Expert Insights

IBM **Institute for Business Value**

Rethinking your approach to AI

How to ground artificial intelligence in business strategy

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Key takeaways

The business leads; AI follows.
Successful AI deployments are born of explicit business challenges and tied to real business results.

Strategic organizations aren't afraid to say "no."
Organizations can generate more value from AI by carrying out AI projects that align closely with business objectives, and by tabling or delaying projects that don't.

AI's future has many possible paths.
Because the future of AI is uncertain, it's a good idea for organizations to consider many potential scenarios and prepare appropriately for each of them.

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Organizations need to be strategic about AI—but don't necessarily need an "AI strategy."

Artificial intelligence (AI) is the shiniest car on the lot: Everyone seems eager to take it for a spin—yet many traditional enterprises are still learning to drive.

That much is evident in society's unbridled enthusiasm for AI, when juxtaposed with the high rate of missteps and misunderstandings. At organizations that are working with AI, respondents expect an average of 35 projects in place by 2022, which represents a nearly ninefold increase from just 4 projects in 2019.[1] And yet, studies consistently show that only about half of AI projects actually make it from prototype to production.[2]

Still, AI can bear real fruit. In its third biennial survey on enterprise AI, the IBM Institute for Business Value (IBV) finds that over 85% of advanced adopters are reducing operating costs with AI, and that organizations report an average revenue gain of 6.3% from AI deployments.[3] Given the potential economic benefits at stake, business strategists and technology futurists at traditional enterprises can play an important role by framing the approach, steering clear of obvious pitfalls, and guiding their organizations along the path to realizing tangible business value.

An often-overlooked capability that separates AI exceptionalism from AI experimentation is a strategic approach. But strategy is a double-edged sword. Wielded correctly, it can help. Handled poorly, it can cause harm, instead.

While it may sound counterintuitive, one of the ways that many public and private organizations misunderstand AI is by developing a so-called "AI strategy." Although the intention is to elevate the importance of AI, and to embolden it with focused attention and resources, the reality is quite different: You may advance AI, but may fail to advance the organization. And what doesn't eventually advance the organization ultimately ends up costing it.

Instead of an AI strategy, successful enterprises start with their business strategy. With that as their North Star, they identify key opportunities where technology can help drive or enable the business strategy. Then leaders deliberately evaluate where AI can play a meaningful role alongside other data-driven analytics solutions, and potentially even complementary non-technical approaches. AI can be a catalyst for new thinking—a means to accelerate top-line impact, address disruption, and unlock new market opportunities, including those enabled by platform economics. But it may not alter the business fundamentals on which organizations operate.

Achieving deep integration between AI and overall business strategy is not a novel approach, even though AI is a novel technology (see sidebar, "Perspective: The making of an AI landscape"). That much is clear when you consider AI's competencies relative to human cognitive abilities.[4] As one researcher summed it up at the prestigious NeurIPS conference in December 2020, "For the last 40 years we have programmed computers; for the next 40 years we will train them."[5] And thoughtfully approach how they *augment* and *enhance* the people that work with AI.

Being successful, however, requires resisting the urge to indulge in what fantastical things AI can do. Instead, organizations need to stay grounded in what practical things AI can help them achieve. Even as AI opens up new avenues for realizing economic value, the organization ought to lead and technology ought to follow—while still articulating new ideas for what's possible and constraints on what's not.

Perspective: The making of an AI landscape

AI does not exist in a vacuum. The conditions that have made it possible for enterprises to deploy it at scale are as numerous as they are serendipitous. Further, they can generally be traced to the second half of the second decade of the 21st century. Among the most significant enablers of AI adoption:

- A rapid explosion of structured and unstructured data—especially images and video—captured from proliferating sources, including satellites, drones, and the Internet of Things.
- A steady shift to the cloud, in part to build the distributed capacity needed to store the order-of-magnitude surge in data from multiplying sources.
- A massive increase in compute power, and a decrease in relative cost, to process data via GPUs and other forms of high-performance computing. This allows for more effective use of deep learning via neural networks and other advanced ML and analytics techniques.
- A rise in platform-based ecosystems and economics, driving scale advantages, greater complexity across organizations, and increased demand for sophisticated techniques to tailor user experiences and deliver them cost-effectively, often via AI.
- A "gray rhino" business disruption from COVID-19, which dramatically shifted ways of working and interacting among people and organizations toward environments that could be further enhanced by AI.

Avoiding strategic pitfalls

Many leading technology-oriented companies have deployed AI successfully. However, at traditional enterprises, the pace of adoption has been slower than expected and early AI attempts have often failed.

There are numerous reasons that AI projects might fail, including some that we have explored in prior reports in this series. For example, our first report explored AI engineering and operations, and our second discussed data.[6] One of the more common reasons for failure, however, is a misdirected strategic intent, which can manifest at organizations in some of the following ways:

- Prioritizing AI projects with business-oriented criteria, but failing to align their efforts with their broader business strategy.
- Having in mind vague aspirations for AI. And in turn, failing to consider what tangible capabilities AI projects need, how to operationalize them, or how to scale them beyond the pilot phase. (See sidebar, "Global telco company: How to turn around a failing AI investment.")
- Being accustomed to predictable results and therefore misunderstanding the probabilistic nature of AI and the relative variability of its outcomes.
- Articulating what business value they want AI to create, but not recalibrating organizational behavior in ways that will actually deliver value with the humans who interact with AI.

Not long ago, a global insurance company learned the importance of strategic intent—and human engagement—when it wanted to use AI models to automate pricing. Although the models worked, they were designed to be opaque. The underwriters and brokers who were using them to sell policies could not see what was happening "under the hood," and were therefore unable to communicate the rates' logic to insurance customers.

Failing to approach AI with a strategic mindset in these and other ways has real consequences. You risk: wasting time and money; losing relevance with customers and employees; and forfeiting potentially game-changing gains in efficiency, productivity, and revenue.

Global telco company: How to turn around a failing AI investment

Trailblazing tech-oriented companies notwithstanding, traditional enterprises of every size—and in practically every sector—are struggling with how to implement AI effectively. Typical is a global telecommunications provider with an intent to build AI and analytics capabilities to help it become more customer-centric.

The company made substantial investments in AI, but wasn't seeing the returns it expected. The reason was strategic as well as structural: Capabilities were distributed throughout the organization, which led to point solutions and duplicative efforts. Furthermore, the company was fettered to numerous legacy systems. This created significant data fragmentation that required valuable domain experts to expend limited resources wrangling and reconciling data instead of building and training AI models.

Upon uncovering the root causes of these challenges, the company pivoted to a more strategic approach. It focused first on a concerted effort to build out common data governance and data platforms. With those as a foundational capability, it will be able to catalog data, apply data standards, and build reusable data products in support of its AI initiatives, thereby accelerating business value realization and unifying disjointed efforts 1 business problem at a time.

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Activating strategic AI

AI is not a hammer looking for a nail. Rather, it's one compelling set of techniques in a robust toolbox that's filled with other technical and non-technical tools, all of which organizations can use to address the needs of their business. Organizations need objective criteria for evaluating business problems and pain points—reimagining a costly back-office workflow, for example, or improving an essential customer experience—and determining what solutions are most appropriate.

But the question remains: How deeply should organizations focus on and invest in building their AI capabilities?

A few criteria can help you evaluate how essential AI is or might be (see Figure 1). First, consider how much "data wealth" is available—whether there's sufficient economically valuable data that can be acted upon by a potential AI-based solution. Second, consider how central AI is to your organization's strategic intent. Finally, consider the nature of the problem, including its:

Scale—AI may be better suited to large-scale problems that have enough potential benefits to justify the investment (and risk) of developing an AI-based solution.

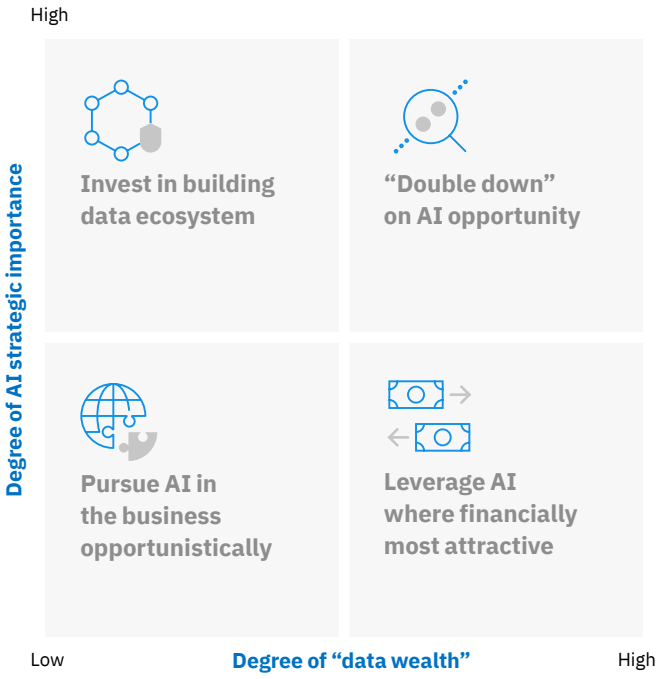
Tempo—AI may be better suited to problems that are moored somewhat outside stable and predictable conditions, and those that are subject to shifts in market demand, business needs, and other data-rich volatility.

Humanity—AI may be better suited to problems that have some degree of automation potential while also creating value for the human employees who will work alongside it.

Figure 1

"Data wealth" versus AI strategic importance

These dimensions can help you determine your approach to AI.



Future focus

But what of the future? Currently, traditional enterprises are exploiting only a small fraction of AI's potential value.

One reason is *technological*: Today's AI is suited to certain kinds of problems, and academics and other experts advancing the field continue to debate what are the most fruitful paths forward. Another reason is *organizational*: Enterprises haven't yet built out the mature, human-enabled capabilities that are needed for AI excellence. In both cases, there's ample opportunity for growth and improvement.

A few macro AI trends worth watching, for example, are:

- **Increased heterogeneity**: It is estimated that 85-90% of the code in "AI systems" is decidedly non-AI.[7] Organizations can therefore expect greater degrees of "composability" as AI solutions increasingly integrate with other, more traditional IT systems. Add to that the increasing reality of hybrid multicloud and compute environments, which often are coupled with AI platforms, and you may have an expected knock-on effect: more heterogenous AI environments, too, within individual companies. As with cloud, the consequence may be greater complexity, which reinforces the need for robust approaches to AI governance, especially among more mature and sophisticated AI adopters.
- **New techniques**: While deep learning has yielded the most sophisticated advancements in AI over the past decade, it isn't always economically viable nor the best technical solution for a given task or objective. Near-term trends to address these challenges include the rise of pre-trained AI models, other software toolsets, and open-source approaches. Advancements in corporate R&D and the academy also look to marry deep learning—still rooted in "brute force," albeit powerful, techniques—with conceptual and elegant symbolic abstraction that aligns more closely with the way human intelligence is nurtured.
- **Small data**: Yet another future trend is "small data." Whereas big data is about data quantity—processing a large volume of data in order to generate business insights—small data will be about data quality: improving AI so that more and better insights can be extracted from smaller volumes of data.[8]

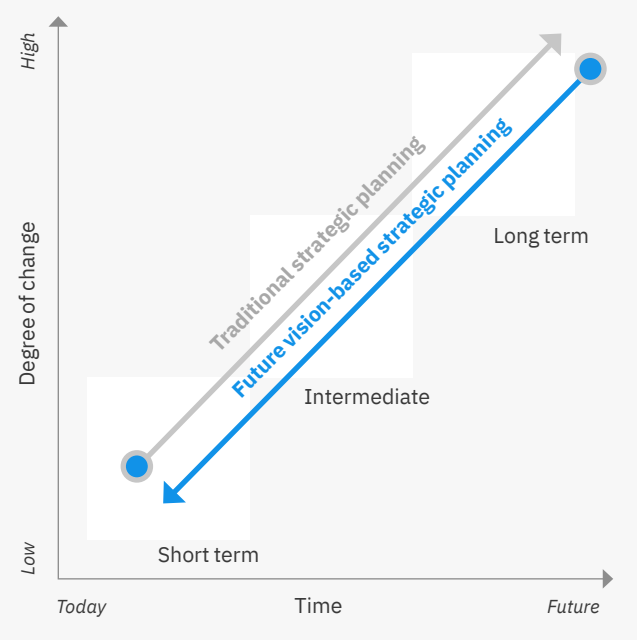
Being plugged into the AI research pipeline will allow organizations to spot these and other future trends early. Irrespective of an organization's AI maturity, a useful approach to make the most of AI's future innovation is scenario-based planning (see Figure 2).

Public and private sector organizations don't need the ability to predict the future—a common approach when navigating paths that are relatively straightforward across territory with low levels of uncertainty. Instead, they can engage in scenario-based planning to imagine multiple potential future states based on the evolution of known trends. And then, work backward to illuminate how the AI landscape might unfold. In other words, they can perform *backcasting* instead of *forecasting*. Doing so can help them them prepare accordingly with a hedged approach, developing actionable plans that might improve readiness and build resilience.

Figure 2

Scenario envisioning approach

Scenario-based planning can help you prepare for multiple AI futures.



Achieving a strategic approach to AI

Against this backdrop of uncertainty, organizations need to assess their market opportunity, define their strategic intent, then chart a careful course forward that considers the many potential scenarios of how a dynamic and fluid AI environment might unfold. Three "E's" of a strategic approach to AI can guide them: engagement, education, and ethics.

1. Engagement

AI need not require a massive investment in time, talent, and technology. Nor does everyone need to build robust, industry-leading capabilities—certainly not overnight. It all depends on the first "E," strategic *engagement*, which translates into making intentional choices about what role AI should play in the organization (see Figure 3).

To justify investing in use cases that drive incremental value, some traditional enterprises may need AI to be more cost-effective and therefore proceed more cautiously. For example, many traditional enterprises are focused primarily on deploying AI into cross-enterprise functions like customer service, marketing, HR, and IT in order to achieve greater effect. Others are focusing their AI efforts on multiple functions within a given business unit, such as wealth management advisory or auto insurance.

Figure 3

AI strategic continuum

Strategic importance of AI: Key segments

	Opportunistic	Horizontally-deployed	Vertically-integrated	Product-embedded	New business model-enabler	Business model-centric	Business model-foundational
Strategic importance of AI	Ad hoc	Important to functional effectiveness	Important to business unit effectiveness	Core to organic growth and innovation	Key to transformation/ platform strategy	Central to business strategy	Essential
Company types	Varied	Incumbents deploying AI into functions to drive customer/operational effectiveness	Incumbents integrating AI within business unit(s) to drive customer/ operational effectiveness	Incumbents embedding AI into core products and R&D to differentiate	Incumbents using AI to help achieve platform economics	Various hyperscalers, software/ hardware companies	AI startups
Degree of AI adoption	Low → Very high						
Role in AI ecosystem	AI consumer → AI provider						

AI is changing so rapidly that the only way to keep up is to formalize and federate knowledge creation within the organization.

Organizations that see AI playing an important role in their products, solutions, and services may invest more seriously. For example, consumer products and even mining companies may use AI to enhance their R&D capabilities, while electronics companies might embed AI directly into their products.

Organizations that see AI playing a transformative role may wish to place big bets that will cause massive disruption. For example, companies in the automotive, agriculture, banking, and oil and gas industries may see AI as a means to enable new business models, often via platform economics. Companies in the technology sector, meanwhile, often put AI at the core of their business.

2. Education

Because the AI landscape is constantly changing, another "E" of AI preparation is *education*—equipping the organization to respond proactively instead of reactively to AI-related threats and opportunities.

Awareness includes what might be coming down the pike and being prepared to respond to it. But awareness isn't enough. To make smart decisions about potential AI investments in response to future trends, organizations also need good AI governance.

Indeed, AI is changing so rapidly that the only way to keep up is to formalize and federate knowledge creation within the organization. A Center of Excellence (COE) can be one vehicle through which to do so. However, AI savvy cannot be isolated in a single team or location. Instead, organizations might consider encouraging, and perhaps even requiring, role-relevant AI training for stakeholders across the organization.

Consider the results of a 2020 study by the MIT Sloan Management Review: in enterprises that embrace organizational learning—creating mechanisms for business leaders to learn from AI and vice-versa—it found that the odds of reporting significant financial benefits from AI increase from 10% to 73%.[9]

3. Ethics

AI *ethics* holds increasing strategic importance, especially in relation to organizations' overarching values, as well as those of their customers, employees, partners, and communities.[10]

Although stakeholder (as opposed to shareholder) capitalism concepts are popular and in the present *zeitgeist*, what matters in the long term is organizations' enduring ethical intent. And even more so, the tangible commitments they've made toward operationalizing it. To that end, it's a good idea for organizations to establish basic ethics requirements and reviews for AI projects, to embed AI ethics in employee training and development, and to establish inclusive and collaborative governance mechanisms with which to think through important ethical concerns.

This may also yield a competitive advantage for organizations that pursue "ethical interoperability" with their key stakeholders. For example, establishing ethics-based selection criteria and management mechanisms for business partners—building on an organization's history and values, as manifested in its brand—may help create defensible "moats" surrounding organizations and their ecosystems that influence customer purchasing decisions and even lifetime value.

Destination: AI excellence

AI capabilities needn't be extremely advanced in order to deliver business value. However, they should be fit-for-purpose; geared toward the organization's specific strategic goals; and grounded in an honest assessment of AI operational and organizational maturity with regard to data, talent, governance, and other dimensions.

By coupling strategic intent with concrete business objectives, then creating clear plans to develop tangible capabilities, organizations can establish a strong foundation on which to deploy AI. Then, and only then, can traditional enterprises that are struggling to steer AI confidently drive it off of the lot.

Action guide

How to ground artificial intelligence in business strategy

Recommendations for all AI adopters, regardless of maturity:

Start with macro-level business strategy

Your organization probably engages already in strategic planning to identify short-, medium-, and long-term business objectives that span the entire enterprise. Before you even broach the subject of AI, seek clarity on those objectives. Then link AI-based solutions directly to achieving your organization's fundamental goals.

Assess business challenges and opportunities

Instead of declaring your intent to deploy AI, then searching for a means to do so, scrutinize your business plans for new market opportunities and existing pain points. Identify which opportunities and pain points may be suited to AI based on pre-determined, objective criteria. Then, working backward as a check, undertake a data monetization exercise to explore existing pools of data wealth where AI can help unlock business value.

Evaluate AI suitability

To determine if AI is the right choice, consider whether you have sufficient data with which to train and inform an AI-based solution. Ask yourself: Is the problem strategic enough to justify an investment in AI? If so, institutionalize these criteria in your business decision frameworks. Be willing to say "no" or "not yet" when conditions aren't right.

Build an AI capability roadmap

Consider structuring AI projects around three essential pillars: a task with clear business value, objective metrics for assessing performance, and a methodology for achieving continuous improvement. To consistently arrive at the right tasks, metrics, and methodologies, develop an AI capability roadmap that defines what foundational AI capabilities will underpin success across multiple projects, initiatives, and programs. Doing so will help you keep in mind AI's business value and its human beneficiaries—both of which are easy to overlook. Subsequently integrate this roadmap into annual operating plans and long-term strategy.

Integrate ethics

"Bake" ethics into every aspect of AI: top-down, bottom-up, and throughout a project's lifecycle. Make it part of training and development—not only for AI practitioners, but also for non-technical staff. Establish a formal AI Ethics Council that's jointly populated by business and technical experts, who can collaborate to foresee and manage ethical risks within the context of customer demands and organizational values. Predicate all of this on a clear statement of values to which data scientists, AI engineers, privacy experts, HR professionals, business practitioners, and others can map their efforts.

Recommendations for less established AI adopters:

Set attainable goals

Focus on small, more easily attainable AI implementations. Pursuing big-bang deployments would require excessive time, talent, and resources. Be laser-focused on narrow and discrete use cases that can generate quick wins to build enthusiasm, credibility, and trust.

Seek buy-in at every level

Achieve stakeholder buy-in early. Deployments will go nowhere without executive sponsorship to obtain business prioritization and resources. Engender enthusiasm from junior talent, to whom execution often is entrusted.

Perhaps the most elusive stakeholders, however, are middle managers, many of whom have a vested interest in preserving the status quo. Mentoring programs and executive coaching are two ways to melt the "frozen middle." Financial and professional incentives are other methods. At all levels of the organization, it pays to understand what messages will resonate with stakeholders—such as cost-cutting with finance executives, and career advancement with ambitious junior associates.

Leverage existing teams

To increase the odds of success even further, take advantage of data and analytics teams where they already exist. Leveraging their talent and lessons learned is a smart move that can help you accelerate progress and reduce risks.

Grow an AI Center of Excellence

AI talent and governance are bedrock on which to build enduring achievements that deliver long-term business value. An AI-specific COE can be a nexus for both. To create one, start small and scale up over time. Critical ingredients include clear design principles and standard operating procedures, a catalog of business-specific use cases, dedicated domain experts, a targeted data architecture, reusable frameworks and components, and a centralized but distributed organizational structure.

Recommendations for more established AI adopters:

Embed AI expertise in the business

Although federating talent and governance inside a COE is valuable, be careful not to silo or isolate your AI expertise. A best-of-both-worlds approach is incubating talent inside the COE while simultaneously embedding staff within business units, where they can familiarize themselves with business challenges and build rapport with business leaders. Rotational programs can help centralize and distribute talent in complementary rather than contradictory ways so that AI expertise grows across your organization instead of stagnating inside the COE. Over time, embedded staff may graduate to business units full-time to drive true AI integration enterprise-wide.

Amplify AI education throughout the enterprise

Effective AI experts are fluent in the business. It's just as important, however, that business experts be fluent in AI. With that in mind, consider role-appropriate AI training and development—for both junior and senior staff, and across multiple business units and functions—to create AI literacy that permeates the business from root to branch.

Instill strategic feedback loops

AI models are well served by dynamic feedback loops. Because they're fluid and iterative, so are AI capabilities. Imbue feedback loops with regular touchpoints and predicate them on a willingness to adapt when facts (about competitors, technology, and market conditions) demand it.

Keep one eye on the future of AI while cultivating it in the present. Scenario-based planning—wherein you imagine potential future states, then work backward based on known trends—can be an effective exercise.

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