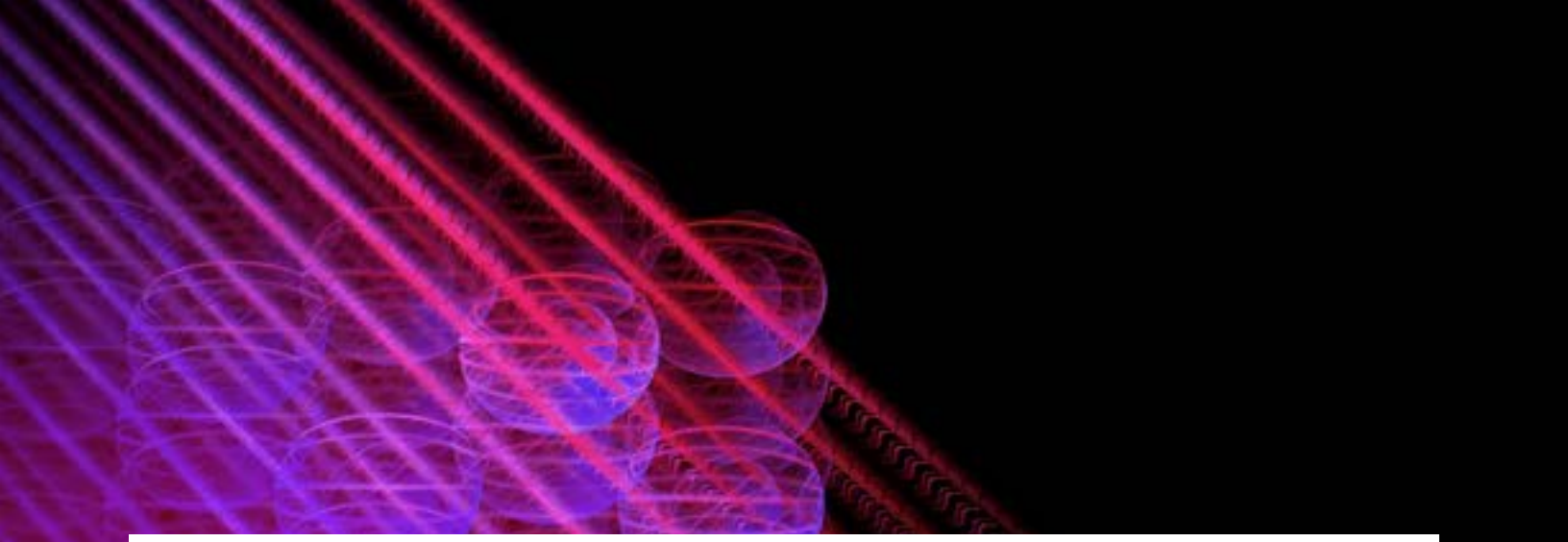


Strategic Battlegrounds

Five Functions Where AI Is Already Delivering

Spurred on by early success, companies of all sizes are increasing their spending on generative AI.

David Crawford, Jue Wang, and John Kanan

At a Glance

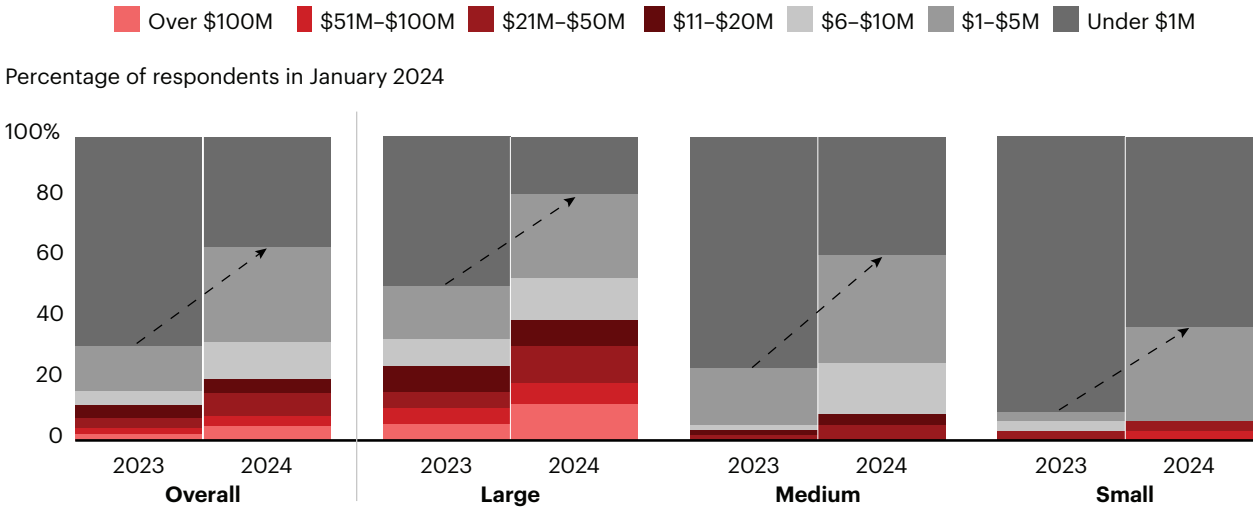
- Companies are ramping up spending on generative AI, especially in software development, customer support, and other areas.
- AI is delivering real efficiency gains across functions, reducing customer support response times by a third and cutting some code-generation times in half.
- More than most disruptions, AI requires some business redesign to capture value. Simply deploying the technology delivers little return on investment.

With some disruptions, fast followers gain a competitive edge by waiting to see what mistakes the first movers make. But that's not what we're seeing with AI: Early adopters are already starting to realize performance gains up to 20% of earnings in as little as 18 to 36 months. They're building capabilities and confidence that are likely to translate to a sustained, competitive advantage, empowering them to redefine operations and develop new business models. The last time we saw a new technology this powerful was when the Internet arrived in the 1990s. And this time, change is happening faster.

At the same time, some investors and analysts remain skeptical about returns on investments in AI. This may be because reaping value from AI requires more than just simply conducting trials or

Figure 1: Companies of all sizes are meaningfully increasing spending on generative AI

Spending on generative AI activities and supporting infrastructure



Notes: 2024 numbers are forecasts; large businesses=more than 10,000 full-time equivalents (FTEs); medium=1,000–10,000; small=less than 1,000; budget for generative AI includes spending on hardware infrastructure, large language models (LLMs), AI workbench and machine learning operations (MLOps) tools, off-the-shelf generative AI applications, and professional services
Source: Bain IT Decision Makers Survey, January 2024 (n=151)

deploying the technology. More so than previous disruptions such as the Internet or cloud, AI requires changes in business processes. Companies that conduct business diagnostics, set targets for business deliverables, redesign processes, and then develop and deploy AI tools are seeing extraordinary value.

These early successes are leading to greater investment: The number of large companies investing over $100 million to implement AI has more than doubled in the past year *(see Figure 1)*. These investments are spurring companies to experiment in hundreds of different use cases, but our research finds that most of the value today can be found in five core areas.

Software and product development

The top use cases for generative AI in software development include code generation, documentation, refactoring, debugging, testing, and run and maintenance. Some developer organizations are already saving 15% to 40% on code generation and documentation, and 30% to 50% or more on refactoring, select testing, and debugging use cases by utilizing the specific patterns and rich datasets that exist beyond the code base.

In some companies, AI deployment has served as the trigger to evaluate software development productivity, expanding their focus to more traditional improvement areas including product management, data-driven prioritization, process stage gate discipline, Agile, and QA shift-left efforts.

Intuit, a financial technology platform for consumers and small businesses, has been testing and scaling more than 30 different use cases to increase end-to-end development velocity throughout the company's software development life cycle with generative AI. By integrating generative AI technology and tools into its development platform, Intuit is improving productivity for product teams (software developers, designers, product managers, data engineers and analysts, technical program managers, etc.). For code generation, the company has seen greater-than-average efficiency gains by tuning its coding assistant tool on Intuit-specific code context patterns and repositories. It has also focused on a set of refactoring tasks to expedite its code base modernization efforts, further accelerating development velocity.

Customer support

Generative AI can do more than automate and optimize customer support; it can also reduce the amount of support needed in the first place. Generative AI's application in customer support includes analytics to anticipate, deflect, and address potential customer issues; chatbots to expand digital self-service offerings and automate interactions; algorithms to connect customers with the most appropriate representative; and knowledge assistant tools that help agents act more efficiently.

Generative AI can reduce adviser response time by up to 35%, support consultants during the resolution process by managing different sources of knowledge, and improve the quality of results by up to 40%.

For example, one technology and manufacturing company developed two cutting-edge generative AI prototype applications for field services. The company launched a maintenance assist copilot to boost productivity of field technicians performing maintenance and repair operations, and it developed new systems to analyze huge amounts of diverse and unstructured building sensor data and coordinate information and decision making for emergency responders.

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Sales and marketing

In sales and marketing, generative AI is deployed in generating dynamic, personalized content, personalized email marketing, social media engagement automation, automated account planning, and advanced training and support. By automating and optimizing these customer interactions,

generative AI is boosting the productivity of sales reps and other marketing staff, shortening cycle times, reducing churns, and delivering better click-through rates through hyper-personalization.

One technology hardware company, for instance, is transforming content management by simplifying content creation, automating systems and workflows that synthesize, assemble, and publish content, and adopting generative AI tools for some roles. The company aims to reduce time spent on content by 30%. Pilots have already delivered promising results in a variety of uses, meeting and exceeding this goal.

New products and features

Companies are deploying generative AI in product and feature development to create simpler and more user-friendly products and interfaces, and to deliver greater customization and personalization. For example, in healthcare, AI can quickly analyze patient data and offer personalized care plans. In other industries, generative AI enables voice or text chat interfaces for simpler interaction with products.

Carrefour's site, for example, offers a generative AI shopping assistant that can generate shopping lists and menu suggestions based on customer information and input. This simplifies the customer shopping experience while making it more engaging.

Back office

Back-office operations are particularly well suited for generative AI improvements, given the vast number of routine processes that are comparatively easy to automate. In the finance function, for example, generative AI can improve the efficiency of drafting internal audit reports, preparing documentation for tax audits, and running custom financial analyses.

Deutsche Telekom has developed a chatbot for its procurement department that is trained on the company's policies and historical procurement strategies. The chatbot can answer team requests about policy compliance and provide recommendations on vendors, contracts, or fair price for a specific request for proposal. Pilot results across the company suggest that the chatbot could save business users up to 2,000 hours per month and procurement users up to 5,000 hours per month.

Anticipating challenges

Deploying AI is a transformative journey that aims for significant productivity growth, but involves addressing challenges that span technological integration, human adaptation in ways of working, and reimagined business processes.

- **Preparing business processes.** In deploying AI, companies should avoid automating existing complexity into their operations. To do that, they should fix the processes before automating by streamlining, simplifying, and eliminating unnecessary steps. This frees up energy and capacity as they modernize operations.

- **Modernizing data and application environments.** Sprawling databases, multiple sources of truth, and complex application environments hinder the rapid deployment of reliable and productive AI. Investing in modernization and data governance before scaling AI applications releases an additional wave of productivity.

- **Finding technology and services support.** Companies implementing AI in the cloud and on premises need reference designs, large language model (LLM) recommendations, prompt engineering, and application development support. All of these resources are in short supply because so many technology providers are currently introducing foundation model AI into their own products. Graphics processing unit (GPU) infrastructure, in particular, is in high demand.

Leading an AI transformation

A strategic implementation of AI aligns initiatives with the organization's business goals. Whether the changes are incremental or transformational, several best practices are emerging.

- Prioritize AI as a way to generate value, from the CEO down. Set clear targets for return on investment (ROI) and hold teams accountable through the budgeting process for delivering savings and creating value.

- Conduct a business diagnostic. Don't automate bad processes. Invest in mapping out value opportunities and redesigning business processes before automating. Set targets and manage change to improve efficiency as the technology is deployed.

- Define a clear roadmap for use cases. Focus on functional areas with high value potential, such as sales and marketing, customer support, software development, and operations.

- Leverage multiple AI delivery models, including self-service knowledge worker tools (such as Microsoft 365 Copilot), prebuilt commercial AI systems from vendors, and custom AI models, when the need for differentiation and sensitivity of data is high.

- Build shared datasets, AI models, and technology components and platforms to ensure economies of scale across solutions. Improve product management, as well as Agile and DevOps processes, to support high-velocity AI development.

- Develop appropriate risk management, responsible AI, and governance roles, and ensure clear communication and talent strategies for the workforce.

For every enterprise, the AI journey will take a unique form. But across industries and markets, it's clear that the dramatic rise of AI is not a passing hype cycle. The strategic and innovative use of AI will play a key role in achieving competitive advantage over the next decade and beyond. Late adopters are out of time, and companies that fall too far behind the curve will find it difficult to maintain or regain their position.

Operational Transformations

To Deploy Generative AI Successfully, Look to Earlier Automations

The most experienced firms are widening their lead in cost savings and productivity.

By Michael Heric, Purna Doddapaneni, and Don Sweeney

At a Glance

- Technology companies investing most heavily in automation outperform others in savings and adoption of new disruptive technologies.
- The gap between leaders and laggards is widening as leaders increase investment as a share of IT budget.
- Leaders are planning to invest, on average, over three times more in generative AI than laggards.
- Successful automation programs include enterprise-wide rollout, combined technologies, value creation, and engaged staff.

Given Nvidia's long history of successfully scaling up automation and artificial intelligence (AI) in its engineering work, it came as little surprise last year when the company announced it was one of the first to test generative AI for boosting the productivity of its chip designers. ChipNeMo, as Nvidia calls it, takes publicly available large language models (LLMs), trains them on Nvidia's 30 years of data, and does some fine tuning. The resulting tools serve as a chatbot, an electronic-design-automation-tool script writer, and a summarizer of bug reports.

Like Nvidia, technology companies with a long track record of developing and scaling up programs in traditional forms of automation, such as robotic process automation (RPA) and analytical AI, are now applying the lessons learned to gain an early advantage in generative AI. As with traditional automation, true success comes only when pilots are converted into large-scale programs that deliver compelling returns on investment across the enterprise.

Bain's latest survey of 893 automation executives worldwide, including 124 in technology companies, finds that companies investing most heavily in automation outperform laggards in savings achieved and adoption of new, more disruptive technologies. (We define leaders as companies investing at least 20% of their IT budget in automation in the past two years, and this elite group achieved an average 22% in cost savings. Laggards are companies investing less than 5% of their IT budget in automation, and these firms achieved just under 8% in savings on average.)

Automation leaders at technology firms were able to reduce the cost of processes by 17% in 2023, whereas lagging companies managed only 8%. Respondents also cited the benefits of trimming the number of low-value tasks, speeding up process completion time, and improving service quality and accuracy.

Consider Microsoft's automation in finance over the years. From 2010 to 2020, Microsoft has grown revenue by 145% while growing finance headcount only 15%. AI has also made Microsoft's finance forecasts more accurate and faster—from 100 full-time-equivalent staff spending one month to 2 full-time employees spending two days.

Now the leaders are moving quickly into implementing generative AI, and plan to invest, on average, over three times more of their IT budget in generative AI than laggards *(see Figure 1)*.

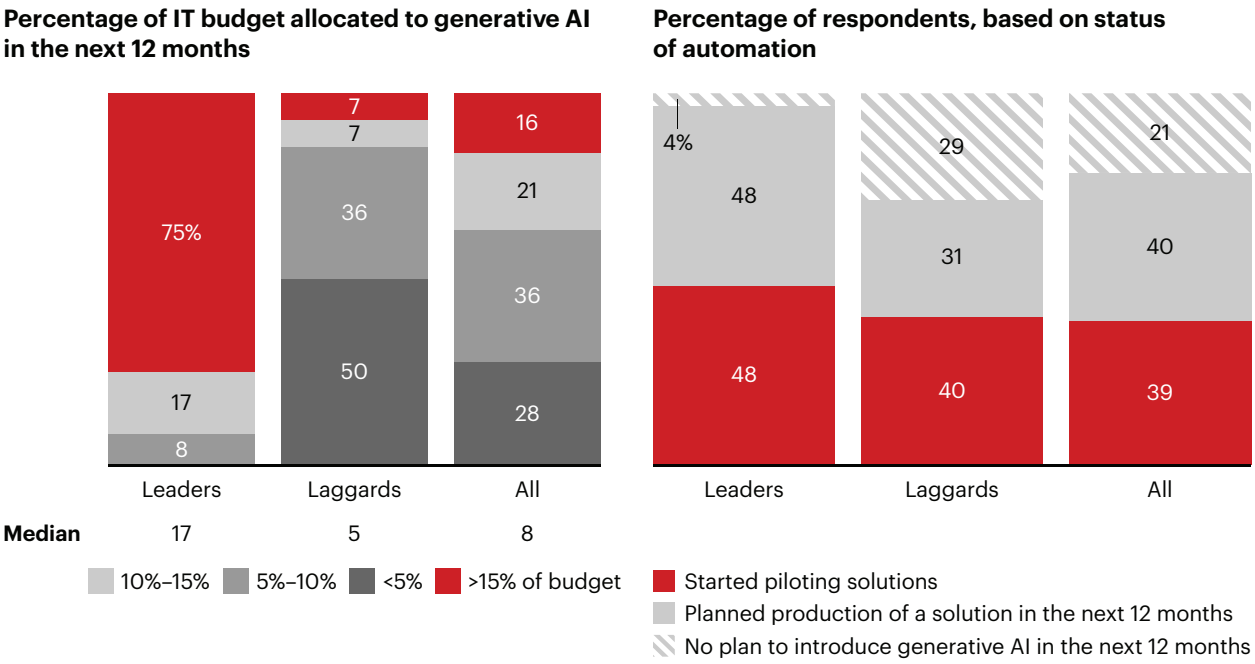
More than cost reductions

The continued wave of automation is generating significant value. AT&T, for instance, began working with RPA in 2015, making the company one of the earliest adopters of the technology, and has been applying AI across its operations for years. AI helps AT&T to optimize field technician routes, reducing fuel consumption while serving more customers; to translate and simplify documents; and to improve coder and developer productivity.

Companies that have successfully scaled up traditional forms of automation—workflow automation, RPA, scripting, and optical character recognition—have already embedded AI outside of LLMs, such as machine learning in document processing or natural language processing in job descriptions *(see Figure 2)*.

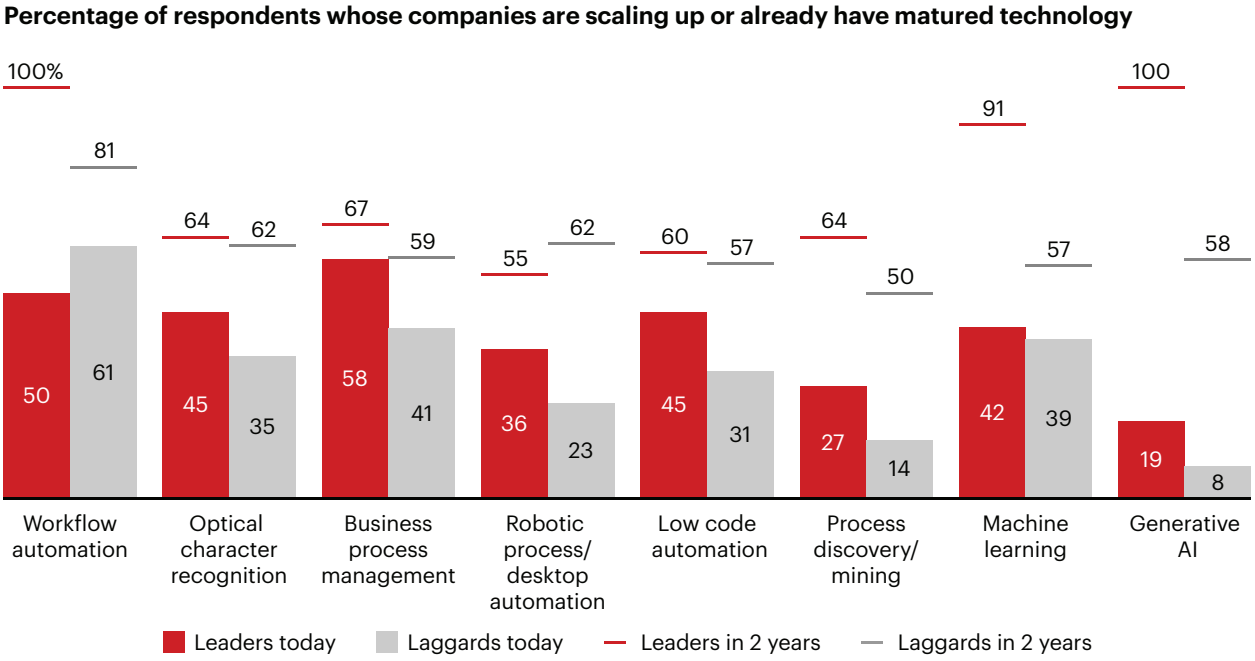
What's more, the gap between leaders and laggards at technology firms has widened and will likely continue to do so, as leaders plan to raise their investment as a share of IT budget while lagging companies plan to be more conservative. In our survey, 33% of leaders plan to invest significantly more in 2024, up from 21% in 2022, compared with only 13% of laggards, down from 19% in 2022 *(see Figure 3)*.

Figure 1: Automation leaders are out-investing other companies in generative AI and moving faster to implement the technology



Source: Bain Automation Pathfinder Survey, 2024, technology companies (n=124)

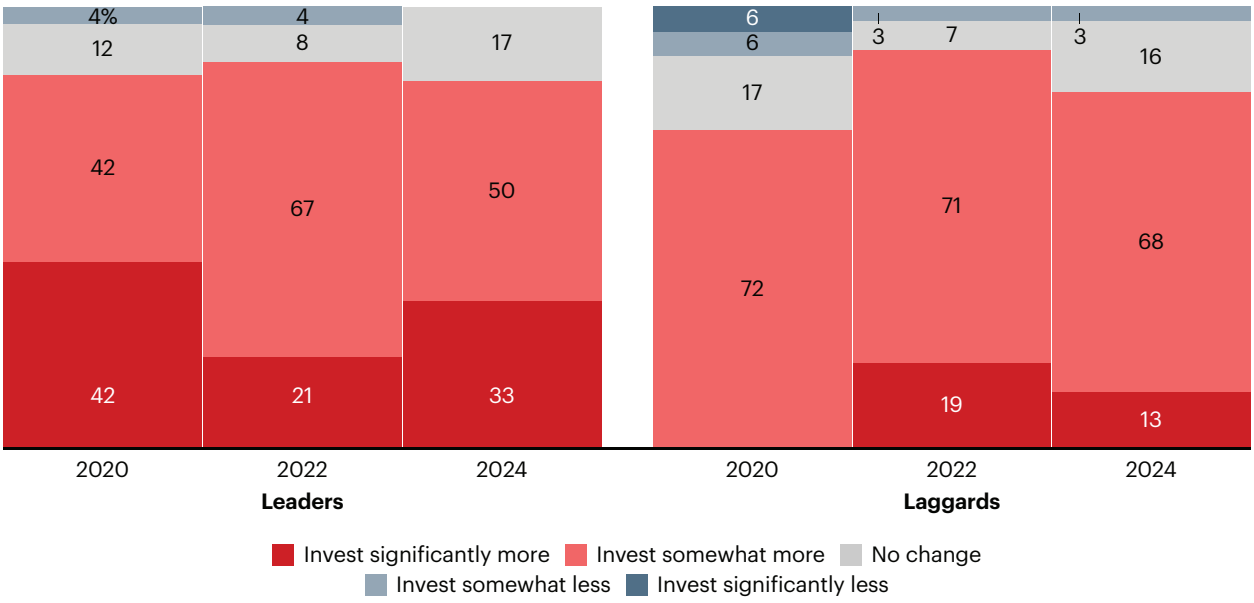
Figure 2: Leaders vs. laggards: technology type



Source: Bain Automation Pathfinder Survey, 2024, technology companies (n=124)

Figure 3: Leaders plan to invest more in automation than other firms in 2024

Percentage of respondents, based on their level of automation investment over the previous 12 months



Source: Bain Automation Pathfinder Survey, 2024, technology companies (n=124)

Generative AI will take automation to new levels of effectiveness and value. Most respondents are and will be using generative AI for three waves of use cases *(see Figure 4)*. In the first wave, they apply the technologies to use cases that were not possible in the past, such as creating new marketing content. For the second wave, they plan to replace technologies for current use cases, including order processing. A third wave will consist of enhancing current use cases, such as accounts payable and receivable. The logic here consists of companies wanting to apply generative AI to new areas, rather than start fresh with use cases where they have already invested resources, built integrations, and trained employees.

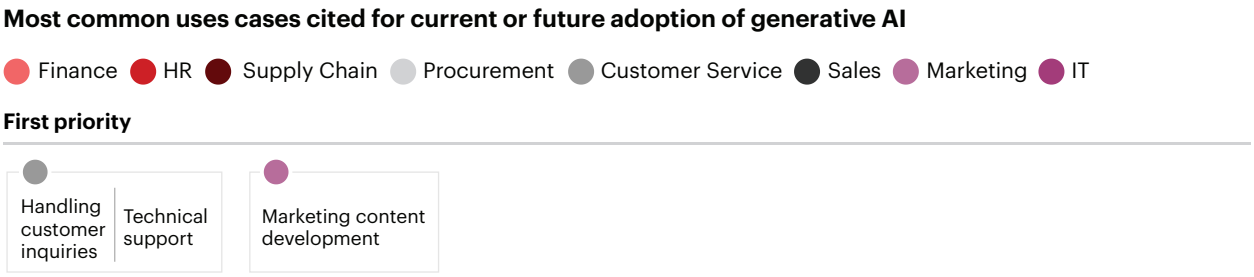
Automation principles that apply to generative AI

Companies that master the following principles will position themselves to rapidly take advantage of generative AI.

Elevate automation from narrow pilots to cross-company strategic initiatives. One common trap is crowdsourcing a long list of small automation projects, often within individual departments, then trying to execute them one by one. This makes it difficult to achieve major savings or other benefits.

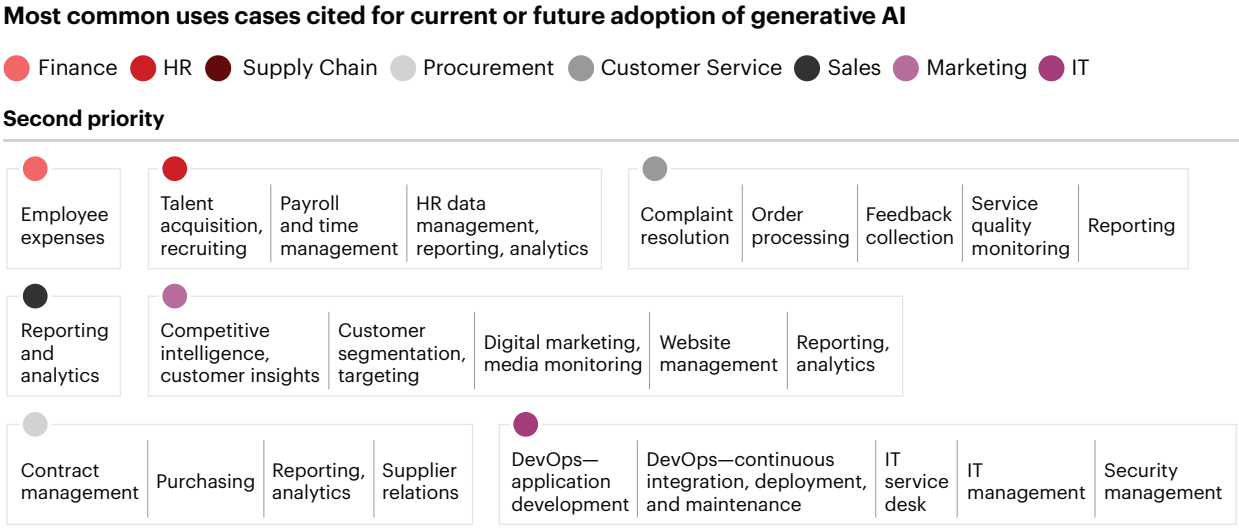
Automation leaders take a different approach. They set bold goals, framing the potential in the millions of dollars. They gain the sponsorship of senior executives and embed automation as a pillar of the overall strategic agenda.

Figure 4a: Companies are applying generative AI to completely new use cases first



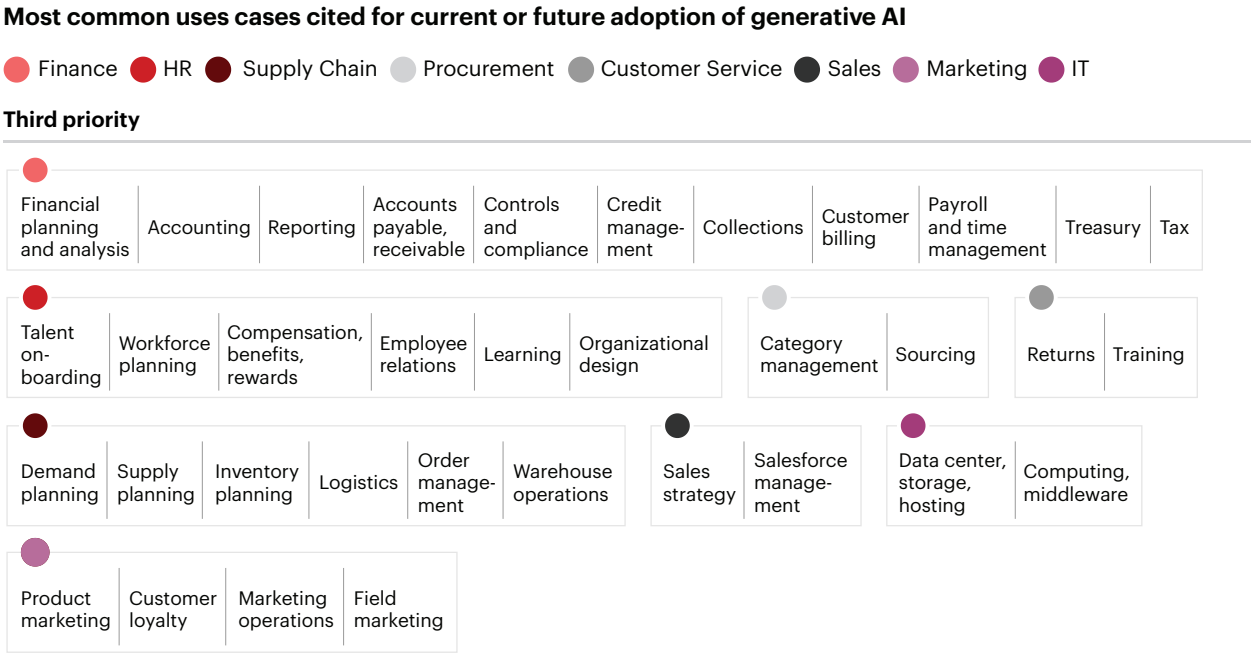
Source: Bain Automation Pathfinder Survey 2024, n=893

Figure 4b: Companies are applying generative AI to completely new use cases first



Source: Bain Automation Pathfinder Survey 2024, n=893

Figure 4c: Companies are applying generative AI to completely new use cases first



Source: Bain Automation Pathfinder Survey 2024, n=893

Combine automation technologies. When individual tasks are automated with different technologies, little value results. Worse, this can add more process complexity than the automation delivers in cost savings. Instead, automation leaders often combine technologies to deliver the best results. They start with the business needs and process, working back to determine the right combination.

Insist on realizing value from automation. Before investing in the software and implementation resources to build an automation, senior executives increasingly want a commitment from the people asking for the investment to achieve savings and other benefits, along with a plan to realize that value. Once automations are deployed, executives expect business processes to be redesigned, and they insist on seeing proof of how teams achieved the value claimed.

Coax and convince to reach full adoption. Managing how employees change their behaviors can make or break an automation program. Maximizing adoption of automation tools entails documenting and educating people on the new way to work, investing in training, tracking adoption rates, and taking steps to keep improving how people use the technologies.

• • •

The level of sophistication and maturity with automation varies widely. But companies that lag can catch up if they're willing to boost their investments and commit to a sustained effort that changes how people work.

The good news is that lessons learned from traditional automation technologies can inform fruitful deployment of new technologies, including generative AI. The techniques, governance issues, and process changes are all quite similar, so using generative AI offers a fresh approach to effectively manage costs and improve the customer experience.