What matters most? Eight priorities for CEOs in 2024

Forming the right agenda is not getting easier. Here's our annual attempt to cut through the clutter and zero in on things that matter to CEOs.

Introduction

What matters most? It's a question we've been investigating for a few years now (here are reports from 2022 and 2021). This year, we're reminded that what matters most are family, friends, values, principles, and commitments.

One of our commitments is to CEOs. It's a tough job and getting tougher all the time. Just in the past few years, they've had to cope with a global pandemic, busted supply chains, war, stubborn inflation, and many other disruptions. Any one of these is enough to derail a CEO's agenda. Taken together, it's the most difficult operating environment we can remember.

We talk to hundreds of CEOs every year, and many of our colleagues do the same. We admire how CEOs are leading their companies for the benefit of all stakeholders. We've consolidated the views that have come out of these conversations and are pleased to offer what we've heard about how companies can do better for society, communities, and employees—and the prosaic business of how they can pay for it all and reward investors too.

Here are eight priorities for CEOs in 2024.

Generative AI goes from proof of concept to scale

The biggest story of this year (or decade) was the arrival of generative AI (gen AI). This is the real deal, folks. Thousands of companies in every industry and in every part of the world are already using a simple gen AI interface to radically transform every imaginable business activity. But while innovators dominate headlines, it's scalers that dominate markets. CEOs need to figure out three things, posthaste: which parts of the business can benefit, how to scale from one application to many, and how the new tools will reshape their industry.

How to outcompete with technology

Gen AI grabs all the headlines, but let's not forget the "digital revolution," if we can so describe something that started 30 or 40 years ago. Digitization might be on a slow boil, but given enough time, all the frogs will still be cooked. And there's a risk that paying too much attention to gen AI could set a company back on its digital transformation. How to escape the boiling pot? This year, our colleagues published a best-selling book, *Rewired: The McKinsey Guide to Outcompeting in the Age of Digital and AI*. It's a collection of our best insights for digitizing the enterprise. Digital winners grow revenues and cut costs faster than others.

The biggest capital reallocation in our lifetime

That's what we said last year about the energy transition. The bill has only gone up since then, for the simple reason that amid uncertainty, investors and companies have held back from committing their capital, even as the Earth grows hotter. Let's be clear: what needs to happen is the creation of thousands of new green-technology businesses, in every part of the emerging business system. We have ideas about where, how, and when companies should invest.

The road to growth

It's a funny thing: growth is always job one for CEOs, but the path to get there is never clear. Sometimes it's about seizing market share; sometimes it's about expanding into new markets; sometimes it's about making a left turn into something completely new. The one constant is the ten rules of growth. How will the rules play out in 2024? For many, it will mean rule four: turbocharge your core, by using technology to power growth. For others, it might mean rule six: grow where you know, by improving sales productivity. And, as always, the most constant of all is rule nine—acquire programmatically—as

the latest installment of our 20-year research effort demonstrates.

What's your superpower?

Think of any company you admire, and you can likely rattle off one or two superpowers that make it uniquely successful. Toyota and its Toyota Production System. LVMH and its exquisite craftsmanship and the entrepreneurship of its brand leaders. Disney and imaginative customer experiences. A distinctive capability can lift a company out of the mire of clogged, commoditized markets and onto the high ground of outperformance. Exceptional implementation is part and parcel of building a new capability.

Learn to love your middle managers

Waffle House, an American restaurant chain, is famous for never closing; some say its doors have no locks. It should also be famous for its management philosophy. The restaurant's grill operators are the stars of the show; after years of training, the best get to be called "Elvis of the grill." After that, they don't get promoted; how do you top being King? But most other companies would likely promote such people into senior management roles that they don't want and are not suited for. Companies need to rethink their philosophy about middle managers and recognize them for what they actually are: the core of the company.

Geopolitics: Beating the odds

As Niels Bohr once said, it's very hard to make predictions, especially about the future. As CEOs watch the changes unfolding in the global geopolitical order, all agree with the sentiment.

What comes next? One thing is for sure: events have an uncanny way of defying the expectations of experts. In the face of that, management teams and boards should consider black swans and gray rhinos in their scenarios and build geopolitical resilience that will serve them well, no matter which side of the coin comes up.

A new lens on the macroeconomy

Nearly four years after COVID-19 rewrote history, some CEOs are still waiting for macroeconomic certainty. That's unlikely to happen—and that's okay. Leading firms capitalize on uncertainty: they assess their risk appetite, then invest near the bottom of cycles. Most rely on scenario planning, not least because the exercise usually reveals the core actions that companies need to take no matter which way the economy trends. CEOs might want to populate their models with the new scenarios we've developed to look at the ways the global balance sheet might develop. Over the past two decades, assets on the global balance sheet grew much faster than GDP—the real economy. But the continuation of that trend is uncertain. Yet another curveball is the rapid shift of assets from the banking system to private markets and what that means for public companies.

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CEOs need a broad range of contradictory perspectives: outside in and inside out, a telescope to see the world and a microscope to break it down, a snapshot view of the immediate issues and a time-lapse series to see into the future. We hope this article and the in-depth readings available within it give CEOs and executives the clarity they seek.

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Technology's generational moment with generative AI: A CIO and CTO guide

CIOs and CTOs can take nine actions to reimagine business and technology with generative AI.

This article is a collaborative effort by Aamer Baig, Sven Blumberg, Eva Li, Douglas Merrill, Adi Pradhan, Megha Sinha, Alexander Sukharevsky, and Stephen Xu, representing views from McKinsey Digital.
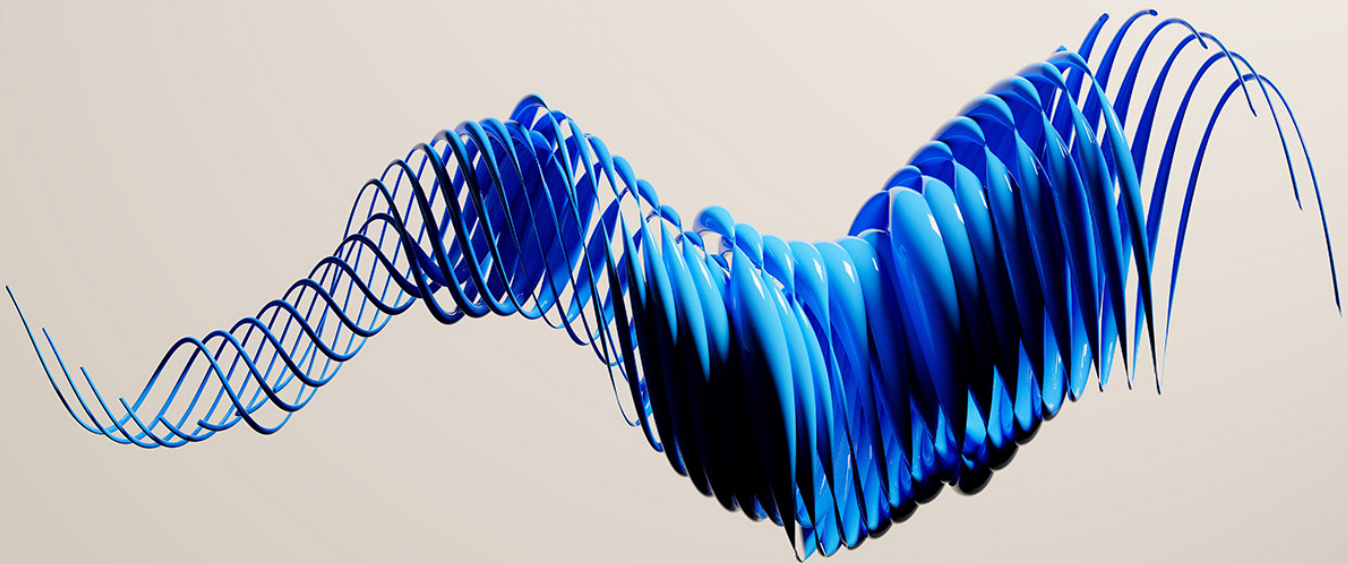
Hardly a day goes by without some new business-busting development related to generative AI surfacing in the media. The excitement is well deserved—McKinsey research estimates that generative AI could add the equivalent of $2.6 trillion to $4.4 trillion of value annually.[1]

CIOs and chief technology officers (CTOs) have a critical role in capturing that value, but it's worth remembering we've seen this movie before. New technologies emerged—the internet, mobile, social media—that set off a melee of experiments and pilots, though significant business value often proved harder to come by. Many of the lessons learned from those developments still apply, especially when it comes to getting past the pilot stage to reach scale. For the CIO and CTO, the generative AI boom presents a unique opportunity to apply those lessons to guide the C-suite in turning the promise of generative AI into sustainable value for the business.

Through conversations with dozens of tech leaders and an analysis of generative AI initiatives at more than 50 companies (including our own), we have identified nine actions all technology leaders can take to create value, orchestrate technology and data, scale solutions, and manage risk for generative AI (see sidebar, "A quick primer on key terms"):

1. Move quickly to **determine the company's posture for the adoption of generative AI**, and develop practical communications to, and appropriate access for, employees.

A quick primer on key terms

Generative AI is a type of AI that can create new content (text, code, images, video) using patterns it has learned by training on extensive (public) data with machine learning (ML) techniques.

Foundation models (FMs) are deep learning models trained on vast quantities of unstructured, unlabeled data that can be used for a wide range of tasks out of the box or adapted to specific tasks through fine-tuning. Examples of these models are GPT-4, PaLM 2, DALL·E 2, and Stable Diffusion.

Large language models (LLMs) make up a class of foundation models that can process massive amounts of unstructured text and learn the relationships between words or portions of words, known as tokens. This enables LLMs to generate natural-language text, performing tasks such as summarization or knowledge extraction. Cohere Command is one type of LLM; LaMDA is the LLM behind Bard.

Fine-tuning is the process of adapting a pretrained foundation model to perform better in a specific task. This entails a relatively short period of training on a labeled data set, which is much smaller than the data set the model was initially trained on. This additional training allows the model to learn and adapt to the nuances, terminology, and specific patterns found in the smaller data set.

Prompt engineering refers to the process of designing, refining, and optimizing input prompts to guide a generative AI model toward producing desired (that is, accurate) outputs.

Learn more about generative AI in our explainer "What is generative AI" on McKinsey.com.

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[1] "The economic potential of generative AI: The next productivity frontier," McKinsey, June 14, 2023.

2. Reimagine the business and **identify use cases that build value through improved productivity, growth, and new business models.** Develop a "financial AI" (FinAI) capability that can estimate the true costs and returns of generative AI.

3. **Reimagine the technology function,** and focus on quickly building generative AI capabilities in software development, accelerating technical debt reduction, and dramatically reducing manual effort in IT operations.

4. **Take advantage of existing services or adapt open-source generative AI models** to develop proprietary capabilities (building and operating your own generative AI models can cost tens to hundreds of millions of dollars, at least in the near term).

5. **Upgrade your enterprise technology architecture to integrate and manage generative AI models** and orchestrate how they operate with each other and existing AI and machine learning (ML) models, applications, and data sources.

6. **Develop a data architecture to enable access to quality data** by processing both structured and unstructured data sources.

7. **Create a centralized, cross-functional generative AI platform team t**o provide approved models to product and application teams on demand.

8. Invest in upskilling key roles—software developers, data engineers, MLOps engineers, and security experts—as well as the broader nontech workforce. But you need to **tailor the training programs by roles and proficiency levels** due to the varying impact of generative AI.

9. **Evaluate the new risk landscape and establish ongoing mitigation practices** to address models, data, and policies.

1. Determine the company's posture for the adoption of generative AI

As use of generative AI becomes increasingly widespread, we have seen CIOs and CTOs respond by blocking employee access to publicly available applications to limit risk. In doing so, these companies risk missing out on opportunities for innovation, with some employees even perceiving these moves as limiting their ability to build important new skills.

Instead, CIOs and CTOs should work with risk leaders to balance the real need for risk mitigation with the importance of building generative AI skills in the business. This requires establishing the company's posture regarding generative AI by building consensus around the levels of risk with which the business is comfortable and how generative AI fits into the business's overall strategy. This step allows the business to quickly determine company-wide policies and guidelines.

Once policies are clearly defined, leaders should communicate them to the business, with the CIO and CTO providing the organization with appropriate access and user-friendly guidelines. Some companies have rolled out firmwide communications about generative AI, provided broad access to generative AI for specific user groups, created pop-ups that warn users any time they input internal data into a model, and built a guidelines page that appears each time users access a publicly available generative AI service.

2. Identify use cases that build value through improved productivity, growth, and new business models

CIOs and CTOs should be the antidote to the "death by use case" frenzy that we already see in many companies. They can be most helpful by working with the CEO, CFO, and other business leaders to think through how generative AI challenges existing business models, opens doors to new ones, and creates new sources of value. With a deep understanding of the technical possibilities,

the CIO and CTO should identify the most valuable opportunities and issues across the company that can benefit from generative AI—and those that can't. In some cases, generative AI is *not* the best option.

McKinsey research, for example, shows generative AI can lift productivity for certain marketing use cases (for example, by analyzing unstructured and abstract data for customer preference) by roughly 10 percent and customer support (for example, through intelligent bots) by up to 40 percent.[2] The CIO and CTO can be particularly helpful in developing a perspective on how best to cluster use cases either by domain (such as customer journey or business process) or use case type (such as creative content creation or virtual agents) so that generative AI will have the most value. Identifying opportunities won't be the most strategic task—there are many generative AI use cases out there—but, given initial limitations of talent and capabilities, the CIO and CTO will need to provide feasibility and resource estimates to help the business sequence generative AI priorities.

Providing this level of counsel requires tech leaders to work with the business to develop a FinAI capability to estimate the true costs and returns on generative AI initiatives. Cost calculations can be particularly complex because the unit economics must account for multiple model and vendor costs, model interactions (where a query might require input from multiple models, each with its own fee), ongoing usage fees, and human oversight costs.

3. Reimagine the technology function

Generative AI has the potential to completely remake how the tech function works. CIOs and CTOs need to make a comprehensive review of the potential impact of generative AI on all areas of tech, but it's important to take action quickly to build experience and expertise. There are three areas where they can focus their initial energies:

— **Software development:** McKinsey research shows generative AI coding support can help software engineers develop code 35 to 45 percent faster, refactor code 20 to 30 percent faster, and perform code documentation 45 to 50 percent faster.[3] Generative AI can also automate the testing process and simulate edge cases, allowing teams to develop more-resilient software prior to release, and accelerate the onboarding of new developers (for example, by asking generative AI questions about a code base). Capturing these benefits will require extensive training (see more in action 8) and automation of integration and deployment pipelines through DevSecOps practices to manage the surge in code volume.

— **Technical debt:** Technical debt can account for 20 to 40 percent of technology budgets and significantly slow the pace of development.[4] CIOs and CTOs should review their tech-debt balance sheets to determine how generative AI capabilities such as code refactoring, code translation, and automated test-case generation can accelerate the reduction of technical debt.

— **IT operations (ITOps):** CIOs and CTOs will need to review their ITOps productivity efforts to determine how generative AI can accelerate processes. Generative AI's capabilities are particularly helpful in automating such tasks as password resets, status requests, or basic diagnostics through self-serve agents; accelerating triage and resolution through improved routing; surfacing useful context, such as topic or priority, and generating suggested responses; improving observability through analysis of vast streams of logs to identify events that truly require attention; and developing documentation, such as standard operating procedures, incident postmortems, or performance reports.

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[2] Ibid.

[3] Begum Karaci Deniz, Martin Harrysson, Alharith Hussin, and Shivam Srivastava, "Unleashing developer productivity with generative AI," McKinsey, June 27, 2023.

[4] Vishal Dalal, Krish Krishnakanthan, Björn Münstermann, and Rob Patenge, "Tech debt: Reclaiming tech equity," McKinsey, October 6, 2020.

4. Take advantage of existing services or adapt open-source generative AI models

A variation of the classic "rent, buy, or build" decision exists when it comes to strategies for developing generative AI capabilities. The basic rule holds true: a company should invest in a generative AI capability where it can create a proprietary advantage for the business and access existing services for those that are more like commodities.

The CIO and CTO can think through the implications of these options as three archetypes:

— **Taker**—uses publicly available models through a chat interface or an API, with little or no customization. Good examples include off-the-shelf solutions to generate code (such as GitHub Copilot) or to assist designers with image generation and editing (such as Adobe Firefly). This is the simplest archetype in terms of both engineering and infrastructure needs and is generally the fastest to get up and running. These models are essentially commodities that rely on feeding data in the form of prompts to the public model.

— **Shaper**—integrates models with internal data and systems to generate more customized results. One example is a model that supports sales deals by connecting generative AI tools to customer relationship management (CRM) and financial systems to incorporate customers' prior sales and engagement history. Another is fine-tuning the model with internal company documents and chat history to act as an assistant to a customer support agent. For companies that are looking to scale generative AI capabilities, develop more proprietary capabilities, or meet higher security or compliance needs, the Shaper archetype is appropriate.

There are two common approaches for integrating data with generative AI models in this archetype. One is to "bring the model to the data," where the model is hosted on the organization's infrastructure, either on-premises or in the cloud environment. Cohere, for example, deploys foundation models on clients' cloud infrastructure, reducing the need for data transfers. The other approach is to "bring data to the model," where an organization can aggregate its data and deploy a copy of the large model on cloud infrastructure. Both approaches achieve the goal of providing access to the foundation models, and choosing between them will come down to the organization's workload footprint.

— **Maker**—builds a foundation model to address a discrete business case. Building a foundation model is expensive and complex, requiring huge volumes of data, deep expertise, and massive compute power. This option requires a substantial one-off investment—tens or even hundreds of millions of dollars—to build the model and train it. The cost depends on various factors, such as training infrastructure, model architecture choice, number of model parameters, data size, and expert resources.

Each archetype has its own costs that tech leaders will need to consider (Exhibit 1). While new developments, such as efficient model training approaches and lower graphics processing unit (GPU) compute costs over time, are driving costs down, the inherent complexity of the Maker archetype means that few organizations will adopt it in the short term. Instead, most will turn to some combination of Taker, to quickly access a commodity service, and Shaper, to build a proprietary capability on top of foundation models.

5. Upgrade your enterprise technology architecture to integrate and manage generative AI models

Organizations will use many generative AI models of varying size, complexity, and capability. To generate value, these models need to be able to work both together and with the business's existing systems or applications. For this reason, building a separate tech stack for generative AI creates more complexities than it solves. As an example, we can look at a consumer querying customer service at a travel company to resolve a booking issue (Exhibit 2). In interacting with the customer, the generative AI model needs to access multiple applications and data sources.

Exhibit 1

Each archetype has its own costs.

Archetype	Example use cases	Estimated total cost of ownership

Taker	— Off-the-shelf coding assistant for software developers
	
	— General-purpose customer service chatbot with prompt engineering only and text chat only
		~ $0.5 million to $2.0 million, one-time
		— Off-the-shelf coding assistant: ~$0.5 million for integration. Costs include a team of 6 working for 3 to 4 months.
		— General-purpose customer service chatbot: ~$2.0 million for building plug-in layer on top of 3rd-party model API. Costs include a team of 8 working for 9 months.
		~ $0.5 million, recurring annually
		— Model inference:
		  • Off-the-shelf coding assistant: ~$0.2 million annually per 1,000 daily users
		  • General-purpose customer service chatbot: ~$0.2 million annually, assuming 1,000 customer chats per day and 10,000 tokens per chat
		— Plug-in-layer maintenance: up to ~$0.2 million annually, assuming 10% of development cost.

Shaper	— Customer service chatbot fine-tuned with sector-specific knowledge and chat history	**~ $2.0 million to $10.0 million, one-time unless model is fine-tuned further**
		— Data and model pipeline building: ~$0.5 million. Costs include 5 to 6 machine learning engineers and data engineers working for 16 to 20 weeks to collect and label data and perform data ETL.[1]
		— Model fine-tuning[2]: ~$0.1 million to $6.0 million per training run[3]
		  • Lower end: costs include compute and 2 data scientists working for 2 months
		  • Upper end: compute based on public closed-source model fine-tuning cost
		— Plug-in-layer building: ~$1.0 million to $3.0 million. Costs include a team of 6 to 8 working for 6 to 12 months.
		~ 0.5 million to $1.0 million, recurring annually
		— Model inference: up to ~$0.5 million recurring annually. Assume 1,000 chats daily with both audio and texts.
		— Model maintenance: ~$0.5 million. Assume $100,000 to $250,000 annually for MLOps platform[4] and 1 machine learning engineer spending 50% to 100% of their time monitoring model performance.
		— Plug-in-layer maintenance: up to ~$0.3 million recurring annually, assuming 10% of development cost.

Maker	— Foundation model trained for assisting in patient diagnosis	**~ $5.0 million to $200.0 million, one-time unless model is fine-tuned or retrained** — Model development: ~$0.5 million. Costs include 4 data scientists spending 3 to 4 months on model design, development, and evaluation leveraging existing research. — Data and model pipeline: ~$0.5 million to $1.0 million. Costs include 6 to 8 machine learning engineers and data engineers working for ~12 weeks to collect data and perform data ETL.[1] — Model training[5]: ~$4.0 million to $200.0 million per training run.[3] Costs include compute and labor cost of 4 to 6 data scientists working for 3 to 6 months. — Plug-in-layer building: ~$1.0 million to $3.0 million. Costs include a team of 6 to 8 working 6 to 12 months. **~ $1.0 million to $5.0 million, recurring annually** — Model inference: ~$0.1 million to $1.0 million annually per 1,000 users. Assume each physician sees 20 to 25 patients per day and patient speaks for 6 to 25 minutes per visit. — Model maintenance: ~$1.0 million to $4.0 million recurring annually. Assume $250,000 annually for MLOps platform[4] and 3 to 5 machine learning engineers to monitor model performance. — Plug-in-layer maintenance: up to ~$0.3 million recurring annually, assuming 10% of development cost.

Note: Through engineering optimizations, the economics of generative AI are evolving rapidly, and these are high-level estimates based on total cost of ownership (resources, model training, etc) as of mid-2023.

[1] Extract, transform, and load.

[2] Model is fine-tuned on data set consisting of ~100,000 pages of sector-specific documents and 5 years of chat history from ~1,000 customer representatives, which is ~48 billion tokens. Lower end cost consists of 1% parameters retrained on open-source models (eg, LLaMA) and upper end on closed-source models. Chatbot can be accessed via both text and audio.

[3] Model is optimized after each training run based on use of hyperparameters, data set, and model architecture. Model may be refreshed periodically when needed (eg, with fresh data).

[4] Gilad Shaham, "Build or buy your MLOps platform: Main considerations," LinkedIn, November 3, 2021.

[5] Model is trained on 65 billion to 1 trillion parameters and data set of 1.2 to 2.4 trillion tokens. The tool can be accessed via both text and audio.

Exhibit 2

Generative AI is integrated at key touchpoints to enable a tailored customer journey.

Illustrative customer journey using travel agent bot

→ API calls

Cus-tomer	Customer logs in and requests to change booking	Customer reviews options	Customer requests live agent	Customer completes book-ing change and drops off

Disagrees

Inter-action	*Chatbot* activated	*Chatbot* communi-cates message and options	*Chatbot* re-sponds	*Chatbot* pings cus-tomer support	*Agent* picks up case and provides new solution	*Agent* inputs new solu-tion for review/ feedback to model

Selects option

Genera-tive AI model	Model receives user request and pulls user info in prompt	Model checks booking policy and sees cus-tomer can-not make change	Model explains issue and gives alternate options	Model instructs booking system to complete task	Model instructs customer support system to assign agent

Back-end apps	Log-in authentifi-cation, model/cus-tomer info access authorization	Booking modification policy management	Workflow management for booking	Workflow management for live agent assignment

Data source	Customer ID data	Customer history data	Policy data	Booking system data	Agent assignment data

Infra-structure and compute	Cloud/on-premises infrastructure and compute

For the Taker archetype, this level of coordination isn't necessary. But for companies looking to scale the advantages of generative AI as Shapers or Makers, CIOs and CTOs need to upgrade their technology architecture. The prime goal is to integrate generative AI models into internal systems and enterprise applications and to build pipelines to various data sources. Ultimately, it's the maturity of the business's enterprise technology architecture that allows it to integrate and scale its generative AI capabilities.

Recent advances in integration and orchestration frameworks, such as LangChain and LlamaIndex, have significantly reduced the effort required to connect different generative AI models with other applications and data sources. Several integration patterns are also emerging, including those that enable models to call APIs when responding to a user query—GPT-4, for example, can invoke functions—and provide contextual data from an external data set as part of a user query, a technique known as retrieval augmented generation. Tech leaders will need to define reference architectures and standard integration patterns for their organization (such as standard API formats and parameters that identify the user and the model invoking the API).

There are five key elements that need to be incorporated into the technology architecture to integrate generative AI effectively (Exhibit 3):

— **Context management and caching** to provide models with relevant information from enterprise data sources. Access to relevant data at the right time is what allows the model to understand the context and produce compelling outputs. Caching stores results to frequently asked questions to enable faster and cheaper responses.

— **Policy management** to ensure appropriate access to enterprise data assets. This control ensures that HR's generative AI models that include employee compensation details, for example, cannot be accessed by the rest of the organization.

— **Model hub,** which contains trained and approved models that can be provisioned on demand and acts as a repository for model checkpoints, weights, and parameters.

— **Prompt library,** which contains optimized instructions for the generative AI models, including prompt versioning as models are updated.

— **MLOps platform,** including upgraded MLOps capabilities, to account for the complexity of generative AI models. MLOps pipelines, for example, will need to include instrumentation to measure task-specific performance, such as measuring a model's ability to retrieve the right knowledge.

In evolving the architecture, CIOs and CTOs will need to navigate a rapidly growing ecosystem of generative AI providers and tooling. Cloud providers provide extensive access to at-scale hardware and foundation models, as well as a proliferating set of services. MLOps and model hub providers, meanwhile, offer the tools, technologies, and practices to adapt a foundation model and deploy it into production, while other companies provide applications directly accessed by users built on top of foundation models to perform specific tasks. CIOs and CTOs will need to assess how these various capabilities are assembled and integrated to deploy and operate generative AI models.

6. Develop a data architecture to enable access to quality data

The ability of a business to generate and scale value, including cost reductions and improved data and knowledge protections, from generative AI models will depend on how well it takes advantage of its own data. Creating that advantage relies on a data architecture that connects generative AI models to internal data sources, which provide context or help fine-tune the models to create more relevant outputs.

Exhibit 3

The tech stack for generative AI is emerging.

Illustrative generative AI tech stack

Users

Legend:
- Apps
- Models
- Data
- Tooling
- Infrastructure

Apps-as-a-service with embedded foundation models

End-user-facing applications and foundation models accessed through a browser interface as SaaS[1] (eg, Midjourney)

Data sources

Embeddings, unstructured data, analytical data, transactional data

Experience layer
DTC[2] or B2B applications (eg, Jasper)

API gateway

Context management and caching
User and task context retrieved from enterprise data sources to prompt generative AI models, cache for common requests

Policy management

Role-based access control and content-based policies to secure enterprise data assets

Data platforms

Vector databases, data warehouse, data lake

Model hub
Platforms that allow users to share models and data sets (eg, Hugging Face)

Prompt library

Closed-source foundation models

API-based, pre-trained models (eg, GPT-4)

Open-/closed-source foundation models
Trained model that is made accessible (eg, BLOOM)

MLOps platform

Existing enterprise platforms
(eg, ERP,[3] CRM[4])

Cloud or on-premises infrastructure and compute hardware

QA and observability

QA model outputs (eg, checks for bias)

[1]Software as a service.
[2]Direct to consumer.
[3]Enterprise resource planning.
[4]Customer relationship management.

In this context, CIOs, CTOs, and chief data officers need to work closely together to do the following:

— Categorize and organize data so it can be used by generative AI models. Tech leaders will need to develop a comprehensive data architecture that encompasses both structured and unstructured data sources. This requires putting in place standards and guidelines to optimize data for generative AI use—for example, by augmenting training data with synthetic samples to improve diversity and size; converting media types into standardized data formats; adding metadata to improve traceability and data quality; and updating data.

— Ensure existing infrastructure or cloud services can support the storage and handling of the vast volumes of data needed for generative AI applications.

— Prioritize the development of data pipelines to connect generative AI models to relevant data sources that provide "contextual understanding." Emerging approaches include the use of vector databases to store and retrieve embeddings (specially formatted knowledge) as input for generative AI models as well as in-context learning approaches, such as "few shot prompting," where models are provided with examples of good answers.

7. Create a centralized, cross-functional generative AI platform team

Most tech organizations are on a journey to a product and platform operating model. CIOs and CTOs need to integrate generative AI capabilities into this operating model to build on the existing infrastructure and help to rapidly scale adoption of generative AI. The first step is setting up a generative AI platform team whose core focus is developing and maintaining a platform service where approved generative AI models can be provisioned on demand for use by product and application teams. The platform team also defines protocols for how generative AI models integrate with internal systems, enterprise applications, and tools, and also develops and implements standardized approaches to manage risk, such as responsible AI frameworks.

CIOs and CTOs need to ensure that the platform team is staffed with people who have the right skills. This team requires a senior technical leader who acts as the general manager. Key roles include software engineers to integrate generative AI models into existing systems, applications, and tools; data engineers to build pipelines that connect models to various systems of record and data sources; data scientists to select models and engineer prompts; MLOps engineers to manage deployment and monitoring of multiple models and model versions; ML engineers to fine-tune models with new data sources; and risk experts to manage security issues such as data leakage, access controls, output accuracy, and bias. The exact composition of the platform team will depend on the use cases being served across the enterprise. In some instances, such as creating a customer-facing chatbot, strong product management and user experience (UX) resources will be required.

Realistically, the platform team will need to work initially on a narrow set of priority use cases, gradually expanding the scope of their work as they build reusable capabilities and learn what works best. Technology leaders should work closely with business leads to evaluate which business cases to fund and support.

8. Tailor upskilling programs by roles and proficiency levels

Generative AI has the potential to massively lift employees' productivity and augment their capabilities. But the benefits are unevenly distributed depending on roles and skill levels, requiring leaders to rethink how to build the actual skills people need.

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[5] "Unleashing developer productivity with generative AI," June 27, 2023.

Our latest empirical research using the generative AI tool GitHub Copilot, for example, helped software engineers write code 35 to 45 percent faster.[5] The benefits, however, varied. Highly skilled developers saw gains of up to 50 to 80 percent, while junior developers experienced a 7 to 10 percent *decline* in speed. That's because the output of the generative AI tools requires engineers to critique, validate, and improve the code, which inexperienced software engineers struggle to do. Conversely, in less technical roles, such as customer service, generative AI helps low-skill workers significantly, with productivity increasing by 14 percent and staff turnover dropping as well, according to one study.[6]

These disparities underscore the need for technology leaders, working with the chief human resources officer (CHRO), to rethink their talent management strategy to build the workforce of the future. Hiring a core set of top generative AI talent will be important, and, given the increasing scarcity and strategic importance of that talent, tech leaders should put in place retention mechanisms, such as competitive salaries and opportunities to be involved in important strategic work for the business.

Tech leaders, however, cannot stop at hiring. Because nearly every existing role will be affected by generative AI, a crucial focus should be on upskilling people based on a clear view of what skills are needed by role, proficiency level, and business goals. Let's look at software developers as an example. Training for novices needs to emphasize accelerating their path to become top code reviewers in addition to code generators. Similar to the difference between writing and editing, code review requires a different skill set. Software engineers will need to understand what good code looks like; review the code created by generative AI for functionality, complexity, quality, and readability; and scan for vulnerabilities while ensuring they do not themselves introduce quality or security issues in the code. Furthermore, software developers will need to learn to *think*

differently when it comes to coding, by better understanding user intent so they can create prompts and define contextual data that help generative AI tools provide better answers.

Beyond training up tech talent, the CIO and CTO can play an important role in building generative AI skills among nontech talent as well. Besides understanding how to use generative AI tools for such basic tasks as email generation and task management, people across the business will need to become comfortable using an array of capabilities to improve performance and outputs. The CIO and CTO can help adapt academy models to provide this training and corresponding certifications.

The decreasing value of inexperienced engineers should accelerate the move away from a classic talent pyramid, where the greatest number of people are at a junior level, to a structure more like a diamond, where the bulk of the technical workforce is made up of experienced people. Practically speaking, that will mean building the skills of junior employees as quickly as possible while reducing roles dedicated to low-complexity manual tasks (such as writing unit tests).

9. Evaluate the new risk landscape and establish ongoing mitigation practices

Generative AI presents a fresh set of ethical questions and risks, including "hallucinations," whereby the generative AI model presents an incorrect response based on the highest-probability response; the accidental release of confidential personally identifiable information; inherent bias in the large data sets the models use; and high degrees of uncertainty related to intellectual property (IP). CIOs and CTOs will need to become fluent in ethics, humanitarian, and compliance issues to adhere not just to the letter of the law (which will vary by country) but also to the spirit of responsibly managing their business's reputation.

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[6] Erik Brynjolfsson, Danielle Li, and Lindsey R. Raymond, *Generative AI at work*, National Bureau of Economic Research (NBER) working paper, number 31161, April 2023.

Addressing this new landscape requires a significant review of cyber practices and updating the software development process to evaluate risk and identify mitigation actions before model development begins, which will both reduce issues and ensure the process doesn't slow down. Proven risk-mitigation actions for hallucinations can include adjusting the level of creativity (known as the "temperature") of a model when it generates responses; augmenting the model with relevant internal data to provide more context; using libraries that impose guardrails on what can be generated; using "moderation" models to check outputs; and adding clear disclaimers. Early generative AI use cases should focus on areas where the cost of error is low, to allow the organization to work through inevitable setbacks and incorporate learnings.

To protect data privacy, it will be critical to establish and enforce sensitive data tagging protocols, set up data access controls in different domains (such as HR compensation data), add extra protection when data is used externally, and include privacy safeguards. For example, to mitigate access control risk, some organizations have set up a policy-management layer that restricts access by role once a prompt is given to the model. To mitigate risk to intellectual property, CIOs and CTOs should insist that providers of foundation models maintain transparency regarding the IP (data sources, licensing, and ownership rights) of the data sets used.

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Generative AI is poised to be one of the fastest-growing technology categories we've ever seen. Tech leaders cannot afford unnecessary delays in defining and shaping a generative AI strategy. While the space will continue to evolve rapidly, these nine actions can help CIOs and CTOs responsibly and effectively harness the power of generative AI at scale.

Rewired to outcompete

Six signature moves led by the C-suite can
build organizations that will outperform in the
age of digital and AI.

by Eric Lamarre, Kate Smaje, and Rodney Zemmel
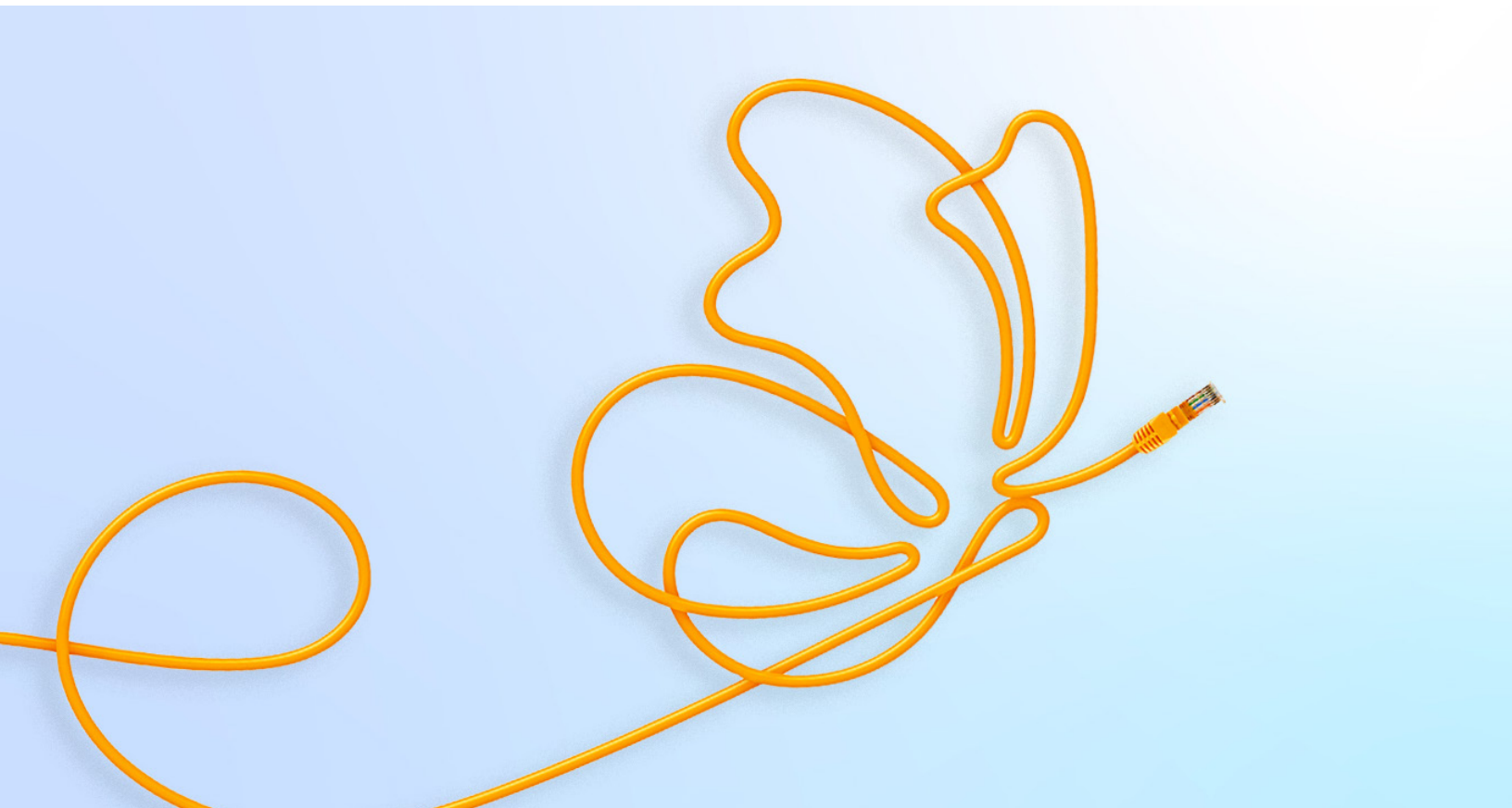
How companies navigate the technology world to achieve sustainable competitive advantage is the defining business challenge of our time.

To be fair, this challenge isn't new. But it's an increasingly pressing one, with deep implications for how companies navigate a world where digital and AI are fundamentally reshaping how we work and live. Companies understand they need to meet the challenge, but most of them are struggling. McKinsey research shows that while 90 percent of companies have launched some flavor of digital transformation, only a third of the expected revenue benefits, on average, have been realized.[1]

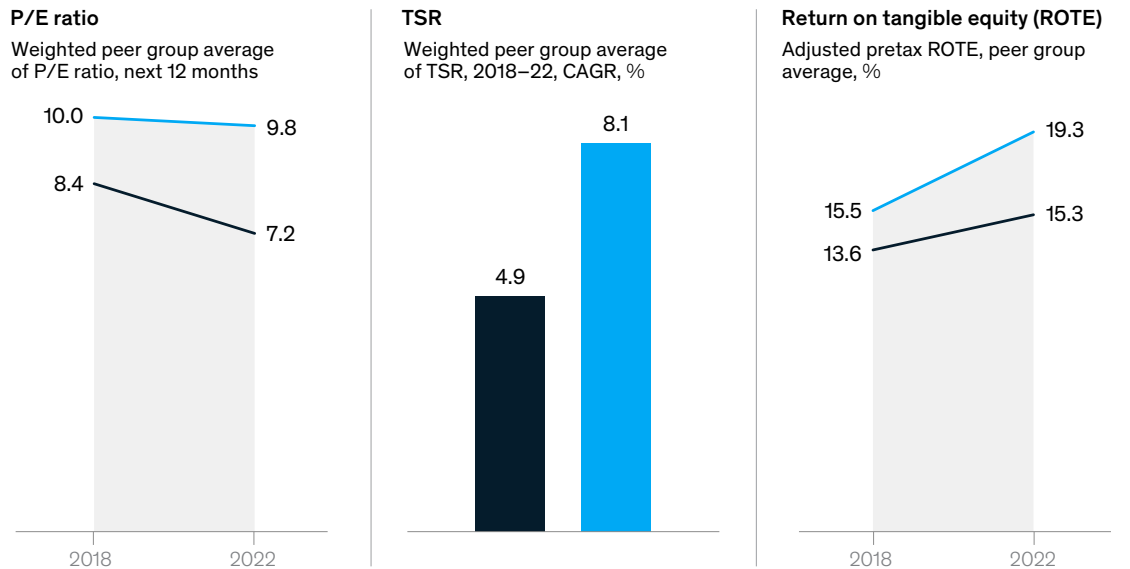Yet it's also a challenge with enormous potential for the companies that get it right. In the banking sector, for example, where digital and AI transformations have been under way for the past decade, compelling empirical data shows that digitally transformed banks outperform their peers. We leveraged a unique data set, Finalta by McKinsey, to analyze 20 digital leaders and 20 digital laggards in retail banking between 2018 and 2022. The results were startling. Digital leaders improved their return on tangible equity, their P/E ratio, and their total shareholder returns materially more than digital laggards (Exhibit 1). Digital excellence is translating into financial outperformance.

This outperformance was propelled by a deeper integration of technology across end-to-end core business processes. This, in turn, drove higher digital sales and lower costs in branches

Exhibit 1

Digital leaders are spurring more value for their shareholders.

Retail-banking example

■ Leaders[1]   ■ Laggards[2]

P/E ratio
Weighted peer group average of P/E ratio, next 12 months

10.0
9.8
8.4
7.2

2018   2022

TSR
Weighted peer group average of TSR, 2018–22, CAGR, %

8.1
4.9

Return on tangible equity (ROTE)
Adjusted pretax ROTE, peer group average, %

19.3
15.5
15.3
13.6

2018   2022

[1]Top 20 retail banks between 2018 and 2022.
[2]Bottom 20 retail banks between 2018 and 2022.
 Source: S&P Global; Corporate Performance Analytics by McKinsey

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[1]"Three new mandates for capturing a digital transformation's full value," McKinsey, June 15, 2022.

and operations. How did the digital leaders accomplish this? By bringing business, technology, and operations more closely together to digitally innovate; by upskilling their organizations; and by building a distributed technology and data environment to empower hundreds if not thousands of teams to digitally innovate, day in, day out. This gets at the nub of why digital and AI transformations are so difficult—companies need to get a lot of things right.

Clearly, for digital and AI to deliver on their business transformation potential, the top team needs to be ready and willing to undertake the organizational "surgery" required to become a digitally capable enterprise. There are no quick fixes. You can't simply implement a system or a technology and be done. Instead, success means having hundreds of technology-driven solutions (proprietary and off the shelf) working together that you continually improve to create great customer and employee experiences, lower unit costs, and generate value. But creating, managing, and evolving these solutions at enterprise scale requires a fundamental rewiring of how a company operates. That means getting thousands of people across different units of the organization working together and working differently to digitally innovate, constantly.

The lessons learned from our work with more than 200 large companies across multiple industries show that capturing this kind of value from digital and AI requires building six critical enterprise capabilities (Exhibit 2). These allow rewired companies to integrate new technologies, such as generative AI, and harness them to create value. While companies may understand this at a high level, they struggle with *how* to build these capabilities successfully and ensure that they work together across the enterprise.

Our new book, *Rewired: The McKinsey Guide to Outcompeting in the Age of Digital and AI*, is all

Exhibit 2

Six enterprise capabilities are critical for successful digital and AI transformations.

Transformational value comes from careful and coordinated execution across all areas of focus

Alignment on value	**1. Business-led digital road map** Align senior leadership team on the vision, value, and road map for the transformation; reimagine business domains to deliver outstanding customer experiences and to lower unit costs.			
Delivery capabilities	**2. Talent** Ensure that you have the right skills and capabilities to innovate and execute.	**3. Operating model** Increase the metabolic rate of the organization by bringing business, operations, and technology together.	**4. Technology** Make technology easier for teams to use so they can innovate at pace.	**5. Data** Continually enrich data and make it easily accessible across the organization to help improve customer experience and business performance.
Change management	**6. Adoption and scaling** Maximize value capture by ensuring the adoption and enterprise scaling of digital solutions and by tightly managing the transformation progress and risks.			

McKinsey & Company

about the *how*. This article is adapted from that book and delineates the core aspects of what it takes for leaders to spur transformation across all six capabilities.

Before we go into detail, it's worth highlighting two key findings. First, no digital and AI transformation can be successful without building a baseline of competence across all six capabilities. Second, these elements are interconnected and need to be managed that way: a good operating model, for example, can't work without the right talent. Similarly, great technology won't make much of an impact if users don't adopt it.

You do not have to be a tech company to achieve excellence in digital and AI. Large, established companies can outcompete and capture value, but only when they are willing to commit to the hard work of rewiring their enterprise. This is a job for the entire C-suite, not just the CEO or the chief information officer (CIO). The cross-functional nature of a digital and AI transformation requires an unparalleled level of collaboration across the C-suite, with everyone having an important part to play in building these enterprise capabilities. Rewiring the business is an ongoing journey of improvement, not a destination. Let's dig into the details of that journey.

Align the C-suite around a business-led road map

When evaluating stalled digital and AI transformations, we find that many of the issues that impede a program's success can be traced back to insufficient planning and alignment. Misunderstanding among leadership at the strategic-planning stage will invariably lead to muddled execution in a company's transformation. Because digital and AI transformations affect so many parts of the business, investing the necessary time to help make the transformation a success pays significant dividends in terms of clarity and unified action. The best companies make sure to get these three early moves right:

Inspire and align the top team. Take the time to establish a common digital language, learn from

other companies that are further along the journey, develop a shared vision among the C-suite, and explicitly agree on a set of commitments that match your ambitions. Consider the example of DBS Bank, one of the world's most successful digitally transformed banks. CEO Piyush Gupta and his top leaders visited and learned from top tech companies around the globe and used those lessons to shape a vision around "Making Banking Joyful" and to commit to making DBS a tech leader. This kind of leadership alignment is crucial to ensuring a successful digital and AI transformation.

Get the "bite" size right: business domains. Some companies struggle from the start of their digital and AI transformation by getting the scope of the change wrong. They start too small—believing that implementing a few use cases will lower risk—or they spread bets and resources too thinly across an uncoordinated set of initiatives. Both approaches typically produce little value. Successful companies, on the other hand, focus their efforts on a few important business domains, such as a production process or the customer journey, and transform them from end to end. As many as 80 percent of successful interventions in struggling digital and AI transformations are based on reanchoring the scope to spur a concerted effort against a few well-defined domains.

Commit to a contract with the C-suite. Effective rewiring requires companies to tie the transformation outcomes of each business domain to specific improvements in operational KPIs, such as reduction in customer churn or improvements in process yield. The team builds a road map where the digital solutions that underpin these KPI improvements are sequenced in a way to produce meaningful value in the short term (say, 12 to 18 months) and transformational value in the medium term (three to five years, for example). The plan explicitly accounts for the buildout of enterprise capabilities, such as hiring digital talent or modernizing data architecture. C-suite leaders commit to these KPI improvements, and the expected benefits are baked into their business objectives. Our rule of thumb is that a robust digital road map should deliver EBIT improvement of 20 percent or more.

When business leaders define an ambitious yet realistic transformation of their business domains with technology, they set in motion the flywheel of digital change. The resulting digital road map is their signature move and effectively acts as a contract that they commit to implementing.

Build your talent bench

No company can outsource its way to digital excellence. Being digital means having your own bench of digital talent—product owners, experience designers, cloud engineers, software developers, and so on—working side by side with your business colleagues. Digital transformations are, first and foremost, people transformations. Here are three actions that digital leaders take:

Create a cleansheet for your talent. Most companies have digital technologists, but many still face the hard work of reskilling their technology and IT organization. The aspiration should be to have 70 to 80 percent of your digital talent in-house, with 20 to 30 percent coming from outside the company and focused on specialized skills, flexibility, or both. Your talent pyramid should shift to a diamond shape, with more competent technologists and fewer novices. That's because there is a step change in productivity from more experienced technologists. You should also have a healthy ratio of hands-on-keyboard technologists versus managerial roles. Rewired leaders target a 4:1 ratio (or better) of engineers to managers, versus the 1:1 found at many companies.

Get religion about skills. Rewired companies develop very granular skill progression grids supported by credentials. For example, Big Tech companies have up to ten levels of data engineers, each with different skill levels and compensation ranges. Without a precise calibration of skills, it becomes difficult to recognize distinctive technologists and compensate them accordingly. Skill progression also gets built into expert-based career tracks and in learning and development programs. In short, the whole digital-talent model revolves around fostering excellence in people devoted to their craft.

Build the team that will build your digital bench. Many HR organizations are hampered by slow recruiting and onboarding processes, rigid compensation frameworks, and outdated learning and development programs for digital talent. But transforming your entire HR organization and underlying HR processes to make them digital ready may not be practical. Setting up a special team focused on adapting current HR processes to win digital talent is the most pragmatic—and successful—way forward. We call this designated team the Talent Win Room (TWR). The primary mission of a TWR is to find technologists with the right skills and to build and continually improve all facets of both the candidate and employee experience.

These shifts in talent practices are not simple, but they are fundamental to becoming rewired with the right talent. While every C-suite executive will have a part to play in this talent reinvention, this is often the chief human resources officer's signature contribution to the enterprise's digital transformation.

Adopt a new operating model that can scale

Most companies have succeeded in standing up a handful of cross-functional agile teams. But scaling up so that hundreds or even thousands of teams work that way, as rewired businesses do, is a daunting challenge. Developing the right operating model to bring business, technology, and operations closer together is perhaps the most complex aspect of a digital and AI transformation because it touches the core of the organization and how people work.

Three leading models have emerged: digital factory, product and platform, and enterprise-wide agile. Each of these models is built on two core ideas. The first is that small, multidisciplinary agile teams, or pods, are the most effective and efficient way to develop software. Second, pods work together most effectively when some are focused on directly improving a customer or user experience (generally called product pods, although they can also be called experience or journey pods)

while others focus on creating reusable services to accelerate the work of all pods (called platform pods). Examples of such services could include a customer-360 data set or an easy way for teams to provision compute and storage capacity.

The implementation of a new operating model is, in our opinion, one of the most significant pivots a company can make to become a rewired enterprise. There are two key moves to getting this right:

Select an operating model that supports your strategy. The digital factory is a separate organizational unit where people work together to build digital solutions for the business units or functions that fund the digital factory. Companies often initially select the digital-factory model because it is a self-contained operating unit and can be implemented relatively quickly (typically 12 to 18 months before it's fully operational, though it can get started in a matter of weeks). BHP and Scotiabank, for example, have implemented this model.

The product and platform model is a more evolved version of the digital factory. While the digital factory might contain 20 to 50 pods, the product and platform model will typically have a few hundred pods, sometimes thousands for large companies. When companies move to a product and platform model, they are making a major strategic decision to realign large parts of the organization to better exploit technology in their core business. Amazon, Google, Itaú Unibanco, and JPMorgan Chase have all implemented this model.

Finally, the enterprise-wide agile model builds on the product and platform model and extends the benefit of agile to the entire business, not just the technology-intensive areas. For example, key account sales and R&D can also benefit from working in small, cross-functional teams. Companies adopt this model when they believe that customer centricity, collaboration, and

flexible resource deployment are key performance differentiators across the entire enterprise. ING and Spark New Zealand have successfully implemented this model.

Professionalize product management. A crucial difference between tech companies and their peers in other sectors is the degree to which they have embedded product management capabilities in their operating models. This capability, in our opinion, makes or breaks the implementation of a new operating model. Some 75 percent of business leaders in a McKinsey survey responded that product management best practices aren't being adopted at their companies, that product management is a nascent function within their organizations, or that it doesn't exist at all.[2] That's a problem. It's also hard to recruit great product managers because understanding the industry and the company context matters. Most companies end up reskilling and building new career tracks for this rare talent, but this requires substantial investments to ensure good results.

The shift to a new operating model is the signature move of CEOs in rewiring the company. Only they can catalyze such large-scale organizational change.

Technology for speed and distributed innovation

The main purpose of technology within a rewired company is to make it easy for hundreds, if not thousands, of pods to constantly develop and release digital innovations. This requires a distributed technology environment where every pod can access the software development tools, data, and applications they need. While leaders hoping to create that environment have a raft of decisions to make, three priorities stand out:

Kit out a technology toolbox. Just like woodworkers, surgeons, or plumbers, software

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[2] Chandra Gnanasambandam, Martin Harrysson, Jeremy Schneider, and Rikki Singh, "What separates top product managers from the rest of the pack," McKinsey, January 20, 2023.

developers need the proper tools to do their work. As an organization scales from five agile pods to 100, or even more than 1,000, it doesn't make sense for pod members to be calling IT every time they have a basic request, such as additional storage capacity or access to a collaboration tool. Leading companies build a developer platform: a self-service portal that makes it easy to access and use all the standardized and company-approved tools.

Use APIs without exception. Once developers have their tools, they need access to data and existing app functionalities to build their solutions. Application programming interfaces (APIs) do that by systematically minimizing dependencies in the architecture by making application functionalities and data easily accessible. Without it, pods will constantly find themselves depending on other pods. Amazon's Jeff Bezos was so adamant about using APIs that he wrote a famous memo about it, which fundamentally changed Amazon and the world of software. The memo essentially said that all teams were expected to expose their data and functionality through service interfaces (that is, APIs) and to communicate with one another through only these interfaces. No other form of inter-process communication would be allowed. No exceptions.

Automate software delivery. Have you ever wondered how an app on your phone can be upgraded so frequently? That seamless functionality is made possible by software delivery automation, also known as CI/CD: continuous integration and continuous delivery. This is the method for systematically automating all steps, including quality checks, testing, packaging (that is, containerization), and staged deployment of the solution to the user. With CI/CD, updates that used to take weeks or months can now be completed in minutes, allowing pods to release incremental improvements weekly or even daily and thus unleash much faster innovation cycles. You won't be able to achieve distributed digital and AI innovation if pods aren't able to release code to a production environment quickly and easily.

This fixation on automation needs to carry over to AI and machine-learning (ML) models. These models

are like living organisms—they need to be constantly recalibrated as new data accumulate and then monitored in real time for drift and biases. When this doesn't happen, AI/ML models fail to transition to full-scale production. Solving for this has required a specialized type of automation called machine learning operations (MLOps). For example, Vistra, a leading energy company, built MLOps automation to support more than 400 AI/ML models deployed to optimize different parts of its power plant operations.

Most CIOs have started their companies' journey to build a robust developer platform, decouple the components of the architecture from one another through APIs, and automate their software delivery pipeline. But we know very few companies that have scaled this across their enterprise. The change management efforts are significant, and the software engineering talent required is in short supply. Creating a technology environment that enables distributed digital and AI innovations is a cornerstone capability of rewired enterprises and a signature contribution by the CIO, the chief data officer (CDO), or both.

Embed data everywhere

In established companies, data is often a source of frustration. As much as 70 percent of the effort involved in developing AI-based solutions can be attributed to wrangling and harmonizing data. Unless data is thoughtfully sorted and organized for easy consumption and reuse, scaling solutions can be a big challenge. The ability to constantly improve customer experience and drive down unit cost depends on giving each digital and AI team (near) real-time access to data. Companies can focus on three areas to achieve this:

Turn to reusable building blocks: data products. Data products are the secret sauce for scaling AI. They help deliver data-intensive applications as much as 90 percent faster, at 30 percent lower cost, and with a reduced risk and data governance burden. A data product delivers a high-quality, ready-to-use set of data in a way that people and applications across the organization can easily access and consume. For example, a data product

could provide a 360-degree view of an important entity, such as customers, employees, product lines, or stores. Companies can prioritize building data products that have the broadest application, that are critical for teams developing priority solutions, and that are unique. Building data products requires dedicated teams and investments.

Install the data architecture "plumbing." Data architecture is the system of "pipes" that deliver data from where it is stored to where it is used. When implemented well, data architecture hastens a company's ability to build reusable and high-quality data products and to put data within reach of any team in the organization. We have seen very rapid technological progress in this field. The emergence of new architectural patterns such as the "data lakehouse" (an innovation that combines the capabilities of a data lake and a data warehouse into a single, integrated platform) makes it easier for companies to solve for both their business intelligence and their AI needs.

Federate data governance. Data touches all aspects of an organization, so its governance needs to account for that complexity. Rewired companies deploy a federated model where a central function (that is, a data management office) sets policies and standards and provides support and oversight, while business units and functions manage activities such as developing data products and building data pipelines to enable consumption.

A data environment that allows for easy data consumption by hundreds of distributed teams is another signature move of the CIO in collaboration with the CDO. It enables data-driven decisions, feeds real-time decision-making systems, and propels faster continuous-improvement loops.

Unlocking adoption and scaling

Developing a good digital solution can be complex and difficult. But getting customers or business users to adopt that solution as part of their day-to-day activities and then scaling that solution across the enterprise are often the biggest challenges. Successful companies concentrate on the following three moves:

Focus equally on adoption and development. User adoption starts with developing great technology solutions that offer an excellent customer experience. But companies often underestimate all the additional elements of the business model that need to be changed to secure adoption. For instance, an insurance company that developed analytic solutions to help agents upsell customers on policies also needed to make changes to pricing algorithms, sales force incentives, distribution and customer engagement models, and metrics and performance indicators. That end-to-end system approach, with a focus on the people side of the equation, is what differentiates digital leaders. They achieve this by making the business accountable for the end-to-end transformation of the domain. As a rule, for every $1 spent on developing digital and AI solutions, plan to spend at least another $1 to ensure full user adoption and scaling across the enterprise.

Scale with "assetizing." Replicating the adoption of a solution in different environments, such as a network of plants, or in different geographic markets, customer segments, or organizational groups is challenging. Companies often find themselves redoing a lot of work and struggling to tailor solutions to local environments. All this extra work is a scale killer, and that's why 72 percent of companies stall at this stage. Digital leaders solve this by "assetizing" solutions, which typically allows 60 to 90 percent of a digital and AI solution to be reused, leaving just 10 to 40 percent in need of local customization.

Track what matters. No one will debate the need to measure the progress of a digital transformation. But the question is what to measure and how. Performance tracking that is poorly designed and lacking the right supporting tools can quickly crumble under its own weight. Rewired companies take the pods responsible for objectives and key results and link them to operational KPIs, tracking

the progression of each pod in a disciplined stage gate review process.

The ability to capture the full economic potential of digital innovations is a core differentiator between digital leaders and laggards. Building this capability is the signature move of business unit and function leaders.

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The capabilities we have laid out for a successful digital and AI transformation present a rich "how to" agenda. You may be wondering where to start your rewiring journey. Why not start where we began this article: by bringing the top team together and having them reflect on your journey thus far? A digital and AI transformation is ultimately an exercise in constant evolution and improvement. If you accept this premise, it will change your perspective on how you approach this critical challenge. To borrow Jeff Bezos's expression to Amazon shareholders about the importance of operating like a digital native: it's always day one for digital and AI transformation.

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Full throttle on net zero: Creating value in the face of uncertainty

To thrive amid shocks to the net-zero economy, leaders are shifting strategies to position themselves to win when the skies clear up.

by Laura Corb, Anna Granskog, Tomas Nauclér, and Daniel Pacthod
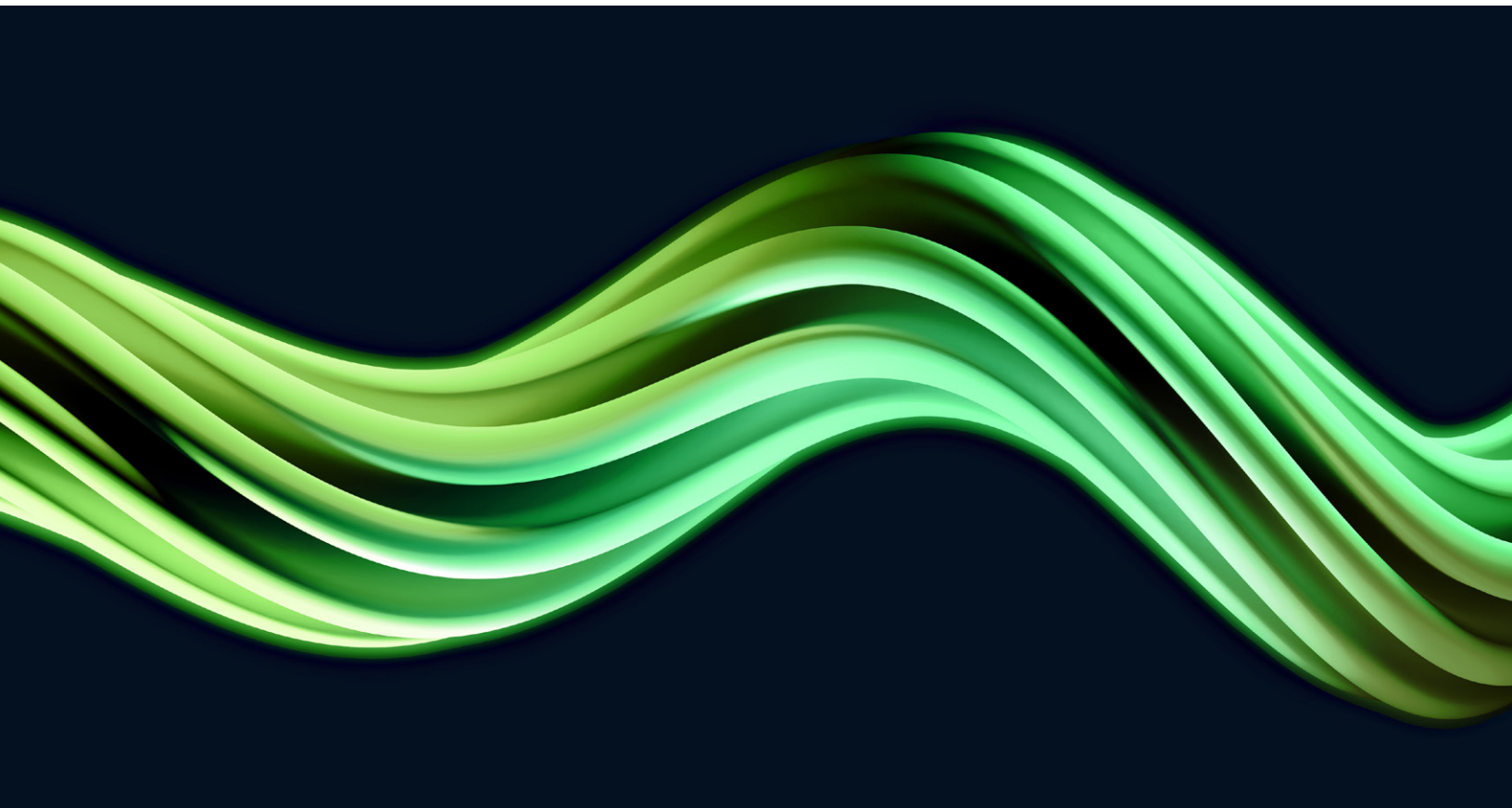
No question, navigating the net-zero economy has become more complicated over the past 12 months amid higher energy prices, supply chain pressures, increased interest rates, higher input costs, and lackluster economic growth. Companies are experiencing long lead times, supply shortages, or price spikes for goods, from transformers to bio-based feedstocks, and services such as engineering, procurement, and construction, that could otherwise accelerate decarbonization. Many leaders feel that creating a clear picture of where the economy is headed has never been as difficult. For some, the current pressures are creating tension between near-term financial performance and commitments toward a net-zero world.

However, our research and experience suggest that there are bold moves leaders can make to create value in the net-zero transition, despite the headwinds. Companies that take disciplined and courageous action on both resilience and sustainability have a unique opportunity: they can reposition themselves ahead of organizations that focus on just the short-term shocks, or organizations that might even step back from their sustainability commitments. We are seeing that some companies are steadfast in their conviction of pursuing green growth opportunities, while others are questioning whether now is the right time. Some leaders are pursuing a robust strategy for a range of future scenarios.[1]

McKinsey research on the 2007–08 financial crisis shows that outperforming companies tended to take a few courses of action to create an earnings advantage, including proactively cutting costs and identifying areas of growth. For navigating the current moment of uncertainty—with an eye toward net zero—we have developed a set of priorities that combine the tactics of outperforming companies in the 2007–08 crisis with moves made by early sustainability leaders. These actions can be applied widely across industries and geographies:

— push ahead on value creation with vision and ambition

— integrate cost and carbon reductions

— create customer partnerships to be an early winner in the market

— update the portfolio to secure profitable growth

— build and scale new green businesses

— execute at digital speed to create competitive distance

In this article, we illustrate how companies can still play offense in the net-zero transition despite uncertainty. The rewards for pushing ahead on green growth could be significant: our analysis shows that growing demand for net-zero offerings could generate $9 trillion to $12 trillion of annual sales by 2030.

Push ahead on value creation with vision and ambition

The volatile economic environment in many regions makes it even more important for companies to orient their sustainability agendas around value creation in nascent or fast-growing markets. The advantage of being an early mover in these new markets is that companies can solidify pole position for offering low-carbon goods and build out production capacity before latecomers enter the market. But being early to segments with growth potential often requires vision and ambition.

Consider a tier-one automotive supplier that set out to be a first-choice supplier for leading automotive OEMs looking to decarbonize. To do so, the supplier needed to offer a set of zero-carbon products at a competitive cost. Executing on this agenda has required the company to build leading capabilities in tracking and verifying the carbon content of the materials and components it procures, finding new suppliers, and utilizing carbon as a new element in product design. By investing in these areas, the company now has industry-leading capabilities in enabling Scope 3 emissions reductions. (Scope 3

[1] For more, see "Leading through uncertainty in the energy and materials sectors," McKinsey, July 31, 2023.

emissions are indirect emissions that arise across a company's value chain.)

Integrate cost and carbon reductions

Our research shows that the companies that fared well coming out of the 2007–08 financial crisis systematically invested in improving the cost competitiveness of their core offerings. In many cases, that means driving down the cost of goods sold (COGS). To date, lowering COGS has often been considered at odds with reducing a product's carbon footprint. However, through our work with leading companies across sectors, we are now seeing that a trade-off between cost and carbon reductions is often not required.

Companies in chemicals, pulp and paper, oil and gas, metals, and other process industries are going after the dual benefit of cost and carbon reductions by improving energy efficiency and process yields, as well as by shifting to lower-carbon raw materials and feedstocks where possible. Manufacturing companies are addressing the same challenge by making changes in design, material specifications, and supply chain choices. Energy efficiency and yield improvements are not new strategies, but with higher energy prices, the value of investing in these areas has increased. In addition, sophisticated analytics tools have unlocked even more potential for dual savings.

In one example, a leading paper and packaging player set out to reduce energy costs and direct emissions at its largest mill. The company deployed engineering solutions such as heat integration and steam optimization to reduce energy consumption, as well as advanced analytics to track it. The paper player found an opportunity to reduce its energy costs by 10 to 16 percent and reduce direct emissions by 12 percent. With many industrial players still facing relatively high energy prices, such energy efficiency opportunities are abundant. In Europe, for example, we estimate that energy-intense industries could create anywhere from €3 billion to €12 billion in value by deploying energy efficiency measures such as advanced analytics. In a different case, a specialty chemicals player is

looking to combine cost and carbon reductions in a systematic and highly aspirational sustainable raw-material program. The company has identified a pathway to reduce more than half of its emissions by 2050 while reducing up to hundreds of millions in costs annually.

Such approaches can come with added benefits down the line. Companies that build carbon reduction competencies across the organization or lock up scarce supply of low-carbon raw materials and components can gain a longer-term edge in the marketplace.

Create customer partnerships to be an early winner in the market

In the current economic cycle, companies in competitive markets may feel a slowdown in their order books and tougher competition for deals. In turn, sales organizations work harder to fill the order pipelines, and pricing decisions become difficult.

Meanwhile, for companies that have unique, zero-carbon product offerings, there are opportunities to gain market share. One way to do this is by signing up partners through offtake agreements—that is, agreements for customers to purchase all or a substantial part of output. Offtake agreements can help solidify an early and disproportionate share of demand in more nascent markets, and the income can be invested into scaling further capacity. In some cases, partnerships can also help companies earn a price premium. Such steps may require some market shaping to maximize impact.

In our experience, calls for offtake commitments are often made at the very top, through CEO-to-CEO dialogue. Offtake agreements can be a strategic advantage for the customer, too, as the customer can lock in supply of early-to-market goods and services ahead of the competition. Once partnerships with offtakers are born, partners can build business ecosystems for the value chain that will allow the category to grow (bringing together raw-material suppliers, technology partners, or regulators, for example). Players that create top-level relationships with their potential customer and

partner base ahead of others could have a head start on capturing value from their green offerings.

As we have discussed in prior articles, companies that produce sustainable goods can also earn green price premiums through product differentiation.[2] What we have learned recently is that green premiums can vary based on a product's carbon credentials—that is, a zero-carbon offering may earn a higher premium than a lower-carbon one. We have seen this play out in metals: lower-carbon aluminum has been on the market for some time, but the price delta compared with traditional aluminum has been negligible. Zero-carbon or green steel, on the other hand, has earned a clear price premium compared with any other type of steel.[3]

Update the portfolio to secure profitable growth

Companies that are generating profits with legacy, higher-emissions businesses could face a conundrum: Should they hold on to the legacy business to help finance greener investments or pull out of the legacy business proactively?

Our analysis shows that companies that came out the strongest from the 2007–08 financial crisis were the ones that divested early and then acquired businesses ahead of others.[4] With this in mind, our perspective is that now is the time for companies to take stock of their portfolios with a focus on the long-term outlook of each business. If there is an opportunity to improve the overall growth of the portfolio by rotating out some businesses that are facing diminishing returns due to their

carbon emissions, and adding businesses that are propelled by sustainability tailwinds, there may be no reason to hold back.

For instance, over the past two decades, NextEra Energy moved out of its thermal-generation portfolio and became a leader in renewable power (in 2020, the company closed its last coal plant in Florida). NextEra is also investing in clean fuels, hydrogen, and battery storage—forms of on-demand, dispatchable generation that can support wind and solar power, which are nondispatchable.[5] NextEra's subsidiary, Florida Power & Light, plans to convert all of its remaining 16 gigawatts of thermal generation to clean fuels or hydrogen generation while driving value to investors and leading the industry in returns and market cap.[6]

The potential value of gearing portfolios toward low-carbon businesses can also be seen at the sector level. A McKinsey review of chemicals companies, for example, revealed that green leaders—companies with both greener product portfolios and exposure to end markets associated with sustainability, including electric vehicles and energy storage—see two to three times higher total shareholder returns compared with laggards.[7]

Additionally, in light of higher interest rates, capital cost is becoming an increasingly important factor. For example, research by the University of Oxford suggests that low-carbon electric utilities in Europe have a lower cost of capital than peers with higher-emission portfolios.[8] As the net-zero transition continues, executives can look for opportunities in industries where capital costs are evolving.

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[2] "Playing offense to create value in the net-zero transition," McKinsey, April 13, 2022.

[3] There is not yet a universally set definition for green steel. In one example, the German Steel Association has proposed an approach where steel with emissions below 350 to 450 tons of CO2e per ton of steel (depending on the share of scrap contents) would qualify as A-labeled green steel.

[4] "Something's coming: How US companies can build resilience, survive a downturn, and thrive in the next cycle," McKinsey, September 16, 2022.

[5] Wind and solar are considered to be nondispatchable because they rely on external variables (wind or sun).

[6] "NextEra Energy sets industry-leading Real Zero™ goal to eliminate carbon emissions from its operations, leverage low-cost renewables to drive energy affordability for customers," NextEra Energy news release, June 14, 2022.

[7] Measuring the "greenness" of a chemical company (or any company) is not straightforward. To better understand how sustainability in chemicals is actively driving valuation, we segmented our sample of chemical companies along two dimensions: those with "greener" product portfolios—defined as more than 25 percent of revenues in biologic, recyclable, or low-carbon product portfolios—and those with exposure to end markets supporting sustainability tailwinds, such as electric vehicles, energy storage, water reduction, energy efficiency, natural ingredients, or circular packaging. For more, see "Chemicals and capital markets: Growing sustainably," McKinsey, April 22, 2022.

[8] Xiaoyan Zhou et al., *Energy transition and the changing cost of capital: 2023 review*, Oxford Sustainable Finance Group and the University of Oxford, March 2023.

Build and scale new green businesses

Our research suggests that companies that built new businesses in the last economic downturn outperformed peers by 10 percent during the crisis and 30 percent through the cycle.[9] These companies took out their magnifying glasses, identified pockets of growth, and positioned themselves to take advantage. They anticipated market needs and allocated money to accelerate innovation.

It should not come as a surprise that the net-zero transition is creating several pockets of growth. The growing demand for low-emission products, in part propelled by corporate emission reduction commitments,[10] is creating opportunities for commercial scaling of a wide range of climate technologies and related services. This demand is further supported by major regulatory initiatives. Last year's Inflation Reduction Act in the United States, for example, allocates about $370 billion for climate and energy spending. Multiple policy packages under the umbrella of the European Green Deal, including the recent Green Deal Industrial Plan, promise to further accelerate the region's shift toward a net-zero economy by facilitating faster access to funding. Similar to previous regulatory programs—such as early offshore wind auctions in the United Kingdom, the German feed-in tariff scheme for renewables, and California's Low Carbon Fuel Standard—these policy packages are setting the stage for companies looking to scale a wide range of zero-carbon technologies and processes, as well as drive down costs.

While the climate technology space has largely been known for its start-ups, such as Northvolt, we are already seeing encouraging examples of incumbents tapping into green business building. A German multibillion-dollar revenue technology group has announced that by 2030, new climate technology areas such as hydrogen electrolyzers will account for 70 percent of its business. In Asia, an Indonesian mining company is planning to cut income from coal by 50 percent, while investing hundreds of millions in renewable energy, and build an electric-vehicle ecosystem in the country.

In taking on green business building, incumbents are still challenged by start-ups with a DNA of innovation and ambition. To scale at the pace that's often required to reach competitive cost levels, incumbents will likely need to push themselves beyond their comfort zone.[11] When getting started, companies should avoid fragmentation of efforts and investments and resist the tendency to maximize cost synergies between the core and growth businesses. For some, a way to steer clear of these pitfalls has been to bring in external investors to the growth ventures. This type of setup provides scaling experience that many incumbents lack, and forces governance that's arm's length from the core business.[12]

Execute at digital speed to create competitive distance

As discussed above, there are advantages to being first or early to market with low-carbon offerings. Companies that execute quickly and effectively can capture the largest green premiums, bring costs down faster to earn higher margins, and reap the capital expenditure benefits from getting projects done faster.

Executing at high speeds is often more familiar to digital players. Commercializing green technologies typically requires significant investments in physical assets, which isn't required for software development or digital engineering. Still, green

9 Matt Banholzer, Ralf Dreischmeier, Laura LaBerge, and Ari Libarikian, "Business building: The path to resilience in uncertain times," McKinsey, December 19, 2022.
10 More than 5,000 companies have made or are in the process of making emission reduction commitments through the Science Based Targets initiative.
11 For more, see Rob Bland, Anna Granskog, and Tomas Nauclér, "Accelerating toward net zero: The green business building opportunity," McKinsey, June 14, 2022.
12 For more, see Tomas Beerthuis, Ralf Dreischmeier, Tomas Laboutka, and Nimal Manuel, "A practical guide to new-business building for incumbents," McKinsey, June 21, 2023.

business builders can learn lessons from successful digital scale-ups.

Executing the actions we've laid out in this article at digital speed takes both the right mindset and the right capabilities. Companies can consider a few approaches:

— Reducing costs and carbon at speed first requires an honest analysis of the trajectory of current emission reduction activities compared with the trajectory required to meet customer demands or net-zero commitments. Companies can then move with urgency to collaborate with suppliers and partners that can help the company meet both their cost and carbon reduction goals.

— Being fast in forging partnerships to gain market share is first and foremost about being in the right executive-level discussions with potential partners in the early stages of business building. The early dialogues provide an opportunity to shape the value proposition before all parameters on the product side have been locked in.

— The speed of portfolio rotation is, of course, contingent on the availability of buyers and sellers and converging views on valuations. That said, players with a well-anchored portfolio strategy and serial M&A capabilities are likely to find it easier to execute at pace. For them,

the decision making related to each deal can focus on the specifics of the transaction at hand, rather than a comprehensive debate on whether it is beneficial to exit or enter a certain business or what the true market potential of that business is.

— In our experience, companies that have built and scaled green businesses successfully—and quickly—tend to take a series of key actions. They lead with game-changing ambition, sign up captive demand before scaling, and often build capacity with parallel scaling.[13] For digital start-ups, the funding dynamics often force leaders to challenge conventional wisdom about how quickly an investment project can be planned, engineered, and executed, or how quickly a new concept can be turned into a product available for customers. Green business builders, whether start-ups or incumbents, could start with such a mentality.

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Despite the economic uncertainty, there are opportunities for companies to play offense and accelerate value creation in the net-zero transition. Building a set of strategic moves now could set up early movers for cost and carbon reductions, green premiums, strong market positions, and new capabilities. Players that choose to slow down could find themselves lagging behind.

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[13] For more, see Rob Bland, Anna Granskog, and Tomas Nauclér, "Accelerating toward net zero: The green business building opportunity," McKinsey, June 14, 2022; and "Scaling green businesses: Next moves for leaders," McKinsey, March 10, 2023.

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Scaling green businesses: Next moves for leaders

New challenges—and opportunities—have emerged for green business builders. A set of actions could help companies scale during these uncertain times.

This article is a collaborative effort by Rob Bland, Laura Corb, Anna Granskog, Tomas Nauclér, and Giulia Siccardo, representing views from McKinsey's Sustainability Practice.

The transition to net zero is well underway, but it is not happening fast enough. Growth in key climate technologies, including wind and solar power and electric vehicles (EVs), has helped accelerate decarbonization efforts worldwide. Solutions such as green hydrogen and long-duration energy storage (LDES) are becoming available and, if scaled, could reduce global emissions even further. But the pace of scaling these technologies has not kept up with projections for a warming planet. Governments and companies have done an admirable job developing and deploying climate technologies to date, but a significant acceleration is required to meet net-zero targets—and stave off the most dire effects of climate change.

Last year, we released a framework for launching and scaling green businesses, based on our work with both incumbents and start-ups.[1] A few of the key actions include leading with game-changing ambition, signing up captive demand before scaling, and building capacity with parallel scaling. In the interim, as the economic and geopolitical backdrop has changed, market dynamics for green business builders have shifted in both nuanced and fundamental ways. On the one hand, capital markets and public-sector institutions have started to galvanize behind green investments. Policy, including the Green Deal Industrial Plan in Europe and the Inflation Reduction Act (IRA) in the United States, promises to support companies looking to scale climate technologies. At the same time, inflation, economic uncertainty, and the invasion of Ukraine have all complicated the path to net zero.

Three areas have emerged that should now be priorities for those navigating the challenges and seeking opportunities: building up supply chains (often through cross-sector partnerships), proactively addressing an emerging skills gap, and

exploring different avenues for financing and investments.

Many of the unique challenges to scaling green businesses remain—high capital expenditures on physical assets (compared with building digital businesses), higher short-term costs, and customer education and adoption barriers for many sustainable products. However, the urgency to reach net-zero targets has only grown in many markets, and the industrial economy is now being reinvented around a lower-carbon energy system, circular-economy practices, and other emerging models. Companies that can innovate and scale during these fast-moving, uncertain times could set themselves up for exponential growth. Our analysis shows that growing demand for net-zero offerings could generate $9 trillion to $12 trillion of annual sales by 2030 across 11 value pools, including transport, power, and consumer goods.

In this article, we lay out the evolving landscape for scaling climate technologies and explore three areas of potential action for green business builders.

A significant scaling gap

More than 4,000 companies have set or are in the process of committing to emissions reductions[2] and 70-plus countries have set net-zero targets.[3] How quickly would key climate technologies need to scale to help meet such goals?

To arrive at projections, we conducted an analysis of the current growth trajectory for climate tech relative to current net-zero commitments. Based on our analysis, even mature technologies—including wind and solar power—would need to scale by a factor of six to 14 times faster to remain on track for a 1.5° pathway by 2030 (exhibit).[4]

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[1] See Rob Bland, Anna Granskog, and Tomas Nauclér, "Accelerating toward net zero: The green business building opportunity," McKinsey, June 14, 2022.
[2] "Companies taking action," Science Based Targets, accessed February 22, 2023.
[3] "For a livable climate: Net-zero commitments must be backed by credible action," United Nations, accessed February 22, 2023.
[4] Based on the McKinsey 1.5°C achieved commitments scenario, which represents existing commitments from companies and policies from countries. To conduct this analysis, we estimated the current trajectory of supply of key climate technologies (based on current activity) across four categories of maturity: mature, early adoption, demonstrated at industrial scale, precommercial; factored in current emissions-reductions commitments from countries and governments; and assessed the supply of these technologies that would be required by 2030 to stay on track for a 1.5° pathway.

Exhibit

To reach net-zero targets, a set of existing climate technologies would need to scale exponentially by 2030.

Annual deployment of climate technologies needed,[1]
multiples of current supply

- - - ▶ Mature   - - - ▶ Early adoption

Wind power capacity, gigawatts — 6×

Solar power capacity, gigawatts — 14×

Battery electric car sales, million — 14×

Green hydrogen electrolyzer capacity, gigawatts — 200×

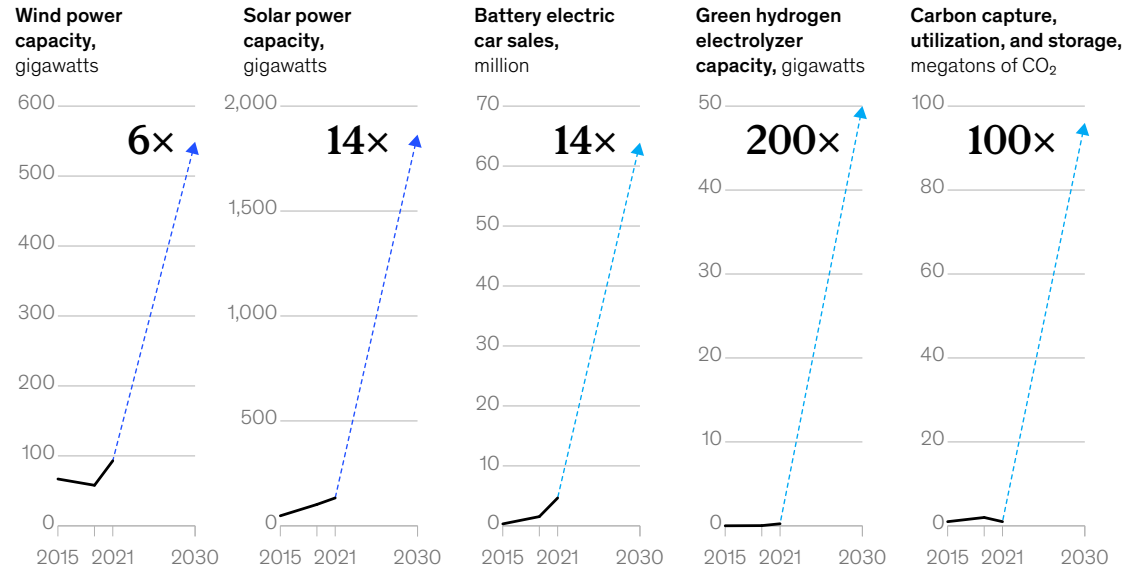**Carbon capture, utilization, and storage,** megatons of CO_2 — 100×

[1]Based on the McKinsey 1.5°C achieved commitments scenario, which represents existing commitments from companies and policies from countries. To conduct this analysis, we estimated the current trajectory of supply of key climate technologies (based on historic and current activity), factored in current emissions-reductions commitments from countries and governments, and assessed the supply of these technologies that would be required by 2030 to stay on track for a 1.5° pathway.
Source: EV-Volumes; IEA; International Renewable Energy Agency; McKinsey analysis

McKinsey & Company

Historically, growth in solar and wind has often outpaced projections, and new players entering the market (oil and gas companies, private equity players, and institutional investors, for example) show signs that the current pace of deployment could speed up.[5] Nevertheless, the potential gap for renewables to meet net-zero targets looks steep.

Climate technologies that are high-potential but relatively less advanced in their commercialization (compared with renewables) would need to scale at an even greater rate. Consider hydrogen. Our analysis indicates that supply of green hydrogen, which is produced with renewables, would need to grow by a factor of 200 times.

Next moves for green business builders

Scaling climate technologies often requires companies to think and act in bold and innovative ways. While our seven actions for scaling green businesses hold true, they continue to evolve (for a summary of the original framework, see sidebar, "Seven actions for scaling green businesses").

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[5] "Renewable-energy development in a net-zero world," McKinsey, October 28, 2022.

Economic uncertainty, inflation, new public funding, technological risks, and supply chain considerations have altered the landscape for green business building.

Actions that have become particularly important for organizations during these volatile times include creatively developing supply chains (including through partnerships), proactively addressing emerging skills gaps in the workforce, and exploring new avenues for financing and investment.

Build up the supply chain through cross-sector partnerships
Green business building efforts are often supply chain building efforts. For hydrogen-powered vehicles to scale and help decarbonize long-haul freight transport, for example, a supply of hydrogen and hydrogen infrastructure also needs to scale. We are increasingly seeing green business builders develop their supply chains by forging partnerships across sectors and, in some cases, creating a growth strategy with complementary players as collaborators. These partnerships are getting a boost from major climate legislation packages in the United States and the European Union. For example, the IRA in the United States allocates $369 billion for climate and energy spending,[6] with a focus on ventures that address critical gaps in the North American supply chain. These collaborations happen upstream, downstream, or horizontally in the value chain.

Upstream partnerships are operational partnerships that propel vertical integration. They occur when a company partners far upstream to secure critical supply of a product or service. In one example, the Volkswagen Group announced a joint venture with Umicore,[7] a circular-materials technology company, to boost the supply of low-carbon battery materials. The collaborators aim to scale capacity to meet demand for 2.2 million EVs per year. Such a partnership could not only help fortify the supply chain for battery recycling, it could also help solidify demand for players across the EV and energy storage value chains (charging infrastructure, grid storage markets) and help reduce commercial risk for investors. In another example of a large-scale upstream partnership, Dow Chemical and Mura Technology, an advanced-recycling company, announced they will pair up to construct multiple recycling facilities for plastics that could add up to 600 kilotons of capacity by 2030.[8]

Downstream partnerships are demand-based partnerships that drive vertical integration. They occur when a company uses a demand commitment from a purchaser to help stabilize or enable their financing. As an example, advanced-market commitments are one tool for helping to guarantee future demand for technologies. Take Frontier, a joint effort among organizations including Alphabet, Meta, Shopify, and Stripe.[9] These organizations have collectively made a $925 million commitment to purchase carbon removal, enabling carbon removal suppliers to have a line of sight to their end customers while they are still scaling operations.

Horizontal partnerships are ecosystem partnerships that bring together a cross-section of organizations along the value chain. For example, the Center for Houston's Future and the Greater Houston Partnership have laid the groundwork for a clean-hydrogen hub in the Gulf Coast region by bringing together both public and private entities that span production, infrastructure, and electrolyzer capacity.[10] Another example is the LDES Council, a group of more than 60 member institutions that

6 Inflation Reduction Act of 2022, H.R. 5376, 117th Congr. (2022).
7 "PowerCo and Umicore establish joint venture for European battery materials production," Volkswagen Group, September 26, 2022.
8 "Dow and Mura Technology announce largest commitment of its kind to scale advanced recycling of plastics," Dow Chemical, July 21, 2022.
9 McKinsey Sustainability is a partner in Frontier. For more, see *New at McKinsey Blog*, "McKinsey partners with Stripe, Alphabet, Shopify, and Meta on $925 million carbon removal commitment," blog post, April 13, 2022.
10 McKinsey's Houston office has been working in collaboration with the Greater Houston Partnership's Houston Energy Transition Initiative and Center for Houston's Future. Over the past two years, McKinsey has supported these initiatives through a variety of efforts, including a pro bono study, *Houston leading the energy transition - strategy report*, Greater Houston Partnership, June 2021, and a report, *Houston as the epicenter of a global clean hydrogen hub*, Center for Houston's Future and the Greater Houston Partnership, May 2022.

has committed to accelerating the scale of LDES technologies.[11] Members include technology providers, customers, and investors.

Get ahead on the skills gap

The net-zero transition has created a shift in needed job skills, as markets are reshaped and organizations institute new operational practices and processes. The range of skills is broad: from honing technical skills in manufacturing EVs, solar panels, and wind turbines to engaging with low-emissions suppliers to having executive expertise in carbon accounting and project finance. Green business building opportunities have encouraged many entrepreneurs, but the available talent to scale operations—in infrastructure, engineering for capital projects, and in process engineering, for example—has not quite caught up.

Looking into the next decade, skills shortages[12] could loom for certain sectors, particularly as more companies concurrently scale up manufacturing and operations in the United States to access the incentives offered by the IRA and the Bipartisan Infrastructure Law. For example, McKinsey analysis shows that bursts of factory building in Michigan could strain labor supply by close to 200 percent and manifest differently across skill categories of workers, with growing needs for architectural, equipment, and electrical work. To address these potential shortages, companies must not only acquire the right talent, they also need to figure out how to upskill and reskill labor for future opportunities. In the United Kingdom, for example, Octopus Energy has opened a heat pump R&D and training facility to help accelerate adoption of the technology.[13]

Building up the talent pipeline at academic institutions is another way for companies to fill the skills gap. For example, Shell is a founding partner of the Energy Transition Institute at the University of Houston, where students work with Shell scientists across three core areas: hydrogen, carbon management, and circular plastics.[14] Governments can support such talent-building efforts at universities. The US Department of Energy, for example, has funded a new research center at the University of Michigan for EV battery technology.[15] Private and public entities will both need to contribute to workforce development going forward.

Explore different avenues for financing and investments

Financing the scale-up of climate technologies can come with challenges, as many technologies rely on significant up-front investments in physical assets, including large-scale facilities and infrastructure. Technologies that haven't yet reached technical maturity or commercialization can come with a higher risk profile for investors. As we have written about before, securing purchase agreements and inviting customers to invest in the business up front are some ways that green business builders have successfully addressed these challenges.

Project finance is an increasingly common approach for green business builders that can help mitigate the risks for capital-intensive infrastructure projects. Project finance is a nonrecourse or limited-recourse structure in which the project company shareholders' liability is limited to their equity investment and the project lenders rely primarily on the project's cash flow for repayment—meaning principal repayment usually begins after the project is operational. Northvolt, a Swedish battery maker, quickly turned to project financing and has plans for at least a third gigafactory manufacturing plant.[16]

[11] McKinsey has collaborated with the LDES Council as a knowledge partner, including on the reports *Net-zero power: Long duration energy storage for a renewable grid*, LDES Council and McKinsey, November 22, 2021; *A path towards full grid decarbonization with 24/7 clean Power Purchase Agreements*, LDES Council and McKinsey, May 2022; and *Net-zero heat: Long Duration Energy Storage to accelerate energy system decarbonization*, LDES Council and McKinsey, November 2022.

[12] Christopher Boone and Karen C. Seto, "With green jobs booming, here's how to plug the sustainability skills gap," World Economic Forum, January 9, 2023.

[13] *Octopus Energy Blog*, "How Octopus Energy is revolutionising heat pumps," blog entry by Aimee Clark, October 29, 2021.

[14] Chris Stipes, "Leading energy," University of Houston, accessed February 22, 2023.

[15] "$11M DOE center for next-gen battery technology," University of Michigan, August 30, 2022.

[16] "Northvolt announces its third gigafactory will be established in Germany's clean energy valley," Northvolt, March 15, 2022.

Seven actions for scaling green businesses

Through our work with organizations that have built and scaled green businesses successfully, we have identified seven key principles. This framework is a way for leaders to navigate both the opportunities and risks involved in scaling climate technologies—and potentially set their companies up for significant growth. There is no one right combination of these factors, and most existing players have combined several of these elements.

Lead with game-changing ambition. Effective green business builders tend to set their sights on creating something significant from the start. Game-changing ambition may mean aspiring to produce a zero-carbon product at a competitive cost (which enables a competitive price), compared with a less sustainable alternative, and scaling new capacity fast.

Accelerate to the point of cost advantage. Building a business around a clean technology may require analyzing different technological pathways, including some technology options that are not yet commercialized. When analyzing a new technology, leaders must understand the scale break point for cost competitiveness, to reach lower unit costs faster and potentially be competitive on price from the start.

Sign up captive demand before scaling. Successful green business builders often set up demand with a strong commercial plan prior to expanding, to reduce risk. One way of accomplishing this is through purchase agreements. For example, Swedish battery manufacturer Northvolt signed a supply agreement with BMW.[1]

Build capacity with parallel scaling. To reach scale-up goals, the ability to drive several investments or market introductions in a limited time frame is key. We've seen leaders "parallelize the scaling" from the start—that is, initiate additional growth waves before they complete the first one. One approach is scaling through partnerships in the value chain. For example, investing in production capacity in a company's home region while finding a partner to deploy the same technology in another. Or coinvesting in expanding manufacturing capacity with suppliers.

Proactively create business ecosystems. As we explore in the accompanying article, scaling most climate technologies won't happen by companies "going it alone." Achieving scale requires coordination among governments and regulatory bodies, investment and financing institutions, incumbent players, and disruptive innovators. Finding the right scaling partners along the value chain— partners that have a similar strategic interest—is key. And coalitions dedicated to scaling access, cost-effectiveness, and supply across green ecosystems are a must for transitioning to a green future.

Lead on sustainable operations, through ambitious targets, innovation, and partnerships. Successful green business builders are leaders in how their operations minimize carbon emissions and other environmental impacts. Sustainable operations start from the beginning— designing with low-carbon inputs (green materials), implementing low-emissions processes (circularity), and controlling for emissions through the value chain. Supply chains for some key materials (lithium, for example) could be in high demand. Solidifying a sustainable, resilient, and cost-effective supply chain is therefore important.

Dedicate recruiting resources early in the process. As we cover in the accompanying article, the range of skills required to scale successful green businesses can be wide—and in an especially tight labor market, scarce. Green business builders can invest early in building their talent base, project the needed skill sets for the future workforce, dedicate resources to upskilling and new capabilities, and create the technical infrastructure to enable superior talent performance.

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[1] "BMW Group signs long-term supply agreement for battery cells with Northvolt," Northvolt, July 13, 2020.

Many green business builders look to blended finance models, which rely on a mix of private capital and public or philanthropic funding. Public-funding pools utilize grants as a means of reducing debt and mitigating risk, for example, and multilateral climate funds, such as the Green Climate Fund, have factored into these blended finance models.

Financing partnerships are also playing a larger role, from joint ventures between local start-ups and global technology companies to multistakeholder-funded research, development, and demonstration (RD&D) programs that provide early-stage and growth-stage equity capital for high-risk first deployment projects. These RD&D programs are particularly showing up in developing countries, to help increase private investments into businesses that serve underrepresented communities most affected by climate change.

When it comes to purchase agreements, inflation could be a top concern for suppliers and buyers. In response, we're seeing green business builders offer agreements to customers that have inflation-adjustable price formulas.

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Scaling new, green businesses may seem more challenging than it did a year ago, but we see many companies addressing the complications with determination and foresight. Organizations that evolve with the times and embrace a new set of actions could set themselves up for significant growth opportunities—and help the climate get back on track.

Decarbonize and create value: How incumbents can tackle the steep challenge

While the task is not easy, incumbents—including those in hard-to-abate sectors—can decarbonize and generate value through a series of key actions.

This article is a collaborative effort by Peter Crispeels, Dieuwert Inia, Henry Legge, Tomas Nauclér, and Philipp Radtke, representing views from McKinsey's Sustainability, Global Energy & Materials, and Advanced Industries practices.

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The net-zero transition could lead to the largest transformation of the industrial sector since the beginning of the Industrial Revolution. To reach net zero by 2050, about $275 trillion in cumulative spending on low-emissions assets will be required over the next 30 years—or approximately 7.5 percent of global GDP every year for 30 years.[1] Decarbonizing operations and product offerings presents many companies with the most significant opportunity in a generation: a potential $9 trillion to $12 trillion in annual sales by 2030 as capital and customer demand shift toward a low-carbon economy. On the flip side, failure to decarbonize could, on average, risk up to 20 percent in economic profit for companies by 2030, based on factors including stranded assets, increasing cost of capital, and loss of market share.[2]

In any case, decarbonization is a difficult transformation for most companies. The costs for scaling climate technologies and building new capabilities can be high. Access to financing can be challenging for businesses entering nascent, untested markets. Timelines for decarbonization can conflict with performance objectives and often stretch beyond the expected tenure of the current company executives. Meanwhile, entire supply chains are still being rewired from fossil fuel–based energy and feedstock to renewable sources, which could lead to major shifts in energy costs and the viability of current assets. In the current moment, leaders are also navigating the added complexity of inflation, disruptions to energy markets, supply shortages, and increased interest rates. To survive—and, ideally, create value—companies will need to think through their decarbonization strategy, keep up with a shifting landscape of market opportunities and policy (from subsidies and regulatory schemes to the organization's geographical footprint), and make swift decisions.

In some markets, start-ups have become early leaders in decarbonization (renewable energy, electric vehicles, and steel, for example). Start-ups often have a higher tolerance for risk-taking and the ability to operate at faster speeds with agility. But a set of incumbents has emerged as market leaders, too. These incumbents, including many in hard-to-abate sectors (such as chemicals and steel), have leveraged a few of their advantages, including long-term customer relationships and access to capital, talent, industry insights, and supplier networks. These established players, from industrial companies to logistics and consumer goods organizations, have been willing to take bold action and play offense to get ahead of their competitors.

How can more incumbents decarbonize *and* create value? Based on our experience, companies that are a step ahead in their decarbonization transformation tend to take action in three key areas. In this article, we explore the three key areas, a new tool that can help leaders build the business case for net-zero offerings, and reasons to move quickly.

Decarbonize and create value: Three moves for incumbents

In our experience, incumbents that have created value through decarbonization have focused on three key areas of action:

— *Decarbonize and improve cost competitiveness.* Companies that reduce costs and emissions simultaneously can gain market share and finance further decarbonization efforts through the additional cash generated. Leading companies typically go after the first 20 to 40 percent of decarbonization while also reducing costs, leading to an improvement in EBITDA.[3]

— *Launch net-zero offerings.* Companies that are quick to offer zero-carbon offerings can leverage inherent supply–demand gaps in nascent markets and create value through value-based pricing strategies and price premiums.

— *Enter new value pools.* Companies that build new businesses along the current value

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[1] "The economic transformation: What would change in the net-zero transition," McKinsey, January 25, 2022.
[2] "Playing offense to create value in the net-zero transition," *McKinsey Quarterly*, April 13, 2022.
[3] Based on net present value.

chain—and tap adjacent value pools—have an opportunity to secure early demand for net-zero offerings and benefit from low-cost financing.

Decarbonize and improve cost competitiveness

In the past two to three years, we've seen an increasing number of companies set ambitious decarbonization commitments. To date, more than 6,000 companies have signed up through the Science Based Targets initiative to achieve an average reduction of 49 percent in Scope 1 and 2 emissions and 28 percent in Scope 3 emissions by 2030.[4] Now companies face the steep challenge of making the reductions a reality.

Many organizations have begun their decarbonization journey by looking to cut emissions from operations. Traditionally, some leaders have assumed there is a financial trade-off for reducing emissions in operations, and for good reason: decarbonizing operations can be complex and capital intensive. We've also seen companies try to decarbonize operations through a stand-alone program that isn't fully integrated with the core business, which can limit both the potential for emissions reductions and a healthy balance sheet.

Now, however, we see leading organizations integrate cost and carbon reductions simultaneously. Our analysis shows that companies are already seeing results: up to 40 percent reductions in emissions and up to a 15 percent improvement in financial performance (Exhibit 1). By 2030, incumbents can, on average, abate 20 to 40 percent of emissions while also reducing their production costs (Exhibit 2). A reduction

Exhibit 1

Companies across industries can reduce carbon emissions and improve financial performance at the same time.

Illustrative financial improvement and CO$_2$ reduction, %
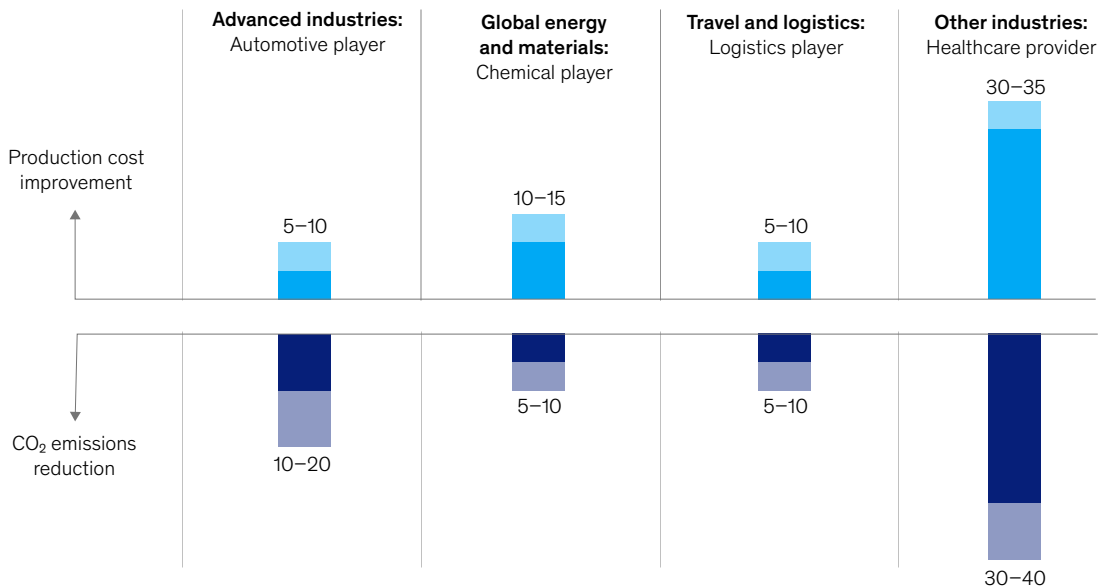
McKinsey & Company

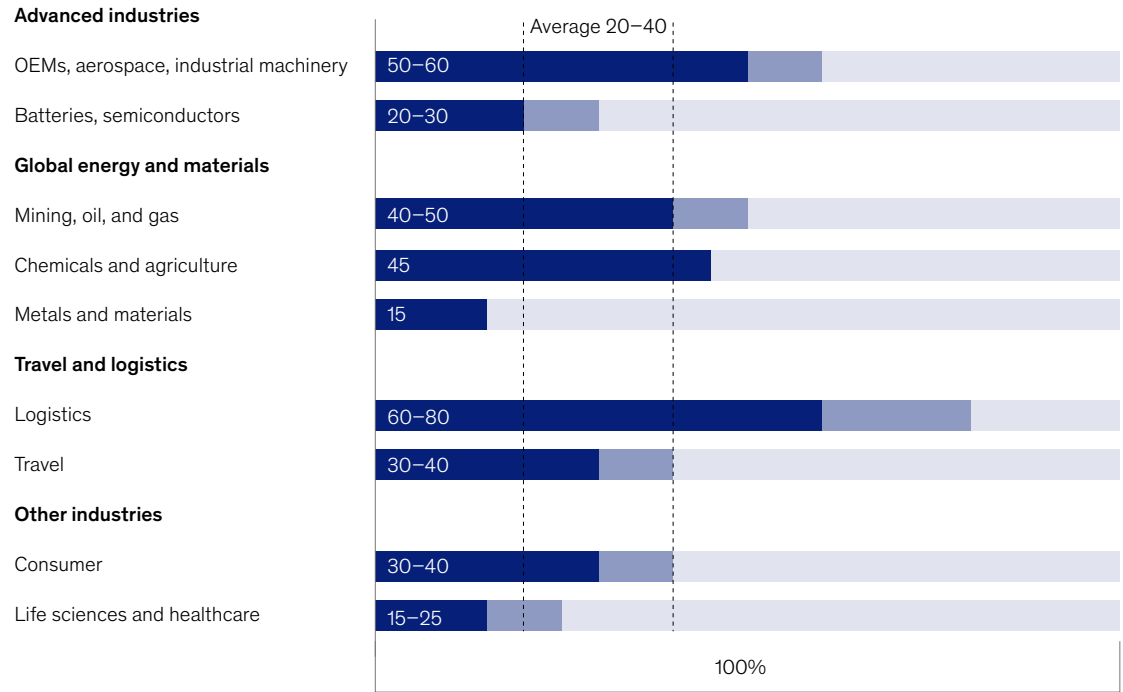[4] Scope 1 emissions are direct emissions that occur from sources that are controlled or owned by an organization; Scope 2 emissions are indirect emissions associated with purchased energy; and Scope 3 emissions are indirect emissions resulting from activities along an organization's value chain. Science Based Targets initiative dashboard, accessed September 26, 2023; US Environmental Protection Agency.

Exhibit 2

Incumbent companies can, on average, abate 20 to 40 percent of carbon emissions by 2030 while also reducing costs.

Cost-effective emission abatement by 2030, by sector,[1] %

Advanced industries	Average 20–40	
OEMs, aerospace, industrial machinery	50–60	
Batteries, semiconductors	20–30	
Global energy and materials		
Mining, oil, and gas	40–50	
Chemicals and agriculture	45	
Metals and materials	15	
Travel and logistics		
Logistics	60–80	
Travel	30–40	
Other industries		
Consumer	30–40	
Life sciences and healthcare	15–25	
	100%	

[1]Includes Scope 1, 2, and 3 emissions. Based on net present value.
Source: McKinsey Catalyst Zero

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in production costs could be driven by energy efficiency, sourcing green energy, and variable cost reduction (yield and throughput increase, for example) of the manufacturing footprint. The potential for dual cost and carbon savings varies by industry. However, in some sectors, we see the potential to reduce emissions by as much as 60 to 80 percent while still having a favorable business case based on net present value. Reducing costs and carbon simultaneously can also free up cash to invest in new business opportunities that emerge from the ongoing net-zero transition.

Integrating cost and carbon reductions can also help companies gain market share. As both the public and private sectors increasingly set demands

on sustainability, organizations that are ahead on decarbonization could be positioned to earn early contracts in growing markets and generate revenue faster than competitors. This advantage for early movers will likely fade as competitors catch up. However, as more market players decarbonize, global emissions should go down—a societal benefit—and end customers should experience more competitive pricing.

The dual task of cutting costs and carbon emissions is not easy. Decarbonizing operations often requires a transformation of processes and capabilities. There needs to be clear buy-in and accountability from leadership, as well as the ability for leaders to continuously reevaluate the

decarbonization strategy as input costs change (energy prices, for example) and new technologies become commercially available. However, many incumbents—including those in harder-to-abate sectors—have advantages, such as the ability to engineer large-scale production processes, technological know-how, and investment flexibility. In our experience, companies successfully integrate cost and carbon reductions through a few approaches, from assessing carbon emissions on a granular level to embedding decarbonization in all processes:

— *Make fact-based decisions through full carbon transparency on an asset and product level.* Leading companies look for carbon and cost reductions on a granular level, down to all assets and product offerings, and operate with full carbon transparency for stakeholders and customers. For example, a leading chemicals player calculates detailed product carbon footprints for approximately 45,000 products, which enables the company to create viable decarbonization pathways and offer their customers a better understanding of a product's carbon footprint. Based on our analysis, such a granular approach can save companies an additional 10 to 20 percent in costs on average.[5]

— *Focus on capturing the first 20 to 40 percent of emissions.* We are seeing companies integrate cost and carbon reductions in several ways, from improving energy efficiency to reducing waste to designing products more efficiently.[6] However, companies often struggle to understand which measures will yield the most savings and how to focus engineering resources and financing. In our experience, leading companies focus on capturing an initial 20 to 40 percent of emissions while also reducing costs.

— *Embed decarbonization in all processes.* Eventually, decarbonization should be embedded in all critical processes. Incumbents will have different areas of focus, based on their sector and where they are in the value chain. Metals, chemicals, and mining companies might focus on plant design and related capital expenditures, whereas technology and component companies might emphasize product design and embedded emissions. For example, a large industrial-equipment manufacturer has set various decarbonization KPIs across all areas of the organization, from embedded emissions in procurement to share of recycled material in product design. Moving quickly to embed decarbonization objectives in all processes, in some cases, can help companies achieve cost efficiency faster and give the organization a head start on building new capabilities.

— *Stay agile in decision making and capital reallocation.* By 2050, about 90 percent of total global emissions can be reduced with existing climate technologies—however, many of these technologies are not currently cost competitive, and only 10 to 15 percent are considered commercially mature.[7] As markets evolve and new climate technologies become commercialized, leaders should remain flexible in their decarbonization plans and capital allocation, with an eye toward cost savings and value creation.

— *Use supply chain partnerships to accelerate the next wave of emissions reductions.* Companies can also build long-term strategic partnerships with technology providers to help them grow and capture economies of scale, which can, over time, lead to cost reductions on emerging climate technologies for the buyers. For example, electrolyzers, which are key to producing clean hydrogen, are increasingly in demand. Proactive companies are partnering with electrolyzer providers to secure long-term supply at competitive prices.

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[5] Based on net present value.
[6] For more, see Laura Corb, Anna Granskog, Tomas Nauclér, and Daniel Pacthod, "Full throttle on net zero: Creating value in the face of uncertainty," McKinsey, September 20, 2023; and Peter Crispeels, Mikael Robertson, Ken Somers, and Eric Wiebes, "Outsprinting the energy crisis," McKinsey, April 21, 2022.
[7] International Energy Agency; McKinsey Sustainability Insights.

Launch net-zero offerings

Demand for net-zero offerings is surging—so much so that there could be shortages in certain sectors. According to our analysis, in steel, cement, and chemicals, for example, there could be up to a 60 percent supply–demand gap in 2030 for net-zero products. While such shortages could temporarily slow the net-zero transition, there is an opportunity for fast-moving players to capture the value of full decarbonization through value-based pricing strategies (moving away from a "cost plus" approach to one that factors in the value of decarbonization, for example) or earning a price premium on green goods and services. In some sectors, we're already seeing green premiums of 15 to 30 percent. In many markets, particularly in Europe, the ability to sell excess carbon allowances further strengthens the business case for green offerings. According to our analysis of green steel, for instance, producers in Europe that combine a green premium with the sale of excess carbon allowances could earn a 30 percent return on capital employed by 2035. Similar opportunities exist for many other products and services.

Another way to build the business case for net-zero offerings could be to use a marginal abatement revenue and cost curve (MARCC) on a product level. A MARCC, a new concept we have developed, shifts the discussion of offering net-zero goods and services from *only* cost to the total value of the opportunity. To create a MARCC, we start with the cost to decarbonize a product and then add the green premiums that we anticipate the net-zero version of the product can earn. Looking at just the costs of net-zero products, for example, shows that, on average, net-zero products incur an overall cost that is 10 to 30 percent higher than their more carbon-intensive counterparts.[8] These figures suggest that creating net-zero offerings would erode margins and destroy value for companies. However, a cross-sector MARCC for net-zero offerings, which captures the potential revenue upside of green premiums, reveals that incumbents can reduce emissions by up to 80 percent and create value (Exhibit 3).

Launching net-zero offerings successfully is not a given. A thorough market analysis and strategy is needed to identify the markets where net-zero products could generate green premiums, particularly if leaders set ambitious carbon abatement goals or foresee large capital expenditures. Companies often need to move quickly in markets where there are supply shortages, creating new markets and product categories, and working with partners across the value chain to maximize carbon reductions. However, incumbents that have existing production models, familiarity with a customer base, and experience with supply chains should have a leg up. The following are specific actions companies can take to help ensure a successful product launch:
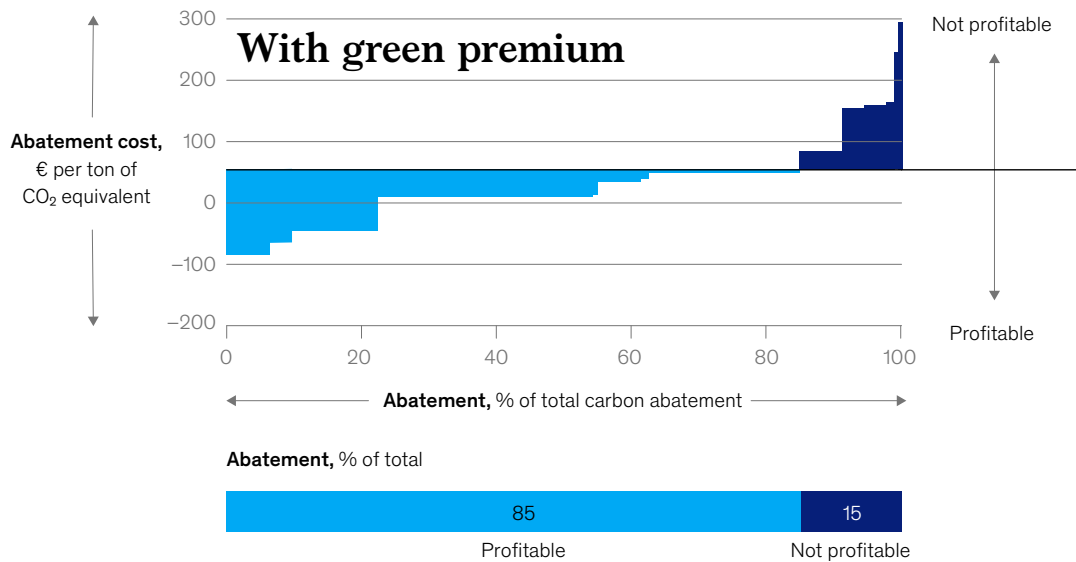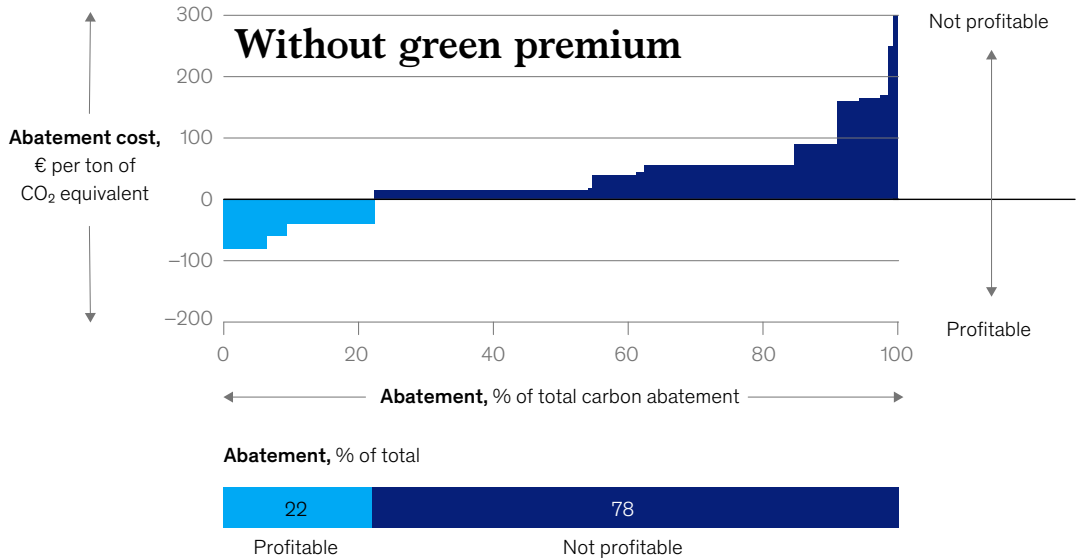
— *Identify high-potential net-zero markets.* Leading companies start with a key question: What net-zero offerings can we provide in markets where there will be structural supply shortages for the foreseeable future?

— *Create new markets and rethink pricing strategies.* Many players who have successfully launched net-zero products have created and shaped new markets. They have achieved this in part through CEO-to-CEO sales (versus selling through the procurement organization). In these CEO-level conversations, leaders can secure early production offtakes and earn a price premium. For example, leadership at SSAB, which is developing fossil fuel–free steel made with hydrogen, has partnered with automotive incumbents to gain early sales. Companies that have identified new opportunities for greener products, like SSAB, have been able to capture a 20 to 30 percent premium.

— *Secure green supplier partnerships for Scope 2 and 3 emissions.* Producing net-zero goods requires reducing emissions across the supply chain (Scope 2 and 3 emissions). Developing long-term partnerships with suppliers to derisk procurement and substitute high-emissions inputs with low-emissions inputs is key, as well as ensuring carbon transparency across

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[8] *The net-zero transition: What it would cost, what it could bring*, McKinsey Global Institute, January 2022.

Exhibit 3

Companies can build the business case for net-zero offerings by factoring a green premium into costs curves.

Illustrative marginal abatement revenue and cost curve for net-zero offerings

Without green premium

Abatement cost, € per ton of CO_2 equivalent

Not profitable

Profitable

Abatement, % of total carbon abatement

Abatement, % of total

22	78
Profitable	Not profitable

With green premium

Abatement cost, € per ton of CO_2 equivalent

Not profitable

Profitable

Abatement, % of total carbon abatement

Abatement, % of total

85	15
Profitable	Not profitable

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the value chain. For example, to decarbonize electricity at its plants and realize its goal of delivering net-zero products, chemical company BASF has worked with energy developers to support the construction of large offshore wind farms.

— *Tap financial partners and asset-level project financing.* To transform the core business around new net-zero offerings, many companies will need to build new plants and facilities. Creating this infrastructure could require billions of dollars in investment. Companies can rethink how they access funding. To finance the construction of its first plant project, H2 Green Steel has raised more than €1.8 billion in equity from a broad group of investors.[9] Energy company Ørsted has financed its transition to becoming the world's leading offshore-wind power producer through a strategy that includes operational cash flows, debt issuances, investment partners, and risk management.[10]

— *Finance new offerings by improving margins in the core.* New net-zero offerings can come with uncertainty in still-evolving markets. A stable and cash-generating core can help keep the business foundation stable while transitioning to the new offerings. To maximize this potential, companies can look to cut costs and improve margins in the core business.

— *Execute fast to capture premiums.* Green premiums won't be around forever. We anticipate that there will be shortages of green products in multiple industries through 2035 (for example, steel, copper, plastics, and cement). Getting ahead of value on the cost curve could set companies up for green premiums in the short term and robust market share going forward. We are already seeing green premium opportunities in steel and recycled plastics. For example, high-quality recycled plastics reached an average premium of up to 60 percent over virgin plastics.[11] One way to move quickly on new offerings is to do "parallel scaling"—that is, initiate additional growth waves before the first one is complete.[12]

Enter new value pools

The net-zero transition can generate vast business-building opportunities for organizations. Since 2015, six decacorns and 135 unicorns have been created within the sustainability space.[13] However, building green businesses isn't just a game for start-ups. As markets transition to green offerings, new value pools will emerge—in many cases, upstream or downstream of a company's current value chain position. There is an opportunity for incumbents to enter these new value pools, provided they move quickly and strategically.

Incumbents might not be naturals at building disruptive ventures. However, in recent years, we have seen incumbents flex a few advantages in building new green businesses, from securing strategic partnerships to attracting low-cost financing, while also embracing the speed and agility of a start-up.

That said, entering new value pools has challenges. It often requires, for example, a new set of capabilities and new types of risk management. Companies can consider a set of actions to mitigate risks while scaling new ventures:

— *Use the core business to secure captive demand.* A critical hurdle for new ventures is to find early-stage customers and partners to secure demand. Maersk, for example, has taken a few steps to create both supply and demand for green shipping fuels. The company has announced plans to invest in a green ammonia facility, along with ferry operator DFDS, and recently set up a green methanol company.[14] Such ventures support the company's decarbonization ambitions and position the organization to gain market share in a nascent but growing market.

9 "H2 Green Steel raises €1.5 billion in equity to build the world's first green steel plant," H2 Green Steel news release, September 7, 2023.
10 "Ørsted's renewable-energy transformation," McKinsey, July 10, 2020; "Funding strategy," Ørsted, accessed October 4, 2023.
11 Marcelo Azevedo, Anna Moore, Caroline Van den Heuvel, and Michel Van Hoey, "Capturing the green-premium value from sustainable materials," McKinsey, October 28, 2022.
12 For more, see Rob Bland, Anna Granskog, and Tomas Nauclér, "Accelerating toward net zero: The green business building opportunity," McKinsey, June 14, 2022.
13 McKinsey analysis of PitchBook and HolonIQ data.
14 "Maersk backs plan to build Europe's largest green ammonia facility," Maersk press release, February 23, 2021; Johannes Birkebaek and Jacob Gronholt-pedersen, "Shipping group Maersk sets up green methanol company," Reuters, September 14, 2023.

Making strategic moves now could be the difference between gaining market share and being stuck with higher costs for entry later on.

— *Secure low-cost financing based on secured demand.* Once captive demand is secured, established players can use their existing network and reputation to help their venture attract low-cost funding. For example, in 2017, Volvo Cars established Polestar as an independent electric-vehicle brand, leveraging its existing assets, capabilities, and customer and supplier relationships to swiftly develop a fully electric stand-alone brand. By utilizing platforms and technologies from Volvo Cars, Polestar was able to adopt an asset-light business model and efficiently create its first models. Volvo Cars' balance sheet, liquidity, and cash position can provide support to Polestar while simultaneously executing its own plans to transition into a fully electric-car company by 2030.

— *Run a stand-alone new business and recruit new talent.* Incumbents can consider providing assets, capabilities, and relationships to a new business. At the same time, incumbents should also consider keeping new ventures at arm's length operationally to establish a fast-paced, agile culture and operating model, while still enabling additional equity to be added by partners if needed. Additionally, companies can look to set up their ventures with new capabilities and talent to succeed, as new parts of the value chain might require new areas of expertise. These moves can help the new business scale faster and rapidly adapt to emerging opportunities.

Now is the time to strike

Companies, for good reason, may hesitate to commit resources without complete clarity on their business case for decarbonization. However, our perspective is that now is the time to strike. Cost curves for green technologies are moving down across industries, and as we discussed earlier, some green premiums may have a shelf life. Making strategic moves now could be the difference between gaining market share and securing profitable growth, versus being stuck with stranded assets and higher costs for entry later on.

The three areas of action we have outlined are not a one-size-fits-all model, and implementing all three at once could indeed be a steep task. Leaders can prioritize based on factors including sector supply–demand dynamics, value chain opportunities, cost analysis, commercially available climate technologies, and evolving policy.

To decarbonize operations, leaders can swiftly act on the most cost-efficient moves that still help achieve decarbonization targets. As we noted earlier, launching net-zero products and services ahead of the competition has the potential to earn green premiums, a source of capital for scaling. When to enter a new value pool may depend on the pace of technological advancement, as well as regulatory changes. While it is impossible to predict such developments, companies would be wise to anticipate change in these areas and be prepared to jump on opportunities—before the competitive landscape gets crowded. For example, last year's Inflation Reduction Act in the United States, which

allocates about $370 billion for climate and energy spending, and multiple policy packages under the umbrella of the European Green Deal, could accelerate pockets of the net-zero economy and facilitate access to funding.

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The net-zero transition presents challenges for incumbents, particularly those in hard-to-abate sectors. At the same time, established companies have a unique opportunity to decarbonize and create value. While there is no one universal approach, making timely moves across three key action areas could help companies create a competitive advantage in the years to come.

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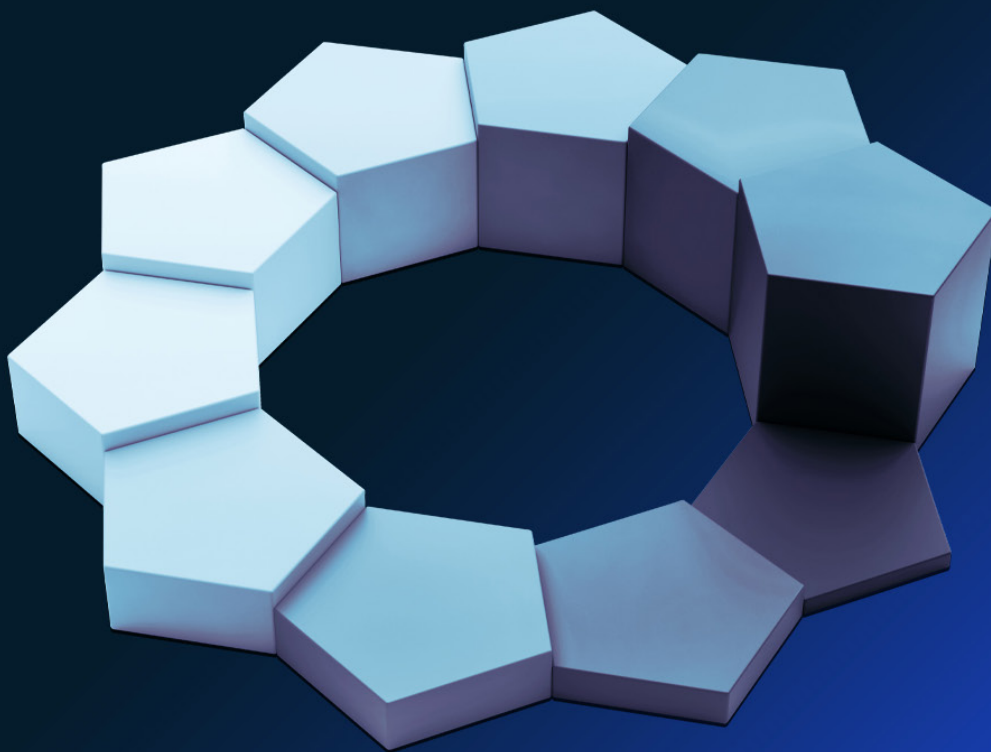
The ten rules
of growth

Empirical research reveals what it takes to generate
value-creating growth today.

by Chris Bradley, Rebecca Doherty, Nicholas Northcote, and Tido Röder

One of the surest signs of a thriving enterprise is robust and consistent revenue growth. That has not been easy to accomplish over the past 15 years. Corporate growth slowed dramatically after the global financial crisis, with the world's largest companies growing at half the rate they did before 2008. Furthermore, increases in capital investments outstripped revenue expansion, compressing returns. Now, with a slowing global economy, rising inflation, and geopolitical uncertainty, growth that delivers profits and shareholder value may become more elusive still.

To buck these trends, business leaders need to follow a holistic growth blueprint consisting of three core elements: a bold aspiration and accompanying mindset, the right enablers embedded in the organization, and clear pathways in the form of a coherent set of growth initiatives. To help our clients identify these pathways, we conducted an in-depth study of the growth patterns and performance of the world's 5,000 largest public companies over the past 15 years.[1]

The research reaffirmed that revenue growth is a critical driver of corporate performance. An extra five percentage points of revenue per year correlates with an additional three to four percentage points of total shareholder returns (TSR)—the equivalent of increasing market capitalization by 33 to 45 percent over a decade. Firms that managed to grow faster and more profitably than their peers during our study period did even better, generating shareholder returns six percentage points above their industry averages.

However, relatively few companies could boast such results. A typical company grew at a measly 2.8 percent per year during the ten years preceding COVID-19, and only one in eight recorded growth rates of more than 10 percent per year (Exhibit 1).

Healthy growth has also been hard to sustain. When we compared our sample's performance in the first half of the last decade with the second half, only one in three companies that were in the top quartile of growth between 2009 and 2014 managed to maintain that rate in the subsequent five-year period. Among companies that grew predominantly organically, the rate was even lower, at one in four. This suggests a strong tendency for growth to revert to the mean.

A typical company grew at a measly 2.8 percent per year during the ten years preceding COVID-19, and only one in eight recorded growth rates of more than 10 percent per year.

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[1] Our sample consisted of the 5,000 largest publicly listed companies by revenue globally in 2019. Companies with unreliable or missing segment data were excluded from the sample. We studied the performance of these companies from 2005 to 2019, the 15 years prior to the COVID-19 crisis.

Exhibit 1

Growth is hard for companies to achieve.

Companies by revenue growth and growth approach, 2009–19, CAGR[1] %

All companies[2]

More companies

↕

Fewer

13%		
Share of companies that grew at a rate higher than 10%		

−14
Lowest growth

0   2.8
        Median

22
Highest growth

Predominantly organic[3] growers

6%

1.4

Predominantly inorganic[3] growers

23%

5.4
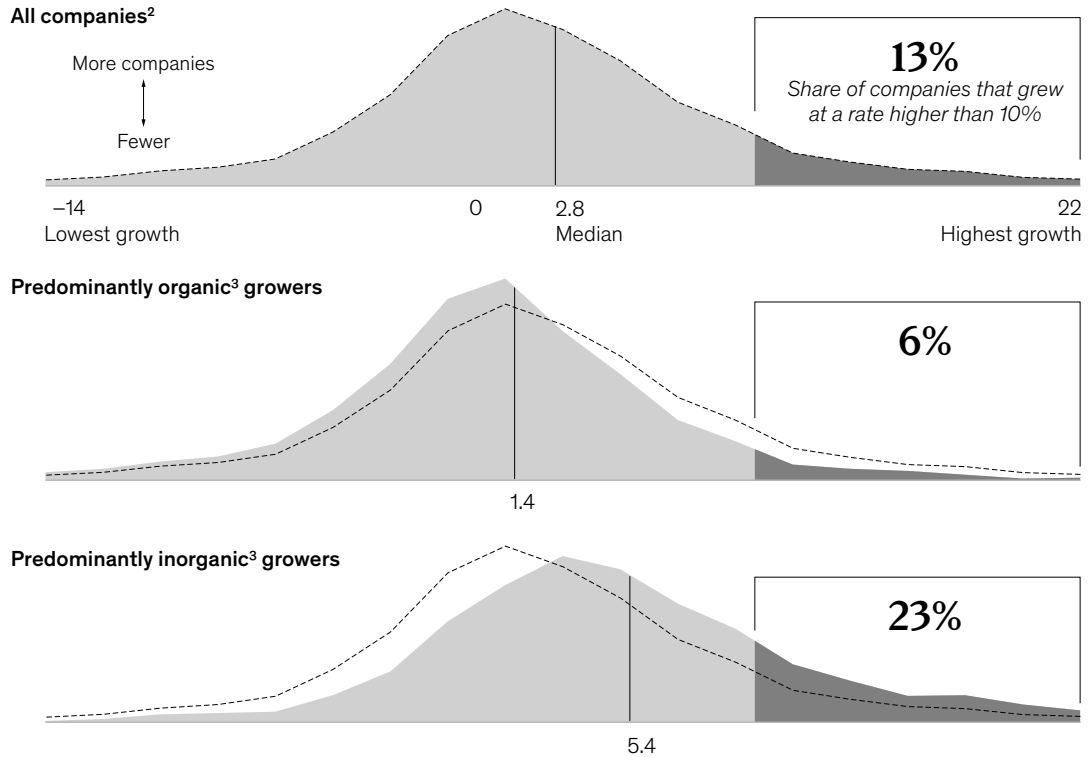
[1] Nominal growth in dollars.

[2] Largest 5,000 publicly listed companies by revenue in 2009 with revenue and goodwill data from 2009 to 2019; 3,931 companies charted.

[3] Companies were classified as inorganic or organic growers, based on their M&A deal data, with organic defined as <1% of market capitalization acquired from 2010 to 2019. Companies with missing deal data were classified based on their net positive change in goodwill relative to starting invested capital (<15% = organic). Of the companies in the analysis, 59% were classified as organic growers, 41% as inorganic growers.

Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global; Strategy Analytics by McKinsey

Ten rules of value-creating growth

To understand how organizations can try to overcome these obstacles, we studied the growth patterns of the sample companies through various lenses. Our findings suggest ten imperatives that should guide organizations seeking to outgrow and outearn their peers.

1. *Put competitive advantage first.* Start with a winning, scalable formula.

2. *Make the trend your friend.* Prioritize profitable, fast-growing markets.

3. *Don't be a laggard.* It's not enough to go with the flow—you need to outgrow your peers.

4. *Turbocharge your core.* Focus on growth in your core industry—you can't win without it.

5. *Look beyond the core.* Nurture growth in adjacent business areas.

6. *Grow where you know.* Focus on growing where you have an ownership advantage.

7. *Be a local hero.* Commit to winning on the home front.

8. *Go global if you can beat local.* Expand internationally if you have a transferable advantage.

9. *Acquire programmatically.* Combine healthy organic growth with serial acquisitions.

10. *It's OK to shrink to grow.* Ruthlessly prune your portfolio if you need to.

We have quantified what it takes to master each rule, as well as the extent to which excelling at each improves corporate performance. The resulting "growth code" allows you to benchmark your growth performance and set the bar for your next strategy. The more rules you master, the higher your reward. But the bar is high—fewer than half of the companies in our sample excelled at more than three of the ten rules, and only 8 percent mastered more than five (Exhibit 2).

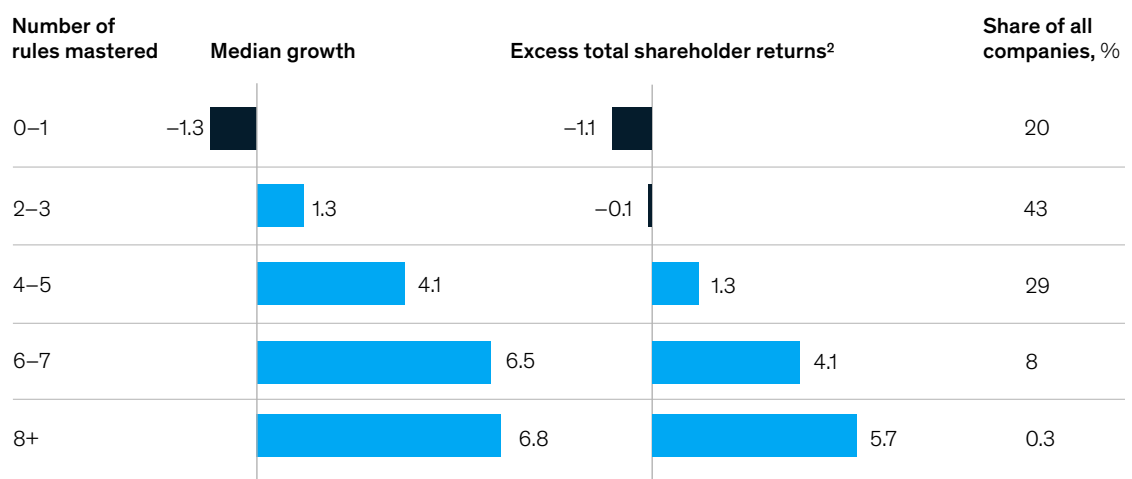## Put competitive advantage first

A high return on invested capital (ROIC) indicates a business model powered by a competitive advantage. Companies that generate stronger returns attract and deploy more capital, a virtuous cycle that enables them to grow faster and generate still higher returns (Exhibit 3). While some firms forgo profits for a time in pursuit of growth (with Amazon being perhaps the best known), the far more typical, and practical, approach is to establish a distinctive business model and then scale it.

For example, a department store chain had a business model—brand-name bargains in stores with low inventories and costs—that in 2007 delivered 5 percent higher ROIC than its cost of capital. The management team used this advantage

Exhibit 2

The more rules you master to create growth for your organization, the better.

Revenue growth and shareholder returns by rules mastered, 2005–09 to 2015–19,[1] CAGR %

Number of rules mastered	Median growth	Excess total shareholder returns[2]	Share of all companies, %
0–1	−1.3	−1.1	20
2–3	1.3	−0.1	43
4–5	4.1	1.3	29
6–7	6.5	4.1	8
8+	6.8	5.7	0.3

[1] Largest 3,000 publicly listed companies by revenue in 2018 with an average revenue of >$1 billion in 2005–09, a reliable business segment, and TSR data; 1,621 companies charted.
[2] Excess total shareholder returns calculated as the company's annual shareholder returns less the median return in its primary industry.
Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

Exhibit 3

Markets reward strong business models.

Invested capital growth and shareholder returns by competitive advantage, 2005–09 to 2015–19,[1]
CAGR %

Starting competitive advantage[2]	Median growth in invested capital over the next decade, CAGR %		Median revenue growth rate over the next decade, CAGR %		Median shareholder returns over the next decade, CAGR %
<−2	0.4		0.9		4.5
−2 to 0	1.9		1.6		6.0
0 to 2	3.4		2.2		6.6
2 to 5	3.3		2.2		6.4
>5	5.3		3.0		8.2

[1] Largest 3,000 publicly listed companies by revenue in 2019 with an average revenue of >$1 billion in 2005–09, a reliable business segment, and TSR data; 1,621 companies charted.
[2] Average return on invested capital less weighted average cost of capital in 2005–09, a proximate measure of competitive advantage or economic surplus captured by the company. Shown in percentage points.
Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

to expand the store network from approximately 900 locations that year to more than 1,500 in 2019. As a result, revenue grew by 9 percent per year and the company generated an impressive 29 percent in annual shareholder returns.

Make the trend your friend

This age-old axiom holds especially true today as the acceleration of pre-COVID-19 trends widens the gap between corporate winners and laggards. Over the past 15 years, companies that expanded in ways that maintained or increased their exposure to fast-growing, profitable segments generated one to two percentage points of additional TSR annually. This suggests that organizations already in attractive markets should keep investing to stay ahead of the pack. Firms facing market headwinds, on the other hand, may need to aggressively reallocate

their resources toward tailwinds, potentially staging large-scale pivots.

The selection of markets needs to be precise, however. In their best-selling book, *The Granularity of Growth*, our colleagues observed that many "growth" sectors have sluggish subindustries, while relatively "mature" sectors include rapidly growing segments. Take the telecommunications services industry, which grew at 1.6 percent per year over the period of our analysis. The fastest-growing company in the sector increased its revenues by 21 percent annually, while the slowest contracted by 9 percent per year. This dichotomy reflects the influence of acquisitions and divestitures, as well as portfolio choices—that is, varying degrees of exposure to segments with different rates of growth. The cloud services category is growing faster than voice services, for

example, and the growth rates of each category vary widely by country.

Don't be a laggard

Outgrowing your industry implies a strong business model—an advantage rewarded by capital markets whether you're in a fast- or slow-growing industry. Furthermore, companies that manage to win market share away from competitors are likely to beat the growth expectations reflected in their share price, unlocking even stronger returns.

Consider this tale of two retail companies, both of which grew at 4 percent a year between 2007 and 2017 but in different segments. A home improvement retailer achieved its growth in a category that grew at 3 percent annually, and the company generated annual TSR of 17 percent. A sports apparel company, in contrast, was outpaced in growth by its segment peers by one percentage point annually, and its shareholder returns were more lackluster at 1 percent per annum. While many factors could have affected these two companies' stock price aside from their growth rates, our analysis suggests that outgrowing your industry is worth, on average, an additional five percentage points of shareholder returns per year. Among companies that managed to achieve this while being more profitable than their peers, this figure was one percentage point higher still.

Turbocharge your core

When developing a growth strategy, often the first question on a CEO's mind is, "Where should that growth come from?" To help find the answer, we categorized revenue increases among our sample companies into growth within the core industry (their largest industry segments at the start of the study period), in secondary industries (smaller but still significant revenue contributors in the first year of our time frame), and in new industries (segments where the companies did not initially have a presence).

This decomposition reinforced the importance of a healthy core business. Put simply, it is improbable that you can achieve strong growth if the core isn't flourishing. Only one in six of the companies in our data set with core-segment growth rates below their industry median managed to achieve overall corporate growth rates above those of their peers. Therefore, finding a way to unlock growth in the core needs to be a top priority. For some organizations, this may require a wholesale revamp of the operating model. Others may need to identify granular pockets with growth potential in their existing markets or new ones and reallocate resources to them from more stagnant segments.
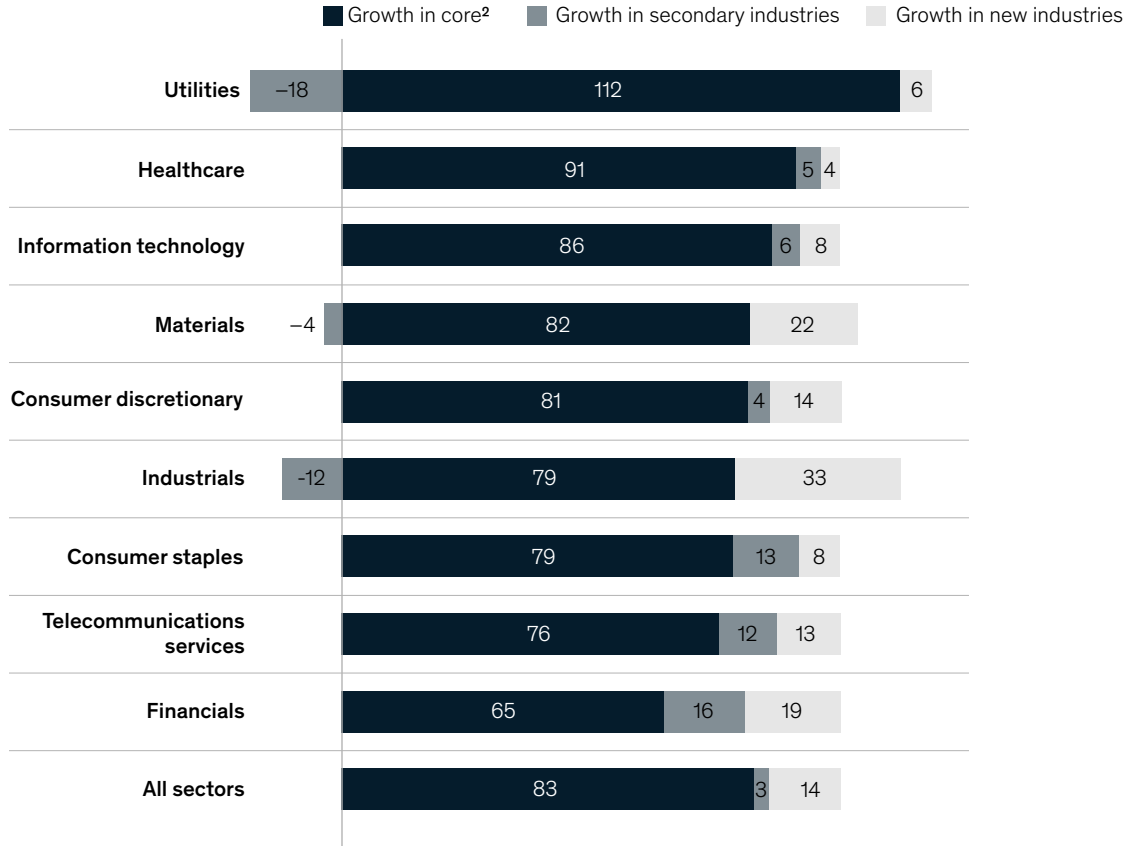
Look beyond the core

Our study found that, on average, 80 percent of growth comes from a company's core industry and the remaining 20 percent from secondary industries or expansion into new ones (Exhibit 4). However, these figures varied among sectors during our study period. For example, industrial companies generated a full third of their growth from new industries, while utilities consolidated toward their core business areas more than other sectors.

Companies that grew into adjacent industries generated, on average, an extra 1.5 percentage points per year of shareholder returns above their industry peers. One such company was a global automotive tire supplier that diversified into brake and safety system technology, powertrains, and vehicle connectivity and information systems. Together, these segments now account for approximately 75 percent of the company's total revenue, and its growth exceeded that of its peers by 2.4 percentage points per year. But examples of this strategy abound. The current transition to net-zero carbon emissions, for instance, presents many promising opportunities for companies in chemicals, construction, and other industries to expand into fast-growing adjacencies such as recycled plastics, sustainable construction

Exhibit 4

Only 20 percent of most organizations' total growth comes from beyond the core.

Share of revenue growth by growth type, 2005–09 to 2015–19,[1] %

■ Growth in core[2]   ■ Growth in secondary industries   ☐ Growth in new industries

Utilities	−18	112	6
Healthcare		91	5 4
Information technology		86	6 8
Materials	−4	82	22
Consumer discretionary		81	4 14
Industrials	-12	79	33
Consumer staples		79	13 8
Telecommunications services		76	12 13
Financials		65	16 19
All sectors		83	3 14

Note: Figures may not sum to 100%, because of rounding.

[1]Largest 3,000 publicly listed companies by revenue in 2018 with an average revenue of >$1 billion in 2003–07, a reliable business segment, and TSR data; 1,595 companies are charted.

[2]We allocated each reported business segment to one of 130 industries and then used the following definitions: the core industry was the one with the largest share of revenue at the start of the analysis period; secondary industries were all noncore industries in a company's portfolio at the start of the analysis period; and new industries were those that a company entered during the analysis period.

Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

materials, or meat substitutes, as demand for their legacy products declines.

For companies with fast-growing core businesses, expanding into new areas can help position their portfolios ahead of future trends. Those with slow-growing cores, on the other hand, can use adjacent businesses to offset slow growth elsewhere.

Grow where you know

As we saw, diversifying into adjacent segments can be a valuable growth strategy, but how similar should these segments be, both to the core and to each other? We used a simple measure: industries are similar if they often appear together in corporate portfolios (for example, cable and satellite together with broadcasting, or aerospace and defense with industrial machinery).
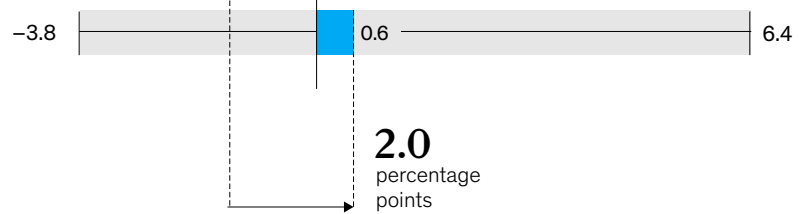
Exhibit 5

Companies that grew into similar adjacencies outperformed their peers.

Excess total shareholder returns[1] by similarity of new growth areas, 2005–09 to 2015–19,[2] %

Entered nonsimilar adjacency

20th percentile	Median	80th percentile
−6.9	−1.4	3.2
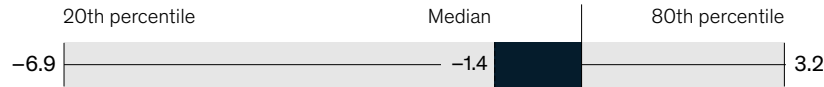
Entered similar adjacency[3]

−3.8   0.6   6.4

2.0
percentage
points

[1]Excess total shareholder returns calculated as the company's annual shareholder returns less the median return in its primary industry.
[2]Largest 3,000 publicly listed companies by revenue in 2018 with an average revenue of >$1 billion in 2005–09, a reliable business segment, and TSR data; 1,621 companies charted.
[3]Top-quartile industry similarity score: we calculated industry similarity based on how frequently two industries occur together in corporate portfolios.
Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

Our analysis shows that companies growing in a way that increases the similarity of their portfolios earn, on average, an additional one percentage point of TSR per annum. Those that expand into new industries can expect an additional two percentage points if the new industry is similar to their core (Exhibit 5).

Why does similarity matter so much? We believe it is a proximate measure of whether a company is a natural (or best) owner of an asset and thus able to generate optimal value from owning or operating the business. This value could derive from synergies with other businesses the company owns, distinctive technical or managerial capabilities, proprietary insights, or privileged access to capital or talent. Take the example of General Mills' purchase of Pillsbury from Diageo. There was little overlap between Diageo's core business and Pillsbury's, while Pillsbury's and General Mills' businesses share many of the same

competencies and assets. This enabled General Mills to reduce costs in purchasing, manufacturing, and distribution, and thereby to raise operating profit by roughly 70 percent.

Be a local hero

Industry (along with moves up and down the value chain) is only one aspect of the "where to grow" issue. The other is geography. Just as it is hard to achieve overall growth if your core business isn't thriving, it is unlikely that you can raise your growth trajectory without winning in your local market.[2] In fact, fewer than one in five of the companies in our sample that had below-median growth rates in their local region managed to outgrow their peers. Many members of this minority are companies in slow-growing regions, such as Japan, that offset lethargic local growth with aggressive international expansion. An air-

[2] Defined as the largest region in the portfolio by revenue. We allocated each business segment in a corporate portfolio to one of 12 geographic regions. The region that accounted for the largest share of revenue at the start of the analysis period is termed the local or home region, while all other regions are classified as international regions.

conditioning and refrigeration manufacturer, for example, managed to offset slow growth in Japan by successfully expanding to North America and China.
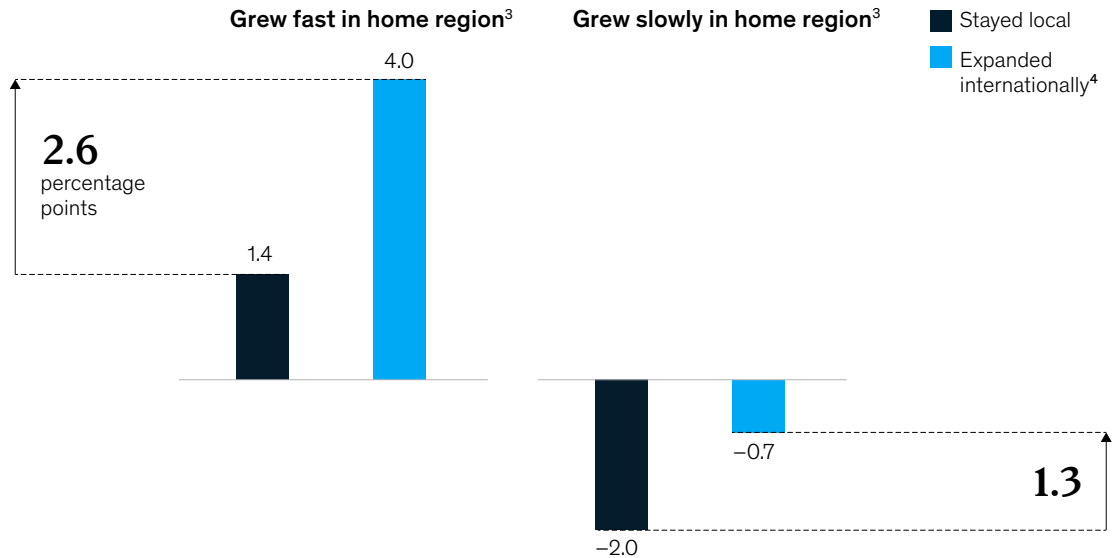
Go global if you can beat local

Approximately half of the total growth by companies in our sample came from geographies outside their home regions—an aggregate number fueled by Japanese and European companies that relied on international markets to compensate for slow growth at home. In faster-

growing areas, such as China and North America, international regions accounted for closer to 30 percent of total growth.

Companies that expanded internationally generated 1.9 percentage points more annual TSR than their industry peers, but those with healthy growth in their home markets benefited more than those merely treading water at home. The former category generated an additional 2.6 percentage points of annual shareholder returns through geographic expansion, while those that struggled locally gained only 1.3 percentage points—not

Exhibit 6

Organizations with fast growth in the home region can benefit most from international expansion.

Excess total shareholder returns[1] by speed of growth and expansion location, 2005–09 to 2015–19,[2] %

Grew fast in home region[3]　　Grew slowly in home region[3]　　■ Stayed local

■ Expanded internationally[4]

4.0

2.6 percentage points

1.4

−0.7

−2.0

1.3

[1] Excess total shareholder returns calculated as the company's annual shareholder returns less the median return in its primary industry.

[2] Largest 3,000 publicly listed companies by revenue in 2018 with an average revenue of >$1 billion in 2005–09, a reliable geographic segment, and TSR data; 1,372 companies are charted.

[3] We defined a company's home region as the region (n = 12) with the largest share of revenue at the start of the analysis period; all other regions were classified as international regions. Grew slowly in home region was defined as growing below the median home region growth rate of all companies in the sample set (1.8% pa).

[4] We classified a company as expanded globally if its international growth in the ten years from 2005–09 to 2015–19 amounted to >20% of 2005–09 (starting) revenue. The companies were distributed across the four categories as follows: 29% were classified as stayed local and grew fast in home region, 34% as stayed local and grew slowly, 21% as expanded internationally and grew fast, and 16% as expanded internationally and grew slowly.

Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

enough to offset the performance drag from the weak home market (Exhibit 6).

To succeed at international expansion, it's critical to have a clear source of competitive advantage that is transferable across regions. Without it, foreign companies will probably struggle to compete with incumbents that better understand the local context. This reality may explain why companies that grow strongly at home benefit so much more from global expansion—they are more likely to have winning business models, aspects of which can be transferred to new regions.

The case of a high-performing European manufacturer of agricultural and municipal vehicles illustrates the benefit of venturing abroad from a strong home base. The company leveraged its equipment's stellar reputation to expand into the United States, where it continued to generate market-beating returns. On the other hand, when a European grocer that struggled in its home market

expanded aggressively into Latin America, its TSR trailed that of its peers by seven percentage points per annum over the subsequent decade.

Acquire programmatically

Mergers and acquisitions account for approximately one-third of the revenue growth among companies in our data set. McKinsey's long-standing research into M&A strategies has repeatedly reaffirmed that it is not the total value of transactions but the deal pattern that drives shareholder returns. After segmenting companies into four categories, our colleagues found that programmatic acquirers—those that did at least two small or medium-sized deals a year along the same theme—outperformed peers using other M&A approaches.

We wondered whether programmatic acquirers outperform organic growers simply because they grow faster, so we extended the analysis to control

Exhibit 7

Programmatic acquirers outperform, even when the analysis controls for growth.

Excess total shareholder returns[1] by deal pattern, 2009–19,[2] %

Growth pattern[3]	Revenue CAGR			All companies	
	<0%	0–5%	>5%		
Programmatic M&A	−1.0	2.8	5.1		2.1
Organic only	−2.7	0	1.5	0	
All other M&A	−3.2	0.2	1.4	−0.2	
Large deal M&A	−3.9	−0.4	2.3	−0.8	

[1] Excess total shareholder returns calculated as the company's annual shareholder returns less the median return in its primary industry.

[2] Largest 2,000 publicly listed companies by revenue in 2018 with reliable M&A and TSR data; negative-growth companies not shown but same pattern holds; 1,990 companies are charted.

[3] Large deal was defined as 1 or more deals with deal value >30% of acquirer market capitalization (MCAP); programmatic as more than 2 deals pa; none as >30% of acquirer MCAP; organic as <2% of MCAP acquired over the period; 14% of companies were classified as programmatic, 26% as organic only, 16 percent as large deal, and 44% as all other.

Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

for growth rates—in other words, comparing the performance of companies with different M&A strategies but similar growth rates. We found that programmatic acquirers still outperformed their organic peers. This suggests that even when companies that grow purely organically match the growth rates of their acquisitive peers, they are less likely to generate peer-beating shareholder returns (Exhibit 7).

Today, many companies with legacy business models are using programmatic M&A to both digitize and enlarge their businesses. Take the example of a European publishing group that made more than 60 acquisitions over the past decade to expand its portfolio into digital media offerings: digital assets now account for more than 70 percent of its revenue.

Why is programmatic M&A so powerful? First, practice makes perfect: programmatic acquirers build organizational capabilities and establish best practices across all stages of the M&A process, from strategy and sourcing to due diligence and integration planning. Second, those that pursue large deals often need to overpay to secure the asset and then must successfully integrate two businesses of similar size—something that's notoriously difficult to get right. Finally, doing many small deals enables companies to gain access to new markets or consolidate fragmented ones without the risk of "betting the house."

It's OK to 'shrink to grow'

Many management teams feel pressure to deliver consistent growth, which is understandable: the 10 percent of companies in our sample that

Exhibit 8

For companies that don't have a consistent growth engine, periodic pruning of slow-growing parts of a portfolio is the best alternative.

Excess total shareholder returns[1] by growth profile, 2009–19, %

Consistent growers[2]	Shrink to grow	Inconsistent growers	Large deal
7%	4%	−1%	−2%

Excess total shareholder returns

Note: Consistent growers accounted for 10% of all companies, shrink to grow 14%, inconsistent growers 68%, and large deal 11%.

[1] Excess total shareholder returns were calculated as the company's annual shareholder returns less the median return in its primary industry.

[2] We analyzed the revenue growth of the largest 3,000 companies in 2019 from 2010 to 2020. Each company was classified into one of four categories: Large deal are those with a single year when revenues grew by 50%; shrink to grow are not large deal, had one or two years with net divestitures (shrunk revenue by more than 5%), and grew in at least all but 2 of the other years. Consistent growers were not large deal or shrink to grow, and grew in 7 or more years of the analysis period; all others were inconsistent.

Source: Corporate Performance Analytics by McKinsey; regulatory filings; S&P Global

grew for seven of the ten years between 2010 and the end of 2019 strongly outperformed their peers. But suppose you don't have this consistent growth engine? Statistically, the worst thing you can do is try to buy growth with a "big bang" acquisition. Your best option is to periodically prune back by divesting slow-growing parts of your portfolio and reinvesting the proceeds into new areas (Exhibit 8).

Companies in our sample that used such shrink-to-grow strategies divested assets in one or two years but grew consistently during the other years. They managed to generate five percentage points more annual excess TSR than inconsistent growers and large-deal acquirers. The key is not to confuse increasing scale with value-creating growth. For example, one Australian conglomerate has consistently divested less attractive parts of its

portfolio, such as insurance, and put the proceeds into growth opportunities. Its shareholders have been handsomely rewarded, with a TSR of more than 10 percent per year from 2009 to 2019.

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All business leaders have cost benchmarks. Now you have a growth benchmark, too. However, mastering the ten rules of value-creating growth is only one part of a holistic growth recipe. Start by developing a clear growth ambition: a quantum of growth that is more than just the momentum of your current businesses. Then develop a coherent set of growth pathways that encompass as many of the rules as possible. Finally, instill the capabilities and operating model to execute with excellence.

Five paths to TSR outperformance

It's hard for companies to significantly beat long-term market TSR, harder still for the largest corporations, and hardest of all in the face of low growth. But industry endowment needn't be destiny.

by Pedro Catarino, Tim Koller, Rosen Kotsev, and Zane Williams

What does it take for large companies to decisively beat market total shareholder returns (TSR) over a decade? To analyze how top performers achieved their success, we studied the 1,000 largest corporations by market capitalization in the United States. In all, we found that long-term TSR out-performers took one of five distinct paths: (1) being in or moving to high-growth markets (or segments of markets), (2) offering new or enhanced products, (3) refreshing their business portfolio, (4) conducting a successful turnaround, or (5) managing their business better than their peers. Some of these paths were more likely to best market TSR outperformance—and being in or moving to growth provided the widest path of all. But growth wasn't the only way to beat long-term market TSR. Strikingly, the same five paths were apparent over each of the three decade-long periods we analyzed.

Methodology: The importance of realistic expectations

To quantify and more clearly frame long-term TSR outperformance, we conducted two analyses. *First*, we looked at the 1,000 largest corporations in the United States by market capitalization, examining how many reached the top decile of ten-year TSR performance over any of three different ten-year periods.[1] Doing so meant beating market TSR by about 20 percent. During those periods, only 11, 15, and 18 percent, respectively, of the top-decile TSR performers were "very large" companies—that is, among the 250 largest companies by market capitalization.

Because so few of the largest companies were among the high-TSR performers, we conducted a *second* analysis, identical to the one for the 1,000 largest companies, that focused just

'Merely' beating market-average TSR by more than 5 percent over a decade still puts large corporations on an extraordinary list: only 23, 28, and 37, respectively, of the 250 largest companies were able to do so in the ten-year periods ending 2012, 2017, and 2022.

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[1] The ten-year periods that ended as of year-end 2012, 2017, and 2022.

on the 250 largest publicly traded US companies. Knowing that very few could best long-term market TSR by about 20 percent, we gave them a lower bar—to beat ten-year market TSR by 5 percent or more. Very few large companies reached even that mark.

The first lesson, therefore, is one of setting expectations. It's not unusual for senior executives of very large corporations, particularly managers who are new to their roles, to pronounce mandates such as "this company will beat market TSR by 10 percent"—or sometimes by an even greater margin. Realistically, however, that goal is rarely attainable. There's a limit, after all, to how much market size a company can ultimately capture, and smaller companies have a lot more room left to grow. When the market or segment in which a company competes isn't growing, smaller companies have much better odds of long-term TSR outperformance: the smaller a company's initial market share, the greater the likelihood that it can beat and *keep beating* investor expectations.

The five paths to outperformance

"Merely" beating market-average TSR by more than 5 percent over a decade still puts large corporations on an extraordinary list: only 23, 28, and 37, respectively, of the 250 largest companies were able to do so in the ten-year periods ending 2012, 2017, and 2022. As well, over the past decade, about 10 percent of large companies that bested market TSR by 5 percent or more were in cyclical industries such as oil and gas or aerospace and defense; decades of research show that cyclical companies will not reliably beat the broader markets when their industry cycles inevitably turn down.

Still, whether or not one considers cyclicality (we conducted both analyses), the results remained stark: there were five distinct paths to substantially beat market TSR (exhibit).
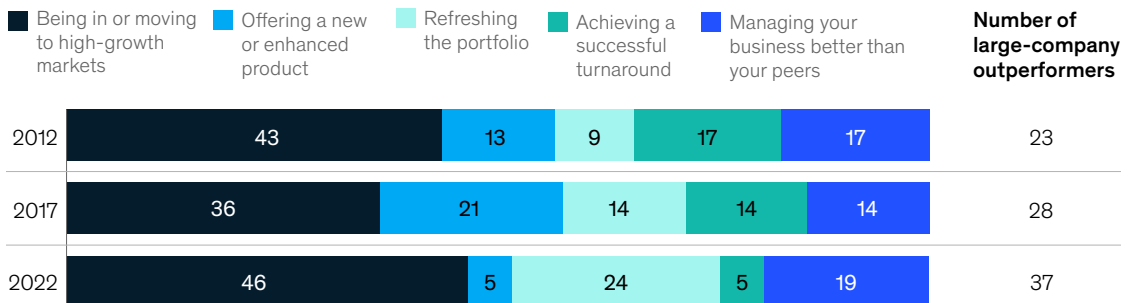
1. Being in or moving to high-growth markets
The widest path to significant TSR outperformance is growth. Many of the companies that took this path

Exhibit

Few of the 250 largest companies beat ten-year market TSR by 5 percent or more.

Distribution of large companies[1] that outperformed 10-year[2] S&P TSR by category and time period,[3] %

	Being in or moving to high-growth markets	Offering a new or enhanced product	Refreshing the portfolio	Achieving a successful turnaround	Managing your business better than your peers	Number of large-company outperformers
2012	43	13	9	17	17	23
2017	36	21	14	14	14	28
2022	46	5	24	5	19	37

[1]250 largest companies by market capitalization, excluding cyclicals.
[2]Time periods are measured as the 10-year periods that ended as of year-end 2012, 2017, and 2022, respectively. "Outperformance" and "outperfomer" for purposes of this analysis are defined as beating, by 5 percent or more, 10-year S&P TSR.
[3]Figures may not sum to 100%, because of rounding.
Source: S&P Capital IQ; Corporate Performance Analytics by McKinsey

started with the good fortune of strong tailwinds, particularly those whose core businesses were in industries such as high tech or that competed in other sectors in which technology could make an outsize difference (as was the case for payment systems in financial institutions). Yet endowment is not destiny; for example, not every semiconductor company was a TSR outperformer. Across industries, the companies that did outperform by taking advantage of tailwinds both executed well in their core business and continued to invest in innovation and improving their business processes. Most important, they relentlessly sought out a high-growth "niche within the niche." For example, rather than settling for providing technology support, one services firm took advantage of a surging demand for cybersecurity. Similarly, while the pharmaceutical sector has generated strong returns for decades, pharmaceutical *suppliers* have recently been a growth dynamo within the broader life sciences industry.

2. Offering new or enhanced products

The second-biggest category of large companies that beat market TSR comprised companies that offered new or enhanced products. We distinguish this second category from "being in or moving to high-growth markets" because the major driver or drivers of outperformance were a small number of specific products (sometimes, only one product) rather than an uplift in a specific business as part of industry-wide trends. Here again, companies in the pharmaceutical industry, along with the biotechnology sector, are instructive. Several companies in these industries introduced breakthrough medicines (for example, for autoimmune diseases or diabetes) for which there were large, eager markets; these new products enabled these large corporations to meaningfully beat broader market TSR.

3. Refreshing the portfolio

A third path to TSR outperformance is to refresh the corporation's portfolio of businesses, tacking toward more value-creating businesses while at the same time not going too far beyond the

organization's core. Companies in this category proactively seek out faster-growing markets where they can build, or practically acquire, a competitive advantage. It's a narrow path; over the last decade-long period we studied, only nine of the 250 largest companies were able to succeed in beating market TSR by 5 percent or more by refreshing their portfolios. Having a proven track record in a core business or businesses was typically a precondition to successfully expanding into new spaces and capturing new pockets of growth. One outperformer, for example, had operated significant publishing and education businesses while also providing financial research. Recognizing emerging trends and businesses for which it was and was not the best owner, the company divested its publishing and education divisions and allocated more resources toward financial research and analytics, which then played an outsize role in value creation. Another prominent example is Microsoft. In 2007, it was the third-largest US company by market capitalization; many of its core products, including Office, Windows, and Xbox, were household names. Yet the company still committed to refreshing its portfolio. In 2008, it began to develop its cloud business; in 2014, new CEO Satya Nadella made clear that the cloud was among the company's highest priorities; and by 2022, Microsoft's "Intelligent Cloud" was firmly in the lead as its largest and most profitable division—and still its fastest growing—as the company moved up to become the second-largest US corporation.

4. Achieving a successful turnaround

A small number of large companies—fewer than 20 percent in each ten-year period (and in the last period studied, fewer than 5 percent)—beat market TSR by more than 5 percent by achieving a successful turnaround. These companies came from a diverse range of industries. Several of them generated large improvements in ROIC through efficiency upgrades and economies of scale. Typically, the turnarounds were extremely rigorous, going far beyond the superficial to substantially improve core operations. Best Buy, for example, ended its European

'Managing your business better than your peers' was the second- or third-largest category of TSR outperformers among each of the ten-year periods. Even so, there were more than twice as many TSR outperformers from a high-growth sector in each period.

operations and Best Buy Mobile stores and focused on dramatically growing revenue from its US stores and operations, including through initiatives such as the "Geek Squad" for in-home support and repair and by more seamlessly matching its online- and physical-store offerings. Or consider a large manufacturer of technology products. The company dramatically upgraded its manufacturing process, shifting from a labor-intensive model to one that was faster, more automated, and highly digitized; by year-end 2022, it had exceeded ten-year market TSR by more than 6 percent.

5. Managing your business better than your peers
Finally, one additional path presented itself for large corporations: superb execution. As hard as it is for a company in a traditional, steady-state industry to gain market share, continue to outperform peers, and, as a result, beat long-term TSR by 5 percent or more, a handful of large caps did just that. Consider the retailer Costco and the insurer Progressive. Neither could avail itself of an industry growth wave, and neither substantially changed its business

portfolio. But they managed their businesses superbly. Execution brought exceptional strategy and distinctive capabilities to life, as reflected by their long-term TSR performance. During the ten-year period ended December 31, 2022, these companies delivered an excess TSR of about 6 and 11 percent, respectively. Over the last ten years, Costco grew almost four percentage points faster than the median for large-cap retail companies. Progressive, for its part, outgrew the insurance industry median by about 5.5 percentage points, continually investing in advanced institutional capabilities such as analytics, consumer experience, and others. Both companies also expanded internationally and benefited from strong customer retention. Indeed, "managing your business better than your peers" was the second- or third-largest category of TSR outperformers among each of the ten-year periods. Even so, there were more than twice as many TSR outperformers from a high-growth sector in each period.

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An examination of three decade-long periods reveals that there are five paths to beating long-term market TSR. Growth is the widest path, though none of the approaches ensure success, and strong strategy and exceptional management are always essential. Indeed, even when everything breaks right, companies should be realistic about the level of sustained TSR outperformance that's attainable. For the largest corporations, beating market TSR over a ten-year time frame by more than 5 percent is a significant achievement indeed.

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What's your superpower? How companies can build an institutional capability to achieve competitive advantage

One capability often sets leading companies apart from the rest. Here's how to build yours.

This article is a collaborative effort by Homayoun Hatami, Brad Mendelson, Michael Park, Liz Hilton Segel, and Rodney Zemmel.

CEOs, just like everyone else, suffer from the paradox of choice. Companies have endless initiatives and plans, all with the promise to "transform" the organization and deliver attractive financial returns. But how is a CEO to prioritize and make choices? Our experience indicates the answer may lie in focusing on the one institutional capability that can separate you from the rest. In a word, CEOs and their companies should look to build a superpower.

Two years ago, a retail giant with a glorious history was just barely surviving. It had made it through the darkest months of the COVID-19 pandemic but was in serious need of a profitable growth path in a disrupted industry. The CFO saw an opportunity in analytics-driven pricing.

With the top team as the driving force, the retailer embarked on a journey to build a world-class analytics capability and radically shift how the company conducted merchandising. It centralized pricing operations, embedded analytics in key parts of the company through a new technology platform, changed the way more

than 600 merchants made pricing and markdown decisions, and trained and certified hundreds of employees on new ways of working. In its first year, the company's new pricing ability produced hundreds of millions of dollars in margin expansion. Even more important, the capability has stuck, and the value continues to roll in.

This company is not alone. Around the world, CEOs are concluding that success in congested, increasingly commoditized markets can be achieved by building a superpower. We've talked with hundreds of leaders and colleagues across all industries. They have shared with us the stories you're about to read, about companies that have made a choice, aligned their resources, and built their chosen superpower to deliver superior economics (and sometimes leapfrog rivals and innovate entire industries). In this article, we'll explain what we mean by an institutional capability, sketch the reasons why building one now is the right move for many companies, and describe how a company can chart a path to building a superpower of its own.

Around the world, CEOs are concluding that success in congested, increasingly commoditized markets can be achieved by building a superpower.

What are institutional capabilities and why are they important?

The term "capability" gets thrown around quite a bit and means different things to different people. Often it refers to individual capabilities—the skills of individual employees and the company's efforts to build those skills through learning and development. But the retailer we described did something well beyond that: it built what we refer to as an *institutional capability*. What do we mean?

Simply put, it's an integrated set of people, processes, and technology that creates value by helping the company consistently do something better than competitors. An institutional capability should derive from the corporate strategy, of course. It must involve work that is integral to the company and the industry; it can't be a gimmick. Done well, such capabilities become a lasting edge, leading to consistent outperformance and growth in competitive advantage over time.

Think of any company that you admire, and you can likely rattle off one or two superpowers that make them uniquely successful. Some excel in a specific area of the business. Toyota has historically been revered for its lean manufacturing strengths. LVMH is well known for exquisite craftsmanship and the entrepreneurship of its brand leaders. Disney is a paragon of imaginative customer experiences. Progressive Insurance is broadly admired for analytics-based pricing of auto insurance. Others excel in the way they operate. Netflix is renowned for its "freedom and responsibility" culture. Danaher is known for the Danaher Business System. In all these cases, institutional capabilities deliberately built over time have helped these companies succeed and thrive.

Broadly speaking, institutional capabilities fall into two categories:

— *Functional capabilities:* these are core activities that a company does today (such as sales, supply chain management and procurement, performance marketing) but

may need to change or improve dramatically to build an advantage. In these disciplines, gaining competitive advantage requires step-change improvements.

Here's an example. A global medtech company determined that supply chain management—forecasting demand accurately and manufacturing on time in the right quantities—was the key to rise to the next S-curve of performance. Customers were increasingly demanding and willing to reward companies that reliably delivered on time. Unfortunately, the company's track record on this dimension didn't stack up, so it embarked on a multiyear journey to turn this capability from a hindrance to a superpower. It created a global supply chain function with a new organizational structure and a clear division of responsibilities between the global center and the regional groups for four layers of employees. The company shifted the mindset of the organization to value global coordination and to abandon the historical complaint of a "global tax." It upgraded the talent and skills of the function by creating a supply chain academy that trained 1,000 people in the initial waves (and continues to train new employees). The company addressed its technology deficit by adopting a sales and operations execution tool and making a multiyear investment in a new advanced planning solution. The impact has been tremendous, with more than $100 million in savings and increased customer satisfaction. Importantly, the journey continues as the company adds new strengths to its superpower.

— *Enterprise-wide capabilities:* these are strengths that truly span the entire company (such as speed of decision making, ability to innovate, the operating system, customer centricity). They often relate to how the company is managed over time or are "net new" capabilities a company requires to remain competitive.

Simply put, 'institutional capability' is an integrated set of people, processes, and technology that creates value by helping the company consistently do something better than competitors.

As an example, a large and established financial-services leader in Latin America was struggling to cope with the superior time-to-market, flexibility, and customer centricity of fast-moving and aggressive entrants. The bank's leaders determined that the bank needed to develop a "client obsession" and become a digital leader. It set out on a comprehensive redesign of its organization, operating model, talent, and technology to make it happen.

The new working model broke down silos by integrating technology, business, and support functions into communities and cross-functional squads aligned with customer needs. It encouraged greater collaboration through shared incentives and performance management. An agile academy trained staff and teams; more than 22,000 employees completed the course. Executives also received training on agile to shift their mindsets and enable collaboration. The bank revamped the talent mapping, recruiting, and hiring systems to attract thousands of new tech employees. On the tech side, about 4,000 business services were modernized, and half

of the bank's computing moved to the cloud. This effort paid off with impressive increases in productivity, between 130 and 530 percent for a broad range of tech and nontech tasks. As a result, the incumbent has been able to gain market share. Importantly, the bank is recognized internally and externally as a digital leader.

Charting a VECTOR toward success

As Hooi Ling Tan, cofounder of Grab, told us, "To be successful in a dynamic environment, it is important to clearly identify and believe in the one single factor that is the stable core of your initial and future success."

Leading companies have an institutional capability (or two) that define them and contribute to their success. But how to build these superpowers? The elements in VECTOR provide a useful guide: vision, employees (and talent system), culture, technology, organization, and routines (or processes). Not all these elements will require massive reform, but a company should carefully consider each as it builds its institutional capabilities.

The VECTOR approach

Vision and leadership
Employees
Culture and mindset
Technology
Organization
Routines

Flash back to high school physics: a vector has both direction of motion and magnitude of distance traveled. For CEOs and the companies they lead, vector is also an apt metaphor for the coordination and momentum required to build a new superpower. Here's a brief description of the six elements needed to build a successful, enduring, institutional capability.

Vision and leadership

Companies often set financial targets for improvement programs. However, the most ambitious and successful CEOs go further and outline a vision for what they want to be known for. How will their company shape and innovate their industry? What are the markers that will clearly indicate that they have created a "superpower"? Equally important, the leadership team must commit to the journey and drive it unwaveringly until the superpower is fully ingrained and sustainable. Furthermore, in a Darwinian world, adaptation never ends. The capability needs to continue to evolve and grow, staying at the leading edge.

Employees

Superpowered companies build a full system of people and talent to support the institutional capability. Too often, companies fall back on one-off efforts such as training programs or targeted external hiring. We often hear executives boast "we have trained *x* thousand people" or "we have hired *y* hundred new people."

Yes, training and hiring are needed, as noted in our examples. But for the superpower to be truly differentiating and sustainable, companies must do the hard work to build a full system that will run for years. A well-functioning talent system maps the pivotal roles and skills required for the capability; honestly assesses the existing strengths and gaps; efficiently balances new hiring (with a high bar) and reskilling of current employees; delivers training throughout people's careers to enhance existing skills and build new ones; designs and manages career paths to retain high performers; and maintains strong incentive and performance management systems.

Culture and mindset

All companies like to think they have their own unique culture and mindsets. But if you put a dozen mission statements side by side, you will be struck by the similarities. Often, when building or enhancing a capability, a mindset shift is required. For example, companies creating a superpower in building new businesses usually shift their mindsets to accept failure and thrive on experimentation. Organizations looking to embed analytics throughout the business must help their people see data as a tool rather than a threat. The techniques of change management still work—change stories, top-team role modeling, change agents, and all the rest. What is often missing, however, is the stamina and consistency to make the change stick with thousands of employees. The key, in our experience, is to commit to ongoing measurement of culture and inclusion of culture change metrics in top management incentives. Culture can be measured and its shifts tracked over time.

Technology

Modern institutional capabilities require the combination of human and technology capital. In today's world, it's hard to imagine a true institutional capability that doesn't have at its core technology, data, and, increasingly, AI. But it's not easy to get right. We see two common mistakes. Mistake one is relying too heavily on an overhaul of core systems to solve all problems. That overreliance creates a risk of slowing down the company's pace of change. If you wait until the full enterprise resource planning system is upgraded to do anything else, chances are you will have missed some opportunities. But when work on core systems is needed, those who build distinctive capabilities don't stop there. They also make appropriate investments in the required technology foundations (including data products and machine-learning operations), and create the teams, ways of working, and practical solutions on top to propel adoption and ensure impact.

Mistake two is opting for a work-around solution and building one-off digital customer journeys or AI models. These thin solutions rarely gain the scale and traction to truly build an institutional capability. Superpowered companies build AI models that scale readily with critical moves, such as putting their data in the cloud (and structuring it the right way), guarding against systemic bias, and directing the effort from the top down to focus on areas that will produce the most value. That ensures a distinctive and enduring capability and avoids a proliferation of pilots that are good for talking points but not much else.

The VECTOR approach (continued)

Organization

The old saying is that "structure follows strategy"; it also applies to creating a new capability. The organizational structure and ways of operating must be designed and constructed to ensure clear roles, responsibilities, and accountabilities to enable the capability to grow and thrive. Too often, companies rely on temporary constructs such as SWAT teams. Pilots or temporary teams are useful in the early days to move quickly and experiment. However, companies need to eventually commit to the capability and build the permanent structure. This requires clearly defining the roles and responsibilities, reporting structures, and decision rights so the capability can flourish. Beyond this, superpowers require financial backing and should become part of the ongoing budgeting and governance processes.

Routines

Processes or routines are where the rubber meets the road. As in any part of the business, high-quality, well-designed routines are essential. Critically, organizations must practice any new processes with coaching to truly lock them into the organization at high quality. Too frequently, companies launch a new set of processes, codify them into standard operating procedures—and then expect employees to miraculously execute on them with consistent excellence. Leading companies treat their superpower like a star athlete treats his or her sport—as a craft that needs to be continually practiced, with world-class coaching, to ensure ever-increasing quality and performance.

Aligning on your vector

The companies profiled here invested considerable energy and dedication to build the capability that they're now known for. It takes a broad effort across the organization, which means that only the CEO can truly integrate all the necessary resources required to get from vision to execution. Building a new superpower is not to be delegated; it requires the top team as a driving force to be effective. As you start or continue your journey, we encourage you to consider three questions:

1. What is the one superpower (or, at most, two) that will determine your company's success over the next three years?

2. Are you aligned as a top team around this superpower, with a vision for what it needs to become?

3. Does your capability-building effort pass the "VECTOR test"—going deep enough on each dimension to build something differentiated and sustainable?

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Middle managers are the heart of your company

Stop thinking of middle management as a way station.
Instead, make it a destination.

by Emily Field, Bryan Hancock, and Bill Schaninger

July 2023

Do you believe any or all of the following statements? Does your boss, or your boss's boss?

— The only way someone at a company can truly advance is to be promoted out of their current role.

— The importance of someone's job can be measured by how many people are underneath their box on the org chart.

— The more senior the role, the more the person in it should be paid and rewarded.

— Outstanding individual contributors should be rewarded with management roles.

— Anyone who stays in a middle-management role for a long time must not be very good.

Even if you try to consciously reject these ideas, they can be hard to push away. That's because they are woven into the very fabric of the corporate world. They are stubborn relics of an era when workplaces essentially stayed the same for years at a time and when a hierarchical management model helped ensure productivity.

But the way we work is changing so rapidly that these outmoded assumptions are now doing serious damage. They are forcing people into roles that they aren't good at and don't enjoy. Cumulatively, they create an effect that can send an organization into a downward spiral.

In particular, the middle layer of management is suffering from these false beliefs—and for three main reasons:

— Senior leadership feels a magnetic pull to promote top middle managers into positions where they no longer do what they love: coach and connect people.

— Senior leaders persist in promoting their best individual contributors, without considering their fitness for a people leadership role.

— Middle managers who do stay in their jobs find themselves pinioned by administrative tasks and stymied by leaders who won't empower them to make changes.

Unfortunately, the word "middle" implies that the person in that spot is on the way to somewhere else—ideally, the top. That thinking is misguided. Instead, we need to view middle managers as being at the *center* of the action. Without their ability to connect and integrate people and tasks, an organization can cease to function effectively. That's why we think the best middle managers are best off staying exactly where they are—like Marcus, who refused to accept the prevailing belief systems about management.

Without the ability of middle managers to connect and integrate people and tasks, an organization can cease to function effectively.

Saying no to a promotion

Marcus had big aspirations for changing society. Just after graduating from college, he was excited to see a posting for a federal-affairs coordinator at a trade group in Washington, DC. It was looking for a "dynamic team player and a self-starter who can juggle multiple projects" while pursuing "policy and advocacy efforts on a diverse set of issues." To his delight, he got the job.

When he arrived, he was the lowest-ranking person on his team. As such, he didn't do much talking in meetings. But he was able to observe whom his bosses met with, from lawmakers to lobbyists to corporate-policy directors. He always noticed one group from a consumer goods company. They were animated and passionate, and it was obvious that they respected one another. Most of all, everyone on the team seemed to be having a good time.

Eventually, Marcus left for what he thought was his dream job: working as a staff member for a US House of Representatives committee. A few years in, though, while doing research on a consumer rights bill, he noticed that the consumer goods company he had admired in his previous job was looking to fill a government affairs position. As a defender of "the little guy," Marcus had never pictured himself working for a big corporation. But on a whim, he applied, and to his surprise, he got the job.

Marcus was a little afraid that the job would require him to sacrifice some of his values, but this proved not to be the case. In fact, he came to realize that he could make more changes from his corporate perch than in his past job.

In his new role, Marcus kept one foot in government while interacting with key players across the company. In the process, his bosses discovered that he had an uncanny ability to bring people from far-flung groups together to achieve common goals. His ability to listen and work toward solutions improved how his company was perceived both inside and out.

The company enlisted Marcus's help when its plan to build a new regional office in North Carolina faced opposition from community leaders who feared it would threaten the city's small-town atmosphere. Marcus listened to their concerns and went back to his superiors and his team. The company agreed to build the office farther away from the center of town than originally planned. Also, by drawing on the experience of another regional center, Marcus devised a pilot program that would target people without college degrees who were struggling to find work in the region. Marcus's interventions helped get the company's plan unanimously approved by the city council.

When Marcus finished work for the day, he almost always felt that he had added specific and substantive value. Soon he was promoted to manage his own group, and he excelled as a people leader. He demonstrated real concern for the development of his team members, and he thought carefully about how to position them for success. Alice, Marcus's boss, was thrilled to see him performing so well and didn't mind giving him credit. She sang his praises to her own bosses so that they were well aware of this star in their midst.

Then Alice accepted a job as a top officer at a think tank. As she prepared to leave, Alice's bosses let Marcus know that her vice president (VP) position was his for the asking. At first, Marcus was thrilled at the opportunity. In addition to the cachet of being a VP, he would receive a hefty salary increase, plus a large block of stock options. Yet despite his initial excitement, Marcus found himself dreading the prospect of his promotion.

Alice's VP job was important, but it didn't play to Marcus's strengths. Alice was good at planning and strategizing. She knew how to maneuver among senior leaders to get things done. When Marcus came up with a great new idea inspired by his interactions with various constituents, she was the one who could pull the right levers with senior leaders to make it happen. But she worked with a much smaller and less varied pool of people than Marcus did.

When Marcus considered what Alice actually *did* all day, the knot of anxiety in his stomach tightened.

He knew that the people he wanted to interact with were the doers—his team members, the researchers, the frontline community leaders—and not just top executives. He had seen how Alice's time was squeezed by endless senior-level briefings.

After some soul-searching, Marcus did something that required a fair amount of fortitude: realizing that his daily job satisfaction was more important to him than a higher paycheck, he declined to apply for Alice's job. The company hired an external candidate as VP.

Marcus's bosses accepted his decision with regret, but as they saw him expand his reach and influence and take on increasingly complex projects, they realized that he had made the right choice. They understood that moving him to a VP position would have been a mistake, both for him and the company.

Marcus's actions led his company to take a hard look at its overall promotion and compensation practices. He ended up getting a promotion without having to move up the corporate ladder. He negotiated key elements of his new role: he would have ample time to lead his team of people, and his VP would help him manage many of the time-consuming interactions with people more senior than him.

We've seen star managers like Marcus throughout our careers. They naturally attract the attention of senior leaders who want to reward and retain stellar performers, yet the reward normally comes in the form of a new job where these managers can no longer use the very skills that got them noticed in the first place. It's a huge waste of talent to see a manager who once looked forward to coming into work now sitting in a big, new office drowning in administrative work that makes them miserable.

Meanwhile, senior leaders tend to retain middle managers who are good at being bureaucrats, administrators, and political players. They aren't quite bad enough to be let go, but they also aren't good enough to promote. They become a part of the

organizational "permafrost" that resists change and stays stubbornly in place.

We find it maddening that so many corporations tend to keep poorly performing managers in place while promoting successful individual contributors and managers into jobs that they find dull, distasteful, and dissatisfying. It seems so obvious: if a person is passionate about their job, then let them stay where they are.

Saying yes to a promotion— and regretting it

Unlike Marcus, another excellent manager was unable to resist the pull of a promotion, even though her instincts told her to stay where she was. Her story is all too common.

Kelsey was a standout manager of a big-city kindergarten through eighth grade education center, where tutors helped children with math, reading, and computer skills. She hired and trained the full- and part-time staff, interacted with parents and children, and even pulled people off the sidewalk and gave them sales pitches. She estimates that she put in about 20,000 steps a day because she was constantly in motion.

Because of the facility's unique location, it served students from some of the best and worst schools in the city, and yet it all just worked. The center was open seven days a week, and once Kelsey worked 23 straight days. She thrived on the intensity. She still remembers one particularly busy day when she was rushing around with sweat stains under her arms and a couple of pencils in her messy hair. The air was filled with the excited din of children's voices as they worked with tutors. One of the fathers, who had initially been skeptical about sending his son to the program, turned to her and said, "You guys do something pretty magical here, don't you?" To this day, it chokes her up just thinking about it.

Then the company was bought by a larger firm. That's when the trouble began. Seeing that Kelsey was a star at an individual center, a newly installed

executive urged her to apply for a job as a regional manager. She got the full-court press, fancy dinner included. So how could she say no? After all, instead of being in charge of one center, she would be overseeing eight centers. That was so much more impressive, right?

An inner voice kept saying, "Don't do it." But when she expressed doubts to her friends, they said, "You'd be a fool to turn it down. You're getting a raise, and it will look great on your résumé."

So she took the job—and was miserable.

A big part of her new job was checking in with the managers of the other centers, making sure they were doing their jobs properly. She also needed to ensure that they were meeting their financial targets each month, which turned out to be impossible because the centers were coming off an unrepeatable boom year.

The executive who promoted her had tried to seal the deal by promising that Kelsey could work from home most of the time. There was just one problem: Kelsey didn't like working from home. She missed the conferences, the coaching, and the constant buzz that used to surround her each day.

One day, while Kelsey was sitting alone in her apartment checking out the latest profits and losses, her boss called to ask her about the maintenance plan at one of the suburban centers. That's when she knew she couldn't take it much longer. Not much later, she quit her job and applied for a teaching-fellowship program at a public-school system. Now she teaches junior-high English.

The sad thing, Kelsey says, is that she would have been a lifer at the for-profit education company if only top leaders had known how to nurture and reward her as a middle manager.

The Waffle House way

With much of the corporate world still in the dark about how to promote stars within the same role, we direct attention to the promotion practices of an iconic restaurant that gets it right.

If you've driven highways in the US South, you most likely have stopped at a Waffle House. The beloved restaurant chain has more than 2,000 locations, primarily in states such as Florida, North Carolina, Alabama, and Georgia—where the first Waffle House opened in 1955. The chain prides itself on its doors never closing, which makes it a favorite of long-haul truckers and just about anyone with a 2:00 a.m. hankering for its famous waffles or hash browns served "covered," meaning topped with a slice of cheese, or "chunked," with cubes of ham added.

New grill operators at Waffle House start with the title of, well, grill operator. In addition to learning how to make each dish to the chain's exacting standards, they have to master Waffle House's shorthand for servers to signal to grill operators what to make for each plate. If a plate comes to the kitchen with a

Much of the corporate world is still in the dark about how to promote stars within the same role.

mustard packet turned up, the grill operator knows the customer wants Papa Joe's Pork Chop and Eggs; mustard packet side down means Country Ham and Eggs. If a plate comes in with a pat of butter, it's for the T-Bone and Eggs, but the location of the butter matters: top of the plate means well done; bottom means rare.

With experience and training, these employees have an opportunity to rise to the level of master grill operator. Master operators, after passing tests that demonstrate their knowledge of customer service, food safety, and cooking, not to mention Waffle House's lore and practices, then receive a higher salary and more responsibilities.

After demonstrating further mastery of techniques and safety certifications, as well as generating a consistent average of $6,000 in revenue per shift (at an average price of less than $10 per order, mind you), these grill operators receive another generous salary boost and get to be known as "Elvis of the grill." While some of those who achieve this level take on additional responsibilities to train newbies, the goal is to keep them doing what they do best—because without quality grill operators, the restaurants couldn't maintain their trademark dishes or 24/7 schedule.

If Waffle House can get this concept right, why can't the rest of the corporate world?

The trades, at least, have long understood the value of promoting people within the same job. Someone who trains to be an electrician is an electrician for life, beginning as an apprentice, rising to become a journeyman, and closing their career as a master electrician, with corresponding jumps in pay and responsibilities. Smart companies have been applying this same concept to technical positions by creating technical-career tracks for top performers rather than promoting them to team lead roles that would take them away from their excellent contributions.

We know of one tech executive who spent years thinking that the only way he could reward his best

software engineers was to move them into people management roles. When he finally realized that this assumption was misguided, he thought it would be enough to set up separate promotional tracks for the engineers. But to his surprise, this wasn't the "build it, and they will come" scenario that he had envisioned. That's because leaders hadn't made the changes management required to keep these pathways fully operational and attractive to employees. His star employees, too, needed to unlearn the idea that staying in individual-contributor roles was unacceptable. The company needed to build a new employee value proposition for its rock stars in tech who derived their energy from technical work rather than managing others' work.

The tech executive deeply regrets not learning this sooner because he knows he lost some of his best talent by pushing them into management positions that were not right for them.

We believe that organizations will reap huge benefits if this concept spreads to middle management. We've seen it over and over in our work: the people who excel at middle- management jobs are true superstars. When one department or team clearly stands out from the rest, more often than not, it's because of a superstar manager. Once these superstars are identified, senior leaders need to do everything in their power to keep them in their jobs. Levers at their disposal can include the following:

— *Salary and bonuses.* This seems obvious, but it's really not. It's ingrained in corporate culture to pay officers, VPs, and other senior leaders more than middle managers. But why? When appropriate, pay the best middle managers even more than your senior leaders to show how much you value them. If you hear complaints from the executives, make up the difference in equity. Compensation should be commensurate with the value a role creates.

— *Stock and stock options.* Speaking of equity, we've been surprised to hear how little equity most middle managers receive. Often, it's zero or a pittance. Let your hardworking managers

share in the equity pot, or you might just see them leave for a start-up that showers them with options. Yes, those start-up options need to vest, and they might end up being worthless, but they send an important message: if you help our company succeed, you will be mightily rewarded for it.

— *A bigger sphere.* Expand the scope or scale of what someone manages without changing the essentials of the job. School districts sometimes do this with their principals, who are—when you think about it—the quintessential middle managers. Rather than promoting them into superintendent roles, which removes them from the teacher–student action, enlightened school districts will place them in much bigger schools instead. In the retail sector, a company might move an excellent manager from a smaller store to a superstore or give them hiring, training, and coaching duties at several additional stores.

— *Title changes.* In the case of a store manager, a person's title might change from junior manager to senior manager to executive manager as their sphere of influence grows. But these title changes can't be no-cost empty words. A new title can come with measurable rewards and increased responsibility while still keeping the job's focus at the center of the action.

— *Challenging assignments.* Every great manager we've met always has ideas about how to make things better. Ask your best ones what they would do if they were in charge. Then, if they're willing, put them in charge of their great idea.

— *Flexible working arrangements.* Just as middle managers can make every effort to accommodate the needs and preferences of their reports, so can managers receive that same consideration from their bosses.

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How can you make sure you are offering the right rewards to your most-valued managers? Here's a thought: ask them! Some may appreciate a bump in salary; others may value more time off. Still others may want a coveted assignment or a travel opportunity. Tailor your rewards to the priorities of your managers.

The way we see it, superstars in management are like the head coach of a football team. After a team wins the Super Bowl, team owners reward and celebrate the coach with accolades, bonuses, and a fat contract renewal. What they don't do is show appreciation by saying, "Congratulations, I'm moving you to the front office." But that's exactly what many companies do.

Black swans, gray rhinos, and silver linings: Anticipating geopolitical risks (and openings)

The need for board-level strategic conversations on geopolitical risk is urgent.

by Andrew Grant, Ziad Haider, and Anke Raufuss

Russia's invasion of Ukraine in February 2022 triggered more than 1,000 companies to curtail their operations in the world's 11th biggest economy, revealing an imperative for global firms to bolster their ability to anticipate geopolitical risk and build resilience.[1]

The global order still reels from disruptions related to the war in Ukraine, including those in energy, food security, supply chains, and more. A central concern among global CEOs who speak with us is whether and how they will contend with additional geopolitical ruptures when they occur. As Japan's prime minister, Fumio Kishida, stated at the 2022 Shangri-La Dialogue global security forum, "Ukraine today may be East Asia tomorrow."[2]

In between navigating the fallout from Europe and unfolding strategic competition in Asia, multinational corporations must also manage a host of long-tail political risks and conflicts across other geographies, including Africa and South Asia.

Even as boards and CEOs work to build capabilities in managing such risks and developing geopolitical resilience, the imperative to lift one's gaze and look around the corner has become key to strategy and performance. Scenario planning is squarely back.

In the extensive literature on scenario planning, notably Peter Schwartz's *The Art of the Long View*, a core point is the need to develop frameworks, with colorful and gripping language, that help leaders "reperceive" the future and unlock strategic foresight.

To facilitate such reperceiving, we outline a framework for geopolitical scenario planning that categorizes geopolitical events in three ways: *black swans*,[3] *gray rhinos*,[4] and *silver linings*.

Evolving from scanning to planning across these categories, leaders should develop lookouts as an early-warning system and full-scale contingency plans for a core subset of geopolitical risks.

The imperative to lift one's gaze and look around the corner has become key to strategy and performance—scenario planning is squarely back.

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[1] "Over 1,000 companies have curtailed operations in Russia—but some remain," Yale School of Management, January 19, 2023; "Economy of Russia—statistics & facts," Statista, January 16, 2023.
[2] John Chipman, "Strategic survey 2022: Strategic prospects," International Institute for Strategic Studies, December 5, 2022.
[3] Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable*, New York, NY: Random House, 2007.
[4] Michele Wucker, *The Gray Rhino: How to Recognize and Act on the Obvious Dangers We Ignore*, New York, NY: St. Martin Press, 2016.

The concepts "blacks swan" and "gray rhino" are widely known and intuitively understood by many corporate leaders we have engaged. We seek to go further, offering an integrated, broadly additive framework for global companies that seek to distill geopolitical complexity and to structure their strategic conversations amid a fragmenting global order.

Reperceiving with multiple lenses

In scanning for scenarios, organizations must first purposefully cast a wide net, rounding out their thinking with an appropriate mixture of internal and external perspectives.

Internal perspectives may combine expertise in the organization from country team leadership with that from internal public affairs, legal, risk, and security professionals. External perspectives may range from retaining a political risk advisory group that has an arm's-length view; to scanning public source materials, such as the World Economic Forum's Global Risk Report or governmental sources such as the US National Intelligence Council's Global Trends and similar strategic assessments commissioned by EU institutions; to leveraging insights from academic, policy, media, and nonprofit arenas.

The resulting scenarios can be viewed through three lenses:

Black swans
Black swans are commonly known as unpredictable events with high impact. Notwithstanding Russia's overt military buildup in 2021, its proceeding to a full-scale invasion of Ukraine was arguably the core case study in 2022. While black swans are inherently unpredictable, pushing one's thinking to anticipate as wide a range of scenarios as possible is critical for sound planning and preparedness. Potential black swans could run the gamut from the political implosion of a major economy; the forcible removal of a leader or a government; a significant regional military conflict; an unprecedented climate event that results in mass casualties, waves of migration, and famine; to another pandemic.

Gray rhinos
In contrast to the unpredictable nature of black swans, gray rhinos are probable events with high impact. We see these risks out there in the distance, but we don't clearly perceive their full dimensions. We're sure they will charge at us, causing material damage, but we don't know precisely when or how much. Organizations must ensure that they have a framework in place to clear out of the way of gray rhinos when they charge. Sometimes, multiple gray rhinos may stampede simultaneously, resulting in an even more appropriately termed "crash" of rhinos (as a group of rhinos is called).

Among the gray rhinos on the global radar is the risk of regional conflicts in Asia escalating amid broader strategic competition. Other imminently charging rhinos may include a major escalation in the Middle East, with cooling relationships and international and domestic pressure against specific regimes that cause an uptick in direct or proxy conflict.

Silver linings
In the maelstrom of geopolitical risks, organizations must step back and calmly assess openings and opportunities that allow them to operate in a safe zone and potentially garner competitive advantage. These "silver linings," as we call them, can be fragile and readily blurred out by storm clouds, and yet they are within the reach of leaders who exhibit strategic courage amid the volatility.

For example, one opening around Russia's invasion of Ukraine has been a material disruption of Europe's energy market and the opportunity for an accelerated renewable-energy transition, whereby Europe can potentially lead the world. Another silver lining when geopolitical tensions constrain supply chains is the emergence of pivot geographies, such as India and Vietnam, as additional opportunities for investment amid "friendshoring."

From scanning to planning

A strategic conversation about black swans, gray rhinos, and silver linings should lead to an aligned understanding within an organization of which two to three scenarios have the most material effect

An organization should consider how to employ its voice and how best to inform policy makers about diligently thinking through the potential consequences of their decisions.

on an organization. Teams supporting leadership should develop a set of clear lookouts for tracking the risk scenarios and trends, whether in a positive or a negative direction. The lookouts might include key economic, political, military, and regulatory developments.

Equipped with a targeted set of scenarios with key lookouts, we recommend narrowing down to one to two scenarios that fuse thought with action. Specifically, the organization should engage in active contingency planning on a host of dimensions that include data and networks, internet protocols, people, partnerships, repatriation of funds, and security.

Shape or be shaped?

Anticipating the environment that can shape an organization is critical, but many leaders we speak with *also* think about defining their role in shaping the geopolitical environment around them.

Indeed, CEOs increasingly expect to take positions on geopolitical matters. According to the *2022 Edelman Trust Barometer Special Report: The Geopolitical Business*, 59 percent of respondents state that addressing geopolitics is a top priority for business. The point, however, is not simply about taking a stand. Leaders within multinational corporations also are reflecting on appropriate ways to inform policy in a more polarized geopolitical environment.

The CEO of a leading Asian company, for example, shared with us how his country's national-security leadership invited him to a briefing where the central point of discussion was "which country poses the biggest threat" to their own country. He shared his bemusement at the question, saying "Armies are always searching for enemies," but also reflected philosophically on his own role, as one of his country's top business leaders, in informing the discussion.

As such, an organization should also consider how to employ its voice, whether through its board, CEO, public or government affairs, or business associations—and how best to inform policy makers about diligently thinking through the potential consequences of their decisions.

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All the notions we thought solid, all that made for stability in international relations, all that made for regularity in the economy . . . in a word, all that tended happily to limit the uncertainty of the morrow, all that gave nations and individuals some confidence in the morrow . . . all this seems badly compromised. Never has humanity combined so much power with so much disorder, so much knowledge with so much uncertainty.

—Paul Valéry, "Historical Fact" (1932)

These words, penned in an essay nearly a century ago by French poet Paul Valéry (and excerpted from the opening of *The Art of the Long View*), resonate today. Valéry was associated with the Symbolist movement in poetry, a group of late 19th-century French writers who favored imagination over realism in poetry in order to access "greater truths."

In our era of volatility, the need for board-level strategic conversations on geopolitical risk is vital. These discussions should channel all participants' imagination and analysis.

Doing so, of course, requires not just a compelling framework. It also demands professionals who have the trust of the leadership—and a leadership team with a common understanding of the geopolitical context. This understanding, refreshed through briefings and policy papers, enables the decision makers to think broadly, creatively, and deliberatively.

Combining those elements, we pose this two-part question:

What are your organization's black swans, gray rhinos, and silver linings, and how will you manage and seize the corresponding risks and openings?

Why the path of global wealth and growth matters for strategy

There are four plausible scenarios for how global economics might unfold in the next decade. Here's how companies can chart a course.

by Michael Birshan, Jan Mischke, and Olivia White
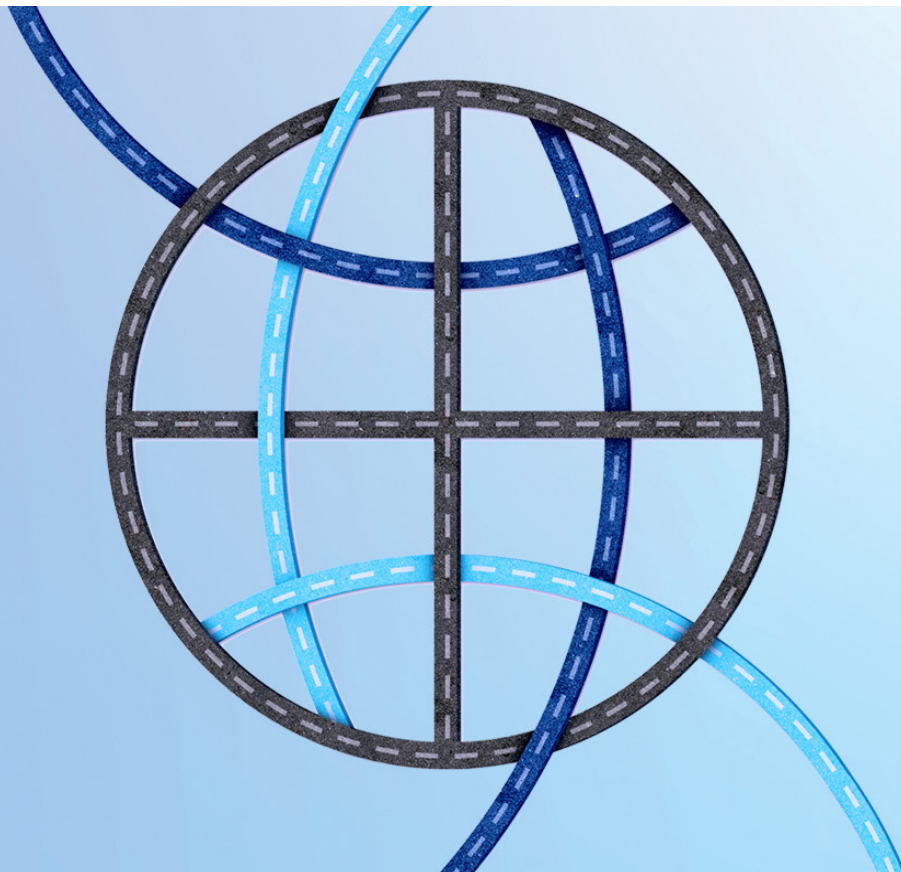
Recent global turbulence raises a question: Is the world shifting to a new economic regime for the long run? New McKinsey Global Institute (MGI) research and a recent McKinsey executive survey[1] suggest that it might be, but the shape of that future remains uncertain. Business leaders should be aware of potential scenarios so they can adjust and strategize accordingly.

MGI looks at economic health and wealth through a unique lens we refer to as the global balance sheet, a tool we borrowed from the corporate world to sum up all of the world's assets and liabilities, including net worth. Our view through this lens indicates that the developments of the past 20 years have contributed to today's economic, financial, and market wobbles.[2]

Over the past two decades, the global balance sheet grew much faster than GDP—the real economy. Because interest rates were kept low to stimulate economies, asset prices and debt grew. Between 2000 and 2021, $160 trillion was added to paper wealth as asset prices surged on the back of low interest rates. For every $1 in investment, $1.90 of debt was generated. Meanwhile, productivity growth among G-7 economies slowed to a sluggish creep: from 1980 to 2000, productivity grew at 1.8 percent per year, while from 2000 to 2018, it decelerated by more than a factor of two, growing at only 0.8 percent annually.[3] Too much savings chased too few productive investments, creating classic secular stagnation.[4] This stable and predictable period was kind to wealth accumulation, but it was challenging for growth and it exacerbated inequality.

The majority of executives today have lived most of their professional lives in this environment. But the future could be quite different, and the range of plausible medium-term scenarios today is unusually broad. As a result, the intuition that has served many business leaders well in their careers so far

may start to lead them astray. Companies and their leaders may want to prepare for what comes next.

In this article, we will examine the dynamics that led to the expansion of the global balance sheet. We will then propose four scenarios for what might come next, describing in broad strokes the impact each could have on the global economy and identifying which scenario the roughly 1,000 executives and asset managers we surveyed consider the most likely. Finally, we will suggest steps business leaders could consider in order to plan for whichever scenario prevails.

The winning strategies during decades of global balance sheet expansion

Leveraged investors have done well since the start of the millennium. In the United States, for example, the market value of real estate expanded 1.5 times faster than GDP from 1995 to 2021 (Exhibit 1), and in the United Kingdom, 1.8 times faster. The value of equities in the United States grew at triple the rate of GDP.

In this setting, a few strategies proved popular. Since credit was cheap, leveraged strategies and finance prevailed, including leveraged buyouts, leveraged asset strategies, rising corporate debt, and share buybacks. With ultralow discount rates and significant venture capital investment, aggressive growth strategies—including, but not limited to, technology—often beat those focused on early profitability and stable returns.

The low cost of capital fueled a focus on how enterprises would succeed in the long term—say, in 2050—rather than on whether they could reach their potential for the early 2020s. New productive investment struggled to be as compelling as the opportunities awarded by asset price appreciation and transactions. In extreme cases, businesses

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[1] McKinsey Executive Survey, June 2023, n = 961.

[2] *The rise and rise of the global balance sheet: How productively are we using our wealth?*, McKinsey Global Institute, November 2021.

[3] All productivity figures drawn from Alistair Dieppe, ed., *Global productivity: Trends, drivers, and policies*, World Bank, 2021.

[4] Lawrence H. Summers, "Accepting the reality of secular stagnation," *Finance & Development*, International Monetary Fund, March 2020; Kathryn Holston, Thomas Laubach, and John C. Williams, "Measuring the natural rate of interest: International trends and determinants," *Journal of International Economics*, May 2017, Volume 108, Supplement 1.

Exhibit 1

Growth of US assets has outpaced that of GDP since about the mid-1990s.

Change in asset value at market prices relative to nominal GDP, 1970–2021

US asset value/GDP, indexed (1995 = 100)

Growth, 1995–2021, %

Equity +208
Currency and deposits +116
Bonds +55
Real estate +51
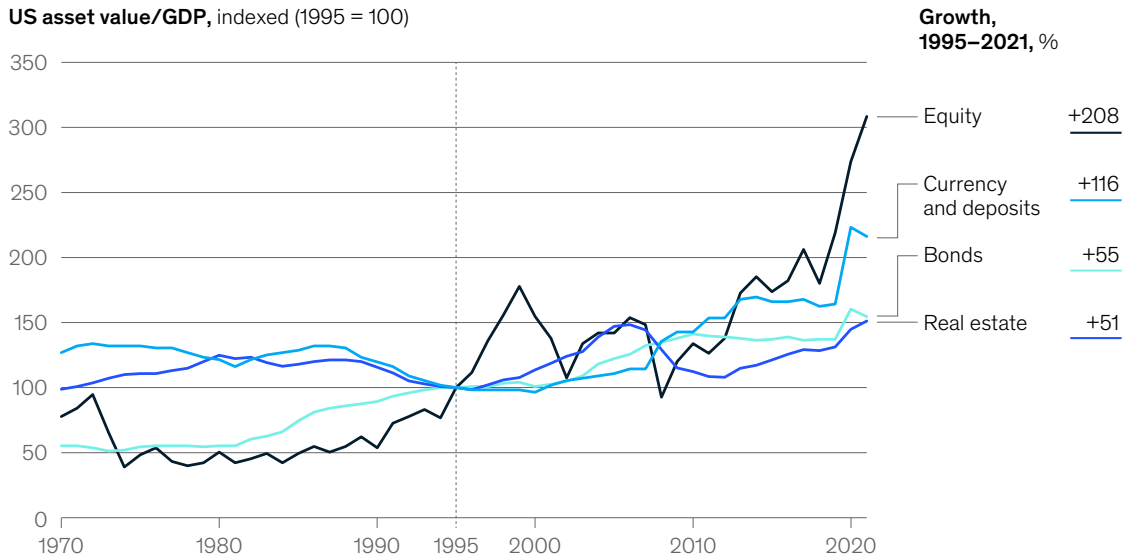
Source: Federal Reserve Board; national statistics offices; OECD; World Bank; World Inequality Database; McKinsey Global Institute analysis

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closed, and corporate sites were redeveloped into residential real estate.

With soft but persistent economic growth, efficiency trumped resilience. Because labor was abundant, recruiting and retention efforts could focus on the highly skilled. Wage—and, even more so, wealth—inequality rose, prompting some sectors to focus on high-net-worth individuals and premium or luxury segments.

Will a new balance of wealth and growth emerge?

What comes next? After a crescendo during the pandemic, when global wealth relative to GDP grew faster than during any other two-year period in the past half century, it appears that a break in the two-decade trend may be coming. But there

is disagreement among economists and business leaders about what will change. Will inflation remain high over multiple years? Will asset prices correct and deleveraging occur? Or is the global economy heading for a period of higher productivity and growth?
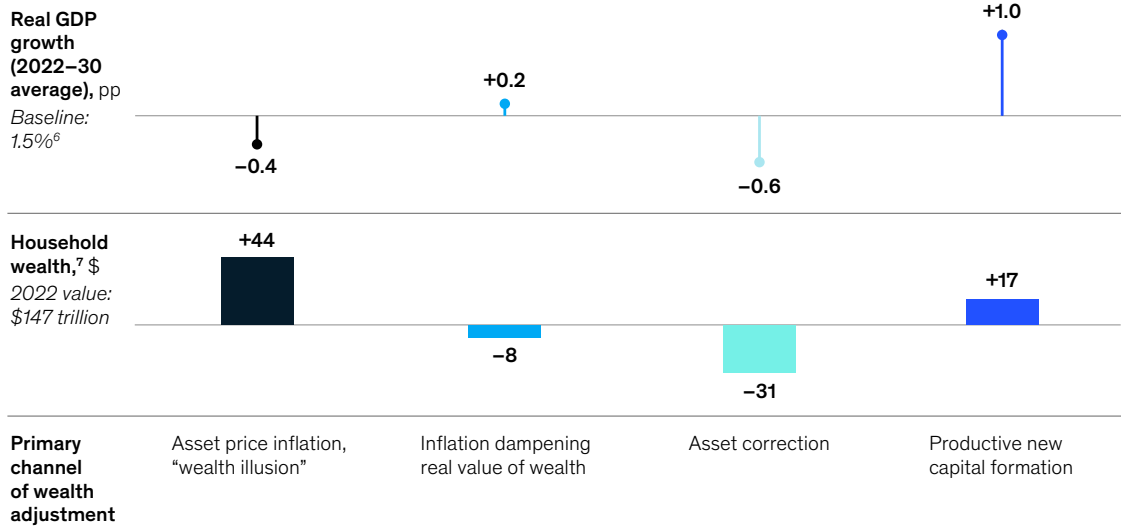
MGI has developed scenarios based on each of the above three possibilities—and a fourth scenario in which the past era of balance sheet expansion resumes (Exhibit 2). Each of these scenarios is plausible. While structural forces, which may push inflation higher, are in play, central banks' commitments to curtail inflation could cause corrections and deleveraging. Higher investment, along with the continued spread of digital and AI technologies, might boost productivity and help the world grow out of an outsize balance sheet (see sidebar, "The four scenarios").

Exhibit 2

Four broad economic and balance sheet scenarios until 2030 are possible.

	Return to past era	Higher for longer	Balance sheet reset	Productivity acceleration
	Like after the US global financial crisis, late 2000s–10s	*Like after the US oil shock, 1970s*	*Like after the Japan real estate bubble, 1990s*	*Like the US after World War II, late 1940s–50s*
What would happen	Back to weak investment and savings glut	Strong desired investment and consumption despite growth headwinds	Fiscal and monetary tightening; financial-system "accidents"	Technology deployment and productive investment
What it means	Sluggish growth, rising wealth on paper, growing balance sheet risk	Gains in nominal wealth but loss in real wealth	Asset correction and balance sheet stress	Growth in real wealth, declining balance sheet risk
Growth[1]	Slightly below trend[2]	About 0–1 percentage points (pp) above trend	About 1 pp below trend	About 1 pp above trend
Inflation[1]	About 0–1 pp below target[3]	About 2 pp above target	About 1 pp below target after initial spike[4]	About 1 pp above target
Real rate[1]	About −1%[5]	About 0%	About −1 to 0% (after an initial spike)	About 1%

Change in 2030 outcomes by scenario, US

Real GDP growth (2022–30 average), pp
Baseline: 1.5%[6]

−0.4   +0.2   −0.6   +1.0

Household wealth,[7] $
2022 value: $147 trillion

+44   −8   −31   +17

| **Primary channel of wealth adjustment** | Asset price inflation, "wealth illusion" | Inflation dampening real value of wealth | Asset correction | Productive new capital formation |

[1]The 2022–30 average. [2]Assuming a return to 2008–16 average after 2023. [3]2% US inflation target. [4]The 2022–30 average here is 0–1 pp above target due to this initial spike. [5]Central bank policy rates. [6]All figures in terms of 2022 dollars. Average forecasted growth over 2022–30 by Federal Reserve Board according to Federal Open Market Committee Mar 2023 projections. [7]All figures in terms of 2022 dollars.
Source: Federal Reserve Board; McKinsey Global Institute Global Balance Sheet (GBS) model; McKinsey Global Institute analysis

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The four scenarios

Return to the past era
It is possible that today's volatility and elevated inflation will prove temporary, and the global economy will return to the patterns of the past 20 years. This would occur if weak investment and a glut of savings bring about slow GDP growth and low interest rates. Inflation would decline to below 2 percent over the next two years, real interest rates would turn slightly negative, and mediocre GDP growth would resume. As debt and asset prices rise, the expansion of the global balance sheet would resume. Overall, real household wealth would grow by a cumulative 28 percent, or $40 trillion on paper, with rising wealth inequality.

For many stakeholders, from asset managers to real estate investors, this may seem like an attractive prospect because wealth would continue to grow. But in this scenario, rising wealth would come at the expense of real economic output, and the risk of financial stress and future corrections would continue to grow.

Higher for longer
In this scenario, consumer demand would be strong, and investment would pick up. Inflation would settle at about 4 percent as tight labor supply continues and investment flows to the net-zero transition, supply chain reconfiguration, and

national defense. To avoid endangering financial stability, short-term interest rates would settle higher and would not contain inflation.

Inflation would lower the burden of debt but also the real value of wealth, similar to the situation in the United States after the 1970s oil shock (although then, inflation was around 9 percent, more than double what is expected in this scenario). The lack of price stability in this scenario, a result of continued inflation, would pose challenges. But it would be accompanied by solid income growth, positive (albeit not impressive) growth in wealth, and a more sustainable balance sheet.

Balance sheet reset
It is also possible that in an attempt to curtail inflation, central banks would keep tightening. Rising rates would lead to further stresses—or even failures—in financial systems, asset values would correct sharply, and the world would enter a drawn-out deleveraging process. Real estate and equity values in the United States would fall by more than 30 percent, and real household wealth would drop by a cumulative 20 percent. Nonperforming loans would increase, and a wave of debt restructurings and defaults would roll through the system.

This scenario serves a double dose of poison: wealth would take a hit (as in the "higher for longer" scenario), and growth would be dampened (as in the "return to the past era"). If this unfolds, the world could find itself in a "lost decade" of growth, as Japan did in the 1990s when its real estate and equity bubbles burst.

Productivity acceleration
By far the most desirable outcome would be to accelerate productivity so that economic growth catches up with the balance sheet. Technology deployment and productive investment would accelerate growth by about one percentage point above past trends. Growth in supply would help bring inflation down to target, while interest rates would stay one percentage point above inflation. The balance sheet would grow but less quickly than GDP. Strong growth would boost equity prices by about one-third in inflation-adjusted terms in the United States, while higher real interest rates would put a cap on real estate prices.

Only this scenario, which resembles the situation in the United States in the late 1990s, combines strong growth in income, wealth, and balance sheet health. Optimistic business leaders are anticipating this "Goldilocks" result.
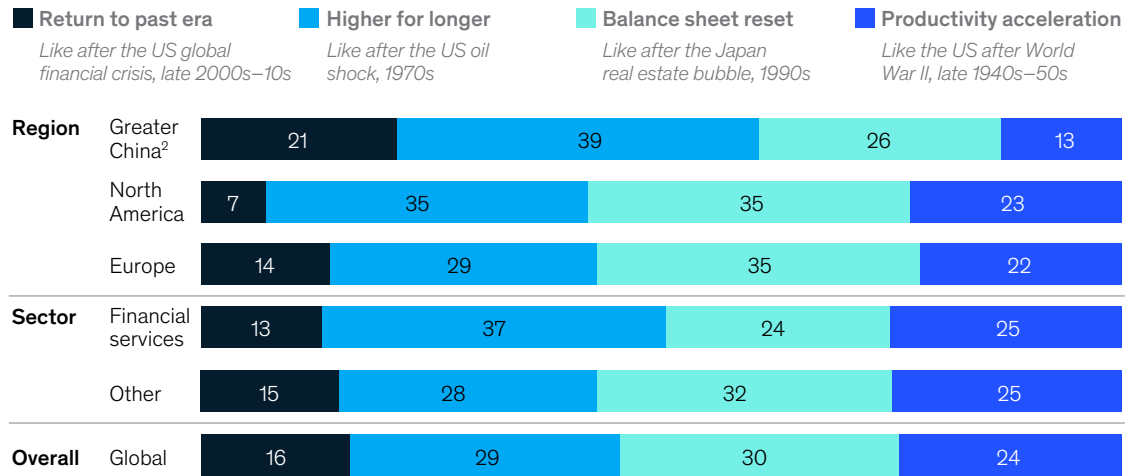
When MGI asked roughly 1,000 executives which scenario they thought most likely, 84 percent of respondents said they expected a scenario different from that of the past era. Their choices of most likely scenario were divided roughly equally between the remaining three options (Exhibit 3). Responses varied by sector and by geography. The financial-services executives who participated in our larger survey, plus a group of about 50 C-suite executives of large asset managers we surveyed separately, thought it was more likely that a "higher for longer" scenario would prevail, where inflation and interest

Exhibit 3

Less than 20 percent of executives surveyed expect a return to the past era.

Survey on expectations for economic outlook, % of responses ranking scenario as most likely[1]

■ Return to past era	■ Higher for longer	■ Balance sheet reset	■ Productivity acceleration
Like after the US global financial crisis, late 2000s–10s	*Like after the US oil shock, 1970s*	*Like after the Japan real estate bubble, 1990s*	*Like the US after World War II, late 1940s–50s*

		Return to past era	Higher for longer	Balance sheet reset	Productivity acceleration
Region	Greater China[2]	21	39	26	13
	North America	7	35	35	23
	Europe	14	29	35	22
Sector	Financial services	13	37	24	25
	Other	15	28	32	25
Overall	Global	16	29	30	24

Note: Figures may not sum to 100%, because of rounding.
[1]Question asked: "Please look at the following scenarios for the global economy and rank them in order of how well they describe your outlook for the next decade. Do not rank any scenario you think has no likelihood of occurring."
[2]Includes Hong Kong and Taiwan.
Source: McKinsey Executive Survey, June 2023 (n = 961)

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rates stay elevated for much of the coming decade. Respondents in Greater China also favored the "higher for longer" scenario, while a plurality of those in Europe selected "balance sheet reset." North Americans were divided between these two scenarios.

Why the next era may be different

Few respondents expect a return to the past, which is likely a reflection of the numerous long-term structural shifts that appear to be under way. How these will play out is, of course, uncertain.

The continuous rise of the global balance sheet over the past two decades has essentially been driven by limited investment for productive uses and a glut of savings, which lowered interest rates and fueled debt expansion and asset price growth.

This could change if productive investment picks up. The net-zero transition will require large outlays. Recent stress in supply chains, both as the result of the COVID-19 pandemic and Russia's invasion of Ukraine, have drawn attention to supply chain resilience; some are being reconfigured, which takes investment. Greater defense spending may also represent an area for investment. In the United States, the Infrastructure Investment and Jobs Act could prompt a boom in large-scale infrastructure investment.

The global savings glut may wane. One factor boosting savings was the fact that inequality rose, and the labor share of income declined, reducing consumption by channeling a disproportionate share of value creation to the wealthy, who tend to save more than the average person. Labor markets are now tight, which may tip the balance toward higher consumption. Aging populations have

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been saving and have not been spending those savings in retirement, but that, too, might change. A rising dependency ratio means that the share of people spending their retirement money rises while the share of those saving while they work declines (though this is a matter of some debate among economists).

How can businesses equip themselves?

The macroeconomic patterns of the past 20 years may be over, but the range of possible economic scenarios between now and 2030 is broad. It makes sense, therefore, for company leaders in any kind of business to lay the groundwork for a potentially different future and to be ready to operate under uncertainty.

Track the right markers

As a first step, businesses should consider identifying a broad set of markers that will help them ascertain which scenario is more likely to occur. Many executives look at the latest inflation numbers but miss more fundamental markers that distinguish between scenarios. Examples of some of the more important ones include the following:

— *Central bank trade-offs.* Many central banks are independent and have a clear price stability

mandate, but they also tend to have a financial stability mandate—two directives that are increasingly in tension.[5] What discussions are taking place about the trade-offs?

— *Fiscal policy stances.* Fiscal tightening could have significant impact on inflationary pressure as interest rate increases face the above financial stability concerns. Where, and to what degree, is tightening likely to happen?

— *Business investment.* Are commitments, and actual investments, picking up materially—say, by two percentage points of GDP or more? If so, the odds of moving toward accelerated productivity rise, and a return to balance sheet expansion becomes unlikely.

Additional markers also matter, including wage and bargaining-power dynamics, profits, and inequality; the relative shifts in effective retirement ages versus life expectancy; and geopolitics and global flows. Because any one of the four scenarios may occur, it would behoove businesses to track these trend indicators and gather a diversity of economic perspectives rather than simply rely on "consensus" forecasts.

[5] See, for example, "Three uncomfortable truths for monetary policy," remarks by IMF first deputy managing director Gita Gopinath for the European Central Bank Forum on Central Banking, June 2023.

Pressure-test the business for what might come

Businesses, including financial institutions, can consider going beyond the typical sensitivities they test in their risk management and use these four scenarios to pressure-test business models. Firms may also think about beefing up equity buffers, strengthening balance sheets, and/or hedging macro risk, among other considerations.

Understand how strategy would transform depending on the scenario

Some firms may want to bet on one scenario, while others may opt to build optionality and robustness for several. A return to the past era is, essentially, business as usual, with all the risks that this entails. To prepare for the three options that propose significant change, specific actions may be needed:

— *Higher for longer.* In this scenario, a number of the capabilities necessary to navigate the past couple of years would become the "new normal" of competitive differentiation. Businesses could take a three-pronged approach of pricing, procurement, and productivity to respond to higher input prices and wages. They could also alter the mix of the business portfolio to benefit from growth and high capital expenditure and shield themselves from rising input and labor costs. Scale will matter more to protect margins. In an environment of rising cost and rates, locking in favorable conditions would be attractive, from long-dated maturities in financing to long-term contracts for labor and suppliers. Firms could also strengthen their focus on catering to the affordable end of the market as inequality falls. Investors seeking to protect assets and wealth from inflationary erosion would also find an environment of higher yields. Financial institutions would need to rethink business models hardwired to ever-growing balance sheets. Banks, for instance, could seek to complement net interest income with more fee-based business models and rely less on wealth management for the wealthy.

— *Balance sheet reset.* A flexible cost base, reduced debt exposure, and "fortress balance sheets" could help businesses build resilience in this scenario. Businesses could also consider how they can ensure that their cost base is flexible in case of a sharp economic slowdown. They may also reduce debt, limit exposure to market prices in equity and real estate, and identify debtors who may struggle to repay

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in such a scenario. Fortress balance sheets could help weather the storm and enable opportunistic response when distressed M&A opportunities emerge. In a similar vein, investors would seek protection from asset corrections and defaults; holding cash would not be the worst option in this scenario. Financial institutions might live through a situation not unlike the years after the 2008–09 financial crisis. There could be substantial opportunities for consolidation and M&A, including situations of distress, making preparation essential.

— *Productivity acceleration.* To benefit from growth acceleration, it would make sense to invest in technology, new capacity, and automation to capture market growth ahead of competitors. Companies that are driving the productivity acceleration—for example, through providing new technologies—may capture significant value. Since human capital and materials could be in short supply, businesses should consider how to lock in access to what may well be a highly competitive market for both. As interest rates rise, firms would be wise to secure long-term financing early. Investors could find opportunities in growth equities and face interest rate headwinds in real estate. Financial institutions could engage in ample opportunities for capital project and business finance.

Firms are not passive spectators but rather participants whose collective actions shape which scenario unfolds

In the midst of uncertainty and economic pressure, it can be all too easy for companies to be purely defensive, seeking to mitigate negative impacts on their business and to build resilience. But playing pure defense could turn into a self-fulfilling prophesy of doom and gloom.

If firms plan solely for a slowdown in GDP growth or a recession, they will be less likely to invest and more likely to wait for more benign economic conditions. If they expect persistent inflation, they may proactively raise prices and cause the inflation they fear. If real estate investors expect lower prices, they may delay starting new projects. Banks focused on strengthening their balance sheets could tighten lending standards, reducing the number of loans they offer.

To help catapult the economy into faster productivity growth, it will be critical to play offense, too. Businesses need strategic courage to invest boldly in emerging opportunities and to commit to the human capital needed to power these investments. These opportunities can be found in well-known megatrends like the energy transition and electrification, aging and healthcare, more resilient supply chains, rising defense investments, and new technologies like AI. How firms deal with inflation also matters: the more they manage to raise labor, materials, and energy productivity, the more they can afford to pay higher wages and prices without passing higher costs onto consumers.

Pessimism is rife at the moment, but it is possible for a productivity acceleration scenario to unfold. Indeed, about one-quarter of executives polled in MGI's survey consider it the most likely one of the four, and many believe that it can happen provided the right actions are taken.

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Adjusting to a new era can be difficult and prolonged. It demands revisiting assumptions and modifying planning, strategy, and business models. Few anticipate a return to business as usual. That sense of realism is a useful starting point.

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