing AI "that we know can work," but doing so at a scale many others would find

CREATING VS. FINDING THE RIGHT AI TALENT

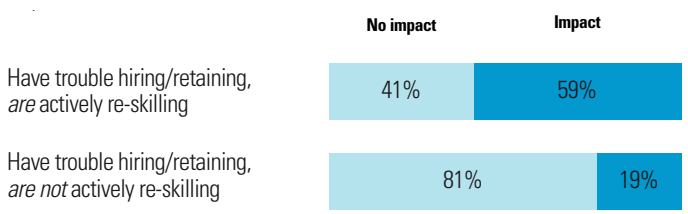
Companies that hire, rent, and cultivate AI talent are more likely to derive value from their AI initiatives than businesses that rely exclusively on their own staff or on outside experts. This diversified approach to AI talent is expensive. It's perhaps no surprise that Pioneers are far more likely than other maturity groups to make large investments in AI talent.

As Figure 8 shows, companies that report trouble hiring or retaining AI talent but are actively helping their existing workforces gain AI skills are more likely, by 40 percentage points, to have generated value from AI compared with companies that are not focused on re-skilling. Think AI "boot camps" and Roche Diagnostics' "innovation theaters," as described below.

Relying on internal talent is often insufficient, however. Companies that have hired outside experts to lead AI development and whose teams are composed primarily of external hires are about 10 percentage points more likely to have derived some business value from AI than those relying solely on internal expertise. What's the takeaway on talent? There is no simple answer to this complex problem. No single approach, whether hiring outside experts or upskilling and re-skilling, seems, by itself, to produce a markedly greater effect on the value of AI. Rather, it is the combination that matters. Of organizations investing in talent in all of the above ways, regardless of other investments, 65% have seen business impact, which signals the importance and power of consistent investment in talent. The effects appear to be additive — and sometimes creatively achieved. In the San Francisco Bay Area, Roche Pharmaceuticals rented a billboard on Highway 101 offering data workers the opportunity to join the effort to help kill cancer. Non-technology companies find that having a societal purpose can be an effective recruitment tool for acquiring AI talent. For Roche Pharmaceuticals, the billboard advertisement "has gained a lot of traction," Guise says. "There is a steady stream of talent into our organization." This is another way that linking AI tightly to business strategy pays off.

FIGURE 8: RE-SKILLING CREATES VALUE

Organizations that are actively re-skilling their workforces have seen more impact from their AI efforts.



daunting. "We see a sweet spot in rolling out those meta-cases," he says. Early projects not only have their inherent value but serve as exemplars as well. Cis points to document management — the capability to classify and extract information from incoming unstructured documents. "Once you're able to do it for claims management," he says, "you can more easily adapt it to other processes like underwriting."

In other ways, Pioneers don't differ markedly from other organizations. Although Pioneers take a somewhat longer-term approach to AI strategies, most organizations believe AI projects may require a different selection and deployment process than other initiatives, and almost all face a shortage of AI talent. (See "Creating vs. Finding the Right AI Talent" for human-resource strategies and "Aligning AI Con-

sumption and Production Capabilities" for some of the challenges in organization-wide use of AI.)

Aligning AI Consumption and Production Capabilities

Envision a company investing in AI, and the image that comes to mind is typically one of machine learning experts devising powerful algorithms to process and learn from vast data sources. While the development or "production" of AI algorithms tends to get all the glory, for AI solutions to materially affect business, it's critical to have willing and capable consumers of AI — people within the business with the desire and ability to exploit AI solutions to make a difference.[1]

This consumption side of AI is often underappreciated, if not wholly overlooked. Today, few AI solutions have off-the-shelf applicability. It's on the consumption side where many companies are failing to invest — and where leading AI practitioners are making real gains. (See "How Siemens Supports AI Consumption," page 14.) But what does it mean to invest on the consumption side?

Our research indicates two broad areas that require consumption-related investments: One is developing a fertile environment in which producers can develop, champion, and implement AI solutions in strong collaboration with the business; the other is developing sufficient expertise among business users so they can properly use the probabilistic nature of many AI solutions. Ensuring that investments in producing AI align with investments in consuming AI is critical.

Create a Fertile Environment

Cultivating nontechnical leaders and business users is essential to ensuring that producers develop AI solutions properly, and, just as importantly, the resulting solutions create business value.

Leading AI practitioners put executives through focused boot camps to teach them how to think about their problems differently in an AI-powered world. Experiences like these don't just increase executives' knowledge, but also get them excited about AI. Boeing describes Roche Diagnostics' full-blown "innovation theaters" for leadership teams "to make the technology less abstract." He designed an experience in which AI and data science became "touchable," with props and interactive exercises. "None of them knew what a genetic algorithm was," he recalls of the executives arriving at a recent session, "but I can tell you, 80% of my executives know now." Boeing adds, "If leaders think about AI like a balance sheet, then they're missing the point. You need to get emotional attachment to the disruptive nature that it can bring."

Overcoming resistance is an issue in some environments. At Gap Inc., DiGrande worries about those employees who "either need to figure out a way to change or need to move on and find a job that's more suitable, because we can't survive as an enterprise without making these changes." How, then, can an organization help more people "figure out a way to change"?

Coureil at Schneider Electric describes how his digital group empowers business colleagues to realize AI's business value by understanding how, for example, a voice or image recognition tool can augment their people's strengths and make their work easier. One key decision was to create new roles for "capability owners" who are "not AI specialists — we don't need them to be that," he says. Instead, they are people who are savvy enough about AI yet have acumen "in key business areas, allowing our digital practice leaders to prioritize and deploy AI projects where they make the most sense."

Growing consumption-focused talent also means investing in people who are geared toward buying what's available on the market, rather than developing applications in-house. For example, Aetna's Keshavarz says, "our expectation is that a large part of the AI solutions we deploy we won't be building — we'll be bringing in things that are built elsewhere and building only a subset of those that differentiate us."

HOW SIEMENS SUPPORTS AI CONSUMPTION

Siemens AG is Europe's largest industrial manufacturing company. Founded 172 years ago, it began life in telegraph-related technology. Today, its diversified mix of offerings includes products and services for customers focused on energy, health care, infrastructure, and industrial production.

Michael May, head of technology field analytics and monitoring, is the executive responsible for Siemens's core technology of data analytics and artificial intelligence. In that capacity, he oversees early-stage AI initiatives across the different businesses, with a portfolio of more than 200 projects currently underway. Many, he says, cluster around the classic AI application of monitoring system performance. Geared toward anomaly detection, they constantly check, "Is the machine going to fail? Is there an issue with the pump?" Others use machine learning to support human work in less expected ways. "The most interesting use cases I see are rarely full automation of a process," he says. "Typically, it's using AI to augment the capabilities of the engineer. We like to call it a digital companion." When AI and knowledge workers join forces, they can work with each other's strengths to solve problems.

The growth of this class of applications, however, raises challenges far beyond the algorithm design, coding, and data hygiene for which many of May's AI experts are trained. As much as for AI production, his team needs to be attuned to the capabilities required for AI consumption. It turns out to be "a multistep process" to get a new tool, however promising, to be effectively adopted and to truly make a difference in an organizational setting, May says.

Siemens, for example, is applying machine learning in the tendering process, the detailed work of spelling out specifications for goods and services the company needs to procure and subsequently compare vendor proposals. In the past, this process demanded that employees closely compare the content of documents, sometimes running to thousands of pages long. AI's language-processing power has changed that: Now, a machine can instantly seize on the key differences in what vendors are willing to commit to and charge for. This is the kind of automation employees appreciate because it spares them days of work and allows them to focus on higher-value tasks. The benefit is a 20% to 30% acceleration of the tendering process, May says, with potential to pull even more time out.

Even with a compelling business case and an attractive value proposition for end users, it took several tries and repeated cross-functional engagement to get the solution into practice and to start realizing the value. May has learned that organization-wise, the process of moving from a first proof of usefulness to a revised process at scale is "very iterative." Designing for consumption often means that the people whose work is affected must not only like the idea, but be willing to provide feedback and test out multiple versions as well.

These days, Siemens devotes a lot of attention to supporting AI's consumption side. For example, the company holds a yearly internal conference on AI that attracts around 400 employees. "We show what we are doing and highlight some projects to help people to get a feeling of what is done," May notes. His group also offers training to raise the organization's overall AI knowledge and runs an AI lab that pulls people out of their daily jobs for a week or so to work with data scientists to come up with an early prototype of a desired solution.

May recalls that five years ago, he and his team simply didn't grasp how important it was to work the other side, the consumption side of AI. Back then, he recalls, "we were very technical, I would say, in my department. But now we understand that we also have to address all those 'soft' sectors and make lots of offers on very different levels to get the people on board."

Invest in Value Creation

Consumption is especially vital to manage because many AI solutions simply don't work right out of the box; organizations must calibrate or codevelop them for the business. At Generali, Cis reports that given the huge rush of vendors into the AI space, one surprise for him has been the lack of AI solutions that are truly "turnkey." Even in what would seem to be the most generic of use cases — employee expense reimbursement — he observes that the available solutions still required extensive tailoring. "What you can find, of course, is a technological platform where you can build your solution, where you can complement existing algorithms with additional rules," he says. "But you need to set up a project structure that uses the technology, and more importantly you need to bring many more skills and capabilities than the pure technology. You're not going to be able to just use the technology as it is."

To get the most of AI solutions, developers and business users must collaborate to identify the right AI algorithms for specific business issues. Solving a business problem turns in part on how that problem is defined. At Generali, Cis has begun applying AI to the million or so support tickets Generali receives annually from commercial agents. He says, "We are going to find a huge part of tickets that we can semi-automate — which means not eliminating entirely the human intervention, but limiting it to some key parts requiring judgment, while preparing in an automatic fashion all the rest of the processing of the inquiry." That means helping people figure out how to work with this capable new assistant. Redesigning their job content around that "final touch" will be left to them.

Coureil speaks similarly about Schneider Electric's experience. The company applies AI for intelligent process automation by relieving humans of tedious and repetitive work, at the level of tasks, not whole jobs — let alone whole processes. The implication of that approach, however, is that people need to learn how to interact with machines now performing tasks that they or their colleagues previously did.

> ***"The underlying solution can get better because it learns from the human experts it augments."***
>
> — Markus Noga, senior vice president, SAP Cloud Platform Business Services

Managers and workers often act as *lead users* — the classic term for early adopters who have early-version tools placed in their hands and whose determined use of them to solve real problems does much to shape the tools' evolution. At enterprise software giant SAP, Markus Noga leads machine learning initiatives as senior vice president of SAP Cloud Platform Business Services. One thing SAP is adamant about is that AI should not operate as a black box in producing decisions and actions. "We're transparent about the use of the tech because in the end, it's still probability based," Noga explains. "So what we will show the user — perhaps they're a finance expert — is that the system has auto-matched everything up to a certain confidence value and then there are residuals where the machine isn't that confident and will propose two or three variants."

Developing the judgment to use those variants (or ignore them entirely) is critical to making the best use of an AI solution. As human users process those exceptions — accepting, rejecting, and altering the AI's suggestions as appropriate — two other important things are happening. First, the human worker is learning to have confidence in the solution, noticing what it's getting right and with what confidence level. Second, the worker's interventions constitute vital feedback. As Noga says, "If the user says 'accept,' we have a positive training signal. The machine can continue to reinforce that. When the user says 'overrule,' we have a negative example." In other words, by keeping humans in the loop, companies create closed-loop cycles for systems to improve themselves as they are used. It is "really powerful," Noga emphasizes, when "the underlying solution can get better because it learns from the human experts it augments."

Successful AI applications have the potential to integrate the organization in unprecedented ways.

AI as a Force for Unification

Generating business value with AI depends on having access to data that meets certain quality and quantity requirements.[2] For many applications, managers must source and integrate AI-dependent data across organizational silos.[3] Likewise, establishing cross-functional collaboration and new ways of working to enable consumption of AI and value achievement require cross-functional organizational behaviors.

In addition, as organizations reach a critical mass of capability to achieve value from AI, and as the processes to get value from data begin to run smoothly, some managers report a secondary, reinforcing effect: AI-generated predictions, solutions, and perspectives enable the organization to align around these new affordances. In short, while organizations often integrate their data, processes, and behaviors to exploit AI opportunities more effectively, on the back of this work, successful AI applications have the potential to integrate the organization in unprecedented ways.

One executive we interviewed from the financial services sector acknowledges this kind of benefit emerged from his organization's larger digital transformation efforts. Prior to the transformation, he observed AI use cases that would involve data from siloed sources — housed in a particular business unit — while now, the company has data that spans multiple lines of business, allowing for models that have a much richer lens than the models it uses to solve use cases in a single line of business. In a relationship business, in particular, many benefits derive from these models because they take what was a fragmented view of a customer and meld the pieces together into a comprehensive understanding. The company gains the ability "to see different events all now in a sort of cohesive thread, being able to look at the time-serious nature of those signals, and build models and capabilities powered by machine learning that allow us to have insights that we didn't have before." With these new insights, the company works effectively as a single organization rather than as a collection of organizational units. Instead of myopically optimizing on a locally beneficial metric, managers can connect their decisions to consequences throughout the organization.

At Anglo American, Narayanan also sees integration benefits from AI deployments. The mining company manages operations based on rapidly changing movements in commodity markets that are far from where ore is mined. Chinese market events, for example, can signal copper miners in Chile where "they have to decide which piece of rock to blast." While market conditions are currently reflected in the way the mine operates, Narayanan believes that AI-based feedback mechanisms will confirm that dispersed operations have received relevant market information and are taking appropriate action. This not only requires integration but promotes greater integration as well. Leaders can use KPIs about the pace and usefulness of responses and response times. Machine learning can, in turn, refine these KPIs, improving strategic alignment.

Narayanan ties his thinking on AI directly to the execution of corporate strategy, specifically, "how decisions are made." He finds that "typically there is a department or a silo or a team, and that team has a way of optimizing its knowledge and optimizing the way it makes a decision happen. The problem with that is the isolated team's decision might not necessarily be the best for the entire organization. It may be great for that one team's performance KPIs, but it's not necessarily true across the board." Narayanan believes "the underpinning value of artificial intelligence comes from grating down the silos." The results from these AI-based processes, he says, become more meaningful, more cross-functional, and more valuable across the enterprise. This is "the big brushstroke."

Conclusion: Capitalizing On an AI-Enabled Strategy

This report began by noting a growing sense of urgency surrounding the adoption of AI in businesses. Sebastian DiGrande at Gap Inc. calls it "an existential threat: If we do not change the way we operate, the tools we use, the degree of automation and AI that we leverage, the industry and the customer will move on without us. And the degree of fixed cost and the narrowness of the margin structure in an industry like retail means that that can make all the difference between winners and losers, between the survivors and those who fall out."

Under pressure from competitors, and with so many targets of opportunity, executives face numerous hard choices and trade-offs. These are the essence of strategy. AI can be revolutionary, but executives must act strategically. Acting strategically means deciding what not to do.

We saw more examples this year of companies aspiring to use AI across the enterprise. Consider the technology-transformed future envisioned by Philips Healthcare. This is a company that excels in several separate domains today — MRI machines, CT scanners, ultrasound, and digital pathology — but Tas insists that "if you buy in on the concept" that the company could provide patients with "precision diagnosis" and "connective care," the obvious challenge is "how to create synergies between those businesses; you're forced to look beyond the boundaries of each of the businesses." AI projects that focus on targeted solutions create a positive pressure for organizational integration on two levels: by forcing a level of data hygiene that yields greater integration across functions, and by revealing exciting opportunities for innovation that organizations can only realize if many disparate parts of the organization pull together.

In sum, the leaders not only anchor their applications of AI in their fundamental business strategy, they approach the use of AI as an organizational initiative, in which data and technology are foundational but organizational behaviors and ways of working make the difference in generating business value.

These principles, however, do not constitute a formula or a step-by-step guide to extracting value from AI. Business leaders who seek value from AI still need to make choices and trade-offs as they navigate the path from their current state to where they aspire to be. One such choice might be focusing on AI projects with more certain, near-term impact rather than larger, riskier projects whose effects will be felt in the longer term. Another choice might be between building and scaling internal teams quickly versus starting initially with a critical mass and scaling slowly.

Executives need to execute strategy with AI in their own context and from their own starting point. So while the survey data shows that Pioneers tend to embrace larger, riskier initiatives focused on revenue growth, this does not imply that taking on such initiatives is the right "first move" for any company seeking value from AI. Taking on a lower-risk cost reduction initiative is less likely to produce transformational strategic results and is empirically less likely to create expectation of increased value over time. Doing so, however, can allow a company to develop new ways of working across the business in order to start building organizational capabilities to get value from AI.

A caution: Most AI success stories focus on improving existing business processes, whether in sales, marketing, pricing, servicing, forecasting, manufacturing, or the like. But these improvements are comparable to improving the gas mileage of combustion engine vehicles in an era of new transportation possibilities. Business executives need to consider how they can reinvent and reimagine many of those processes in the context of what AI enables. This is where AI's true potential will emerge: not in doing the same thing better, faster, and cheaper but by doing new things altogether.[4] This is where AI will disrupt industries the most.

As business leaders look to the future, they must also carefully consider how AI may affect their talent strategy. In most companies, the skill sets and success profiles of the workforce (and the talent pools from which they will come) will be materially different in the next decade or two than they are today; the

effect of this change on a company's long-term HR strategy will be nothing short of massive.

One thing is certain: If AI initiatives are not core to a company's business strategy, they are unlikely to create meaningful value and scale. Finally, if a company's current business strategy ignores AI as a risk or as an opportunity, it probably needs revisiting.

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REFERENCES

1. S. Ransbotham, D. Kiron, and P. Kirk Prentice, "Minding the Analytics Gap," MIT Sloan Management Review, March 16, 2015.

2. S. Ransbotham, P. Gerbert, M. Reeves, et al., "Artificial Intelligence in Business Gets Real," MIT Sloan Management Review and Boston Consulting Group, September 2018.

3. E. Wilder-James, "Breaking Down Data Silos," Harvard Business Review, Dec. 5, 2016, https://hbr.org.

4. S. Ransbotham, "Don't Let Artificial Intelligence Supercharge Bad Processes," MIT Sloan Management Review, March 20, 2018, sloanreview.mit.edu.

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"AI is rapidly becoming one of the key paradigms that leaders from all industries and organizations are trying to figure out. Combining deep insights from actual practitioners across varied contexts, this report is essential reading for all executives. Critically, the study highlights the importance of executive and strategic alignment in driving successful AI programs, which is often one of the most underrated keys to unlocking the power of AI."

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