TRENDS REPORT

The State Of Generative AI, 2024

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By Zeid Khater with Aaron Katz, Srividya Sridharan, Brian Hopkins, Rowan Curran, J. P. Gownder, Evan Megan

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Summary

Generative AI (genAI) technology promises to transform how enterprises operate, how employees do their jobs, and how consumers interact with brands. We're in the early stages of genAI technology, and there are many questions around its use cases, risks, and real-world impact. Enterprises are balancing opportunity with apprehension; most are experimenting with genAI in their workflows, and many are developing production systems based on solutions from tech companies and service providers. This report explores the current state of generative AI from the demand and supply angles, how companies are adopting it, and what factors enterprises should consider when preparing to implement it.

The State Of Generative AI: Wave Of Disruption Coming

Generative AI is shifting the paradigm of digital technology away from experiences based on pages, sites, and search terms and toward experiences based purely on natural language. It promises to transform how we interact with technology itself. Forrester expects that genAI will add convenience to and remove friction from a variety of experiences, reshape jobs in ways we are only beginning to contemplate, and disrupt organizations and industries.

However, it's still early days. Broad confusion about and misunderstanding of the technology coexists with widespread experimentation; near-daily announcements of new features, investments, and partnerships; and hype from tech vendors about capabilities that may be months or years away. And there are still meaningful obstacles to genAI adoption for enterprises, particularly for externally oriented (i.e., customer-facing) use cases. These include questions about the quality of training data; the use of copyrighted material in training and outputs; model and data bias; frequent model "hallucinations" and inaccuracies; and data security concerns. Even so, enterprises are moving aggressively from education and exploration to experimentation and adoption, requiring new approaches to assessing business value and strong governance to ensure ethical and safe use.

A Small Number Of Key Players Dominate LLMs

Large language models (LLMs) like OpenAI's GPT series have been at the center of the generative AI discourse (see Figure 1). Although LLMs are only one segment of a broad spectrum of generative models, their impact has been undeniably groundbreaking. While LLMs are just the beginning of the genAI transformation, they dominate the conversation today. A growing set of open source players and service providers also have their own proprietary models. The supply side of genAI is characterized by:

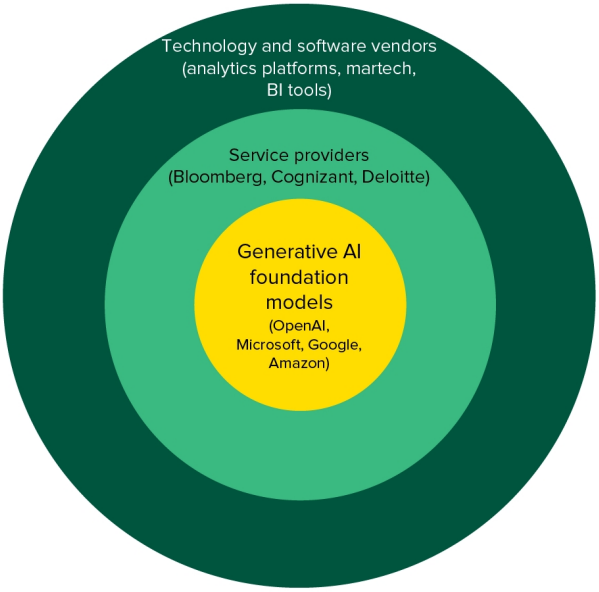
- **A small group of leading tech companies.** Foundation LLMs require almost unimaginable volumes of data (GPT-4 is trained on more than a petabyte of data), years of development, and millions of dollars of infrastructure, which limits the number of competitors. As a result, the LLM space is dominated by a handful of vendors that have made long-term investments in a foundation model, including Open AI's GPT models, Meta's LLaMa, and Google's Bard for text and Stable Diffusion, Open AI's Dall-E, and Midjourney for images. Some foundation models (e.g., LLaMa) are open source, so developers have access to the code and can modify and extend it; others (e.g., GPT-4) can be licensed, but the source code is

not publicly available.

- **Generative AI service providers.** Large service providers such as Accenture, Deloitte, McKinsey, and PwC have built proprietary genAI solutions to serve enterprises. These firms typically leverage public LLMs, open source models, and additional data and technologies to build broader AI solutions that meet the specific needs of clients. They act as intermediaries, transforming high-level AI research into practical customized applications for enterprises.
- **A broad group of vendors offering some genAI features.** Tech vendors of all stripes are finding ways to integrate LLM capabilities into their products and services. Most vendors' genAI features are a thin wrapper empowering more efficient input and output in software, leveraging the technology's ability to summarize, translate, and create content. Vendors of call center and customer experience software use genAI to provide more natural interactions with chatbots; creators of software development tools use it to write and QA code; and creative industries use genAI-based tools to produce text and images at scale.

Figure 1

Three Broad Tiers Of Generative AI Suppliers



Plans To Adopt Generative AI Are Nearly Universal

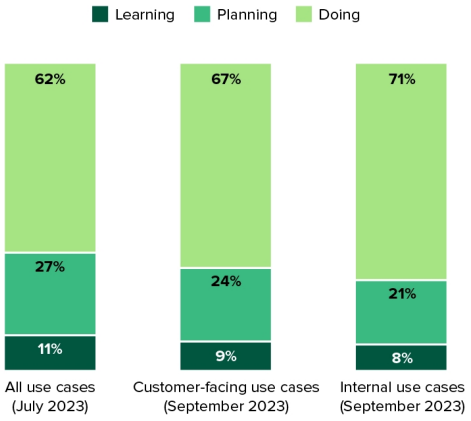
According to Forrester's 2023 data, over 90% of global enterprise AI decision-makers have concrete plans to implement generative AI for internal and customer-facing use cases (see Figures 2 and 3). While production use cases are limited to a few sophisticated organizations, enterprises expect broad value from genAI, with productivity as the leading benefit (47%) and innovation and cost efficiencies close behind (see Figure 4). Most enterprises have yet to realize bottom-line benefits from genAI; the technology is too new to have many proven cases where genAI in production workflows is definitively linked to growth. Given the complexity, spotty explainability, and unpredictability of genAI models, firms are taking a cautious approach that:

- **Starts with internal use cases.** Using generative AI internally for employee productivity and workflow optimization allows firms to test and refine their models in a controlled environment. The top three use cases — employee productivity, knowledge management, and software development — all focus on internal improvements, where knowledge management bots can accelerate workflows, automate tasks, and generate new ideas and innovation by providing inspiration at scale and TuringBots can vastly improve developer productivity.
- **Moves slowly into customer-facing and other external applications.** Once companies are successfully using genAI internally and understand how to manage and govern genAI applications, they slowly push outward to test new ways to enhance customer experiences via conversational AI, chatbots, and virtual assistants. Most of these external deployments employ heavy human-in-the-loop management and validation — at least for now.

Figure 2

Most Organizations Are Using Or Planning To Use Generative AI

"How would you characterize where your organization is today in its use or plans to use generative AI?"

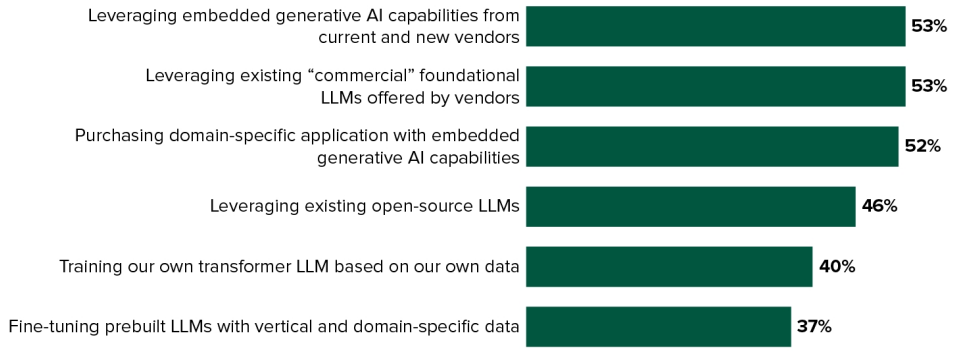


Base: 275 global AI decision-makers
Source: Forrester's July 2023 and September 2023 Artificial Intelligence Pulse Surveys

Figure 3

Organizations Follow Multiple Approaches To Generative AI Adoption

"Which of the following approaches to adopting generative AI are part of your organization's generative AI strategy?"
(Multiple responses accepted)

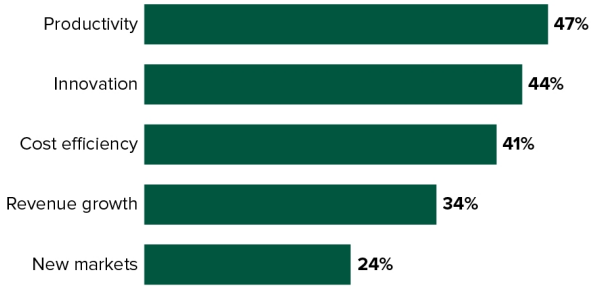


Base: 267 global AI decision-makers whose organizations have a documented AI strategy
Source: Forrester's September 2023 Artificial Intelligence Pulse Survey

Figure 4

Users Of Generative AI See A Variety Of Benefits

"Which of the following do you believe are the greatest benefits of generative AI for your organization?"
(Multiple responses accepted)



Base: 275 global AI decision-makers
Source: Forrester's September 2023 Artificial Intelligence Pulse Survey

Risks Are Still Top Of Mind For Many AI Skeptics

Widespread enterprise adoption of generative AI still faces significant obstacles. Among AI decision-makers, 30% say that a lack of technical skills to use genAI is one of their biggest barriers to adopting it; 28% cite difficulty integrating genAI with existing infrastructure. About as many cite data privacy and security concerns, governance and risk challenges, and (lack of) employee readiness. Moreover, many enterprises are waiting for more mature regulatory frameworks and clarity on the relevance of foundation models to specific industry verticals or corporate functions before putting genAI applications into production. While generative AI promises huge benefits, the technology still has challenges of:

- **Hallucination, error, and bias.** Despite dramatic improvements in accuracy over the past year, public LLMs regularly produce results that are irrelevant or flat wrong. Because their training data sets are weighted toward publicly available internet data, their outputs will reflect biases and misinformation common on the internet. Moreover, LLMs and other generative models are probabilistic, not deterministic. They don't reason or fact-check; they use millions of parameters and billions of data points to predict what word is most likely to come next based on a prompt. Fortunately, new tools and techniques are emerging to help reduce the occurrence of problematic outputs considerably.
- **Weak or absent explainability.** Enterprises need explainability to be able to troubleshoot when a model produces undesirable results or because regulators require it. With most traditional AI models, it's possible to reverse-engineer how the model produced an output or build an explainable version of an opaque model. This is not the case with generative models; even experts still don't know exactly how they produce results. No one can perfectly predict what results a generative model will produce or explain why it produced a given result. It's uncertain whether explainability is even possible for genAI applications.
- **Privacy and regulatory concerns.** Firms have legitimate questions about the incorporation of their data (or even their prompts) into LLM training data sets and how proprietary company or customer data is treated when fed into an LLM. Some large enterprises, particularly those in heavily regulated industries, are exercising extreme caution to protect company and customer data; many ban tools like ChatGPT outright over concerns about data protection and regulatory backlash. Others are leveraging genAI in data-safe ways (e.g., using private enterprise instances of ChatGPT) as more options become available.

- **IP and copyright uncertainty.** The legal landscape around generative AI is marked by uncertainty, particularly concerning copyright infringement and the ownership of AI-generated content. Recent lawsuits against major firms like Microsoft and OpenAI have intensified these concerns. Courts and law firms are navigating these challenges, but no clear consensus has emerged on how intellectual property (IP) laws apply to genAI.

Generative AI Use Cases Are Diverse

Early adopters report they are implementing generative AI in diverse use cases across operations, customer engagement, and product development (see Figure 5). The areas of biggest immediate impact are employee productivity, customer support, and coding, where genAI's ability to streamline workflows with natural language answers to common questions and to automate repetitive tasks and uncover prior art (particularly in application development) can be used with less risk (see Figure 6).

Figure 5

Internal And External Use Cases

Use case	Internal/external	Benefits	Risks
Employee productivity	Internal	Automating repetitive tasks; freeing up time for backlogged work	Hallucinations or errors in outputs leading to poor decisions; introduced bias
Software design, development, and testing	Internal	Faster, more efficient development of higher-quality code	Flawed algorithms; plagiarized or copied code
Content creation	Internal	Faster, less expensive content creation	Biased incorrect information; impersonal tone
New product or service development	Internal	Innovative ideas and designs; shorter development cycles	Impractical ideas; unsafe concepts
Customer-facing experiences	External	Personalized recommendations; interactive experiences and conversations	Inappropriate or harmful content; erroneous information
Customer self-service	External	Faster answers to customer questions; the ability to scale customer service at a lower cost	Inability to handle complex issues; customer frustration
Knowledge management	Both	The ability to find answers and information more quickly	Surfacing incorrect or outdated information; security risks if information is sensitive
Self-service for data and analytics	Both	Data democratization; reduced load on insights teams	Misleading interpretations of data; incorrect statistical assumptions

Figure 6
Generative AI Heat Map

Use case	Financial services	Insurance	Healthcare	Public sector	Retail	Smart manufacturing
Employee productivity	Hot	Hot	Hot	Cold	Hot	Hot
Software design, development, and testing	Hot	Hot	Hot	Warm	Hot	Hot
Content creation	Warm	Warm	Warm	Cold	Hot	Hot
New product or service development	Warm	Warm	Warm	Cold	Warm	Hot
Customer-facing experiences	Warm	Warm	Warm	Cold	Cold	Cold
Customer self-service	Warm	Warm	Warm	Cold	Warm	Cold
Knowledge management	Warm	Warm	Warm	Warm	Warm	Warm
Self-service for data and analytics	Hot	Hot	Warm	Warm	Warm	Warm

Prepare For Generative AI With Governance And Experimentation

To prepare for generative AI, leaders need to take several steps now, even if the enterprise has no immediate plans to build custom AI applications. AI is coming into your organization whether you know it or not. Your employees have access to free AI tools that they may be using in their work, and your IT and software partners are building genAI capabilities into the applications deployed in your on-premises and cloud environments. This is the time to start building in-house skills: Forrester sees genAI as a key enabler of most future enterprise applications, so experimenting with internal use cases and building your AI muscles will ensure that you aren't blindsided by rapid developments and disruptions. The first steps toward generative AI success are:

- **Setting governance guidelines for BYOAI.** Anyone can log into a free version of ChatGPT and copy data into the prompt window, raising potential risks ranging from inaccurate output to a data privacy breach. Leaders need to immediately establish clear guidelines around the use of bring your own AI (BYOAI), including limiting access to various tools; specifying a preferred company or enterprise

toolset; or defining the circumstances under which using genAI is fair game, what data may be used in a prompt window, what is permissible on employee-owned or company-owned devices, and how the enterprise will track and report usage, costs, and outputs. Well-defined BYOAI policies will empower employees to innovate while ensuring proper oversight for security, ethics, and compliance.

- **Establishing standards for evaluating genAI in vendor solutions.** Most of the AI operating in your organization wasn't built by you — it's embedded in third-party software and solutions. You should evaluate and govern AI that is part of a vendor's capabilities, just as you would with a homegrown application. The risks — such as hallucinations, bias, and data privacy breaches — are the same regardless of the source. When assessing a vendor's genAI products, know what the must-haves are for your enterprise. You may need to examine the vendor's data sourcing and content curation practices, data privacy protections, human review and training processes, model performance and oversight, and ability to customize training data sets and fine-tune models responsibly. Ensure that vendors comply with your enterprise standards before you sign that contract.
- **Updating your AI strategy with standards and guardrails for implementing genAI.** As generative AI advances and enterprises tackle more complex and risky use cases, leaders must refresh their AI strategy and governance to incorporate appropriate standards, principles, and guardrails for ethical and responsible use. Address bias, misinformation, and IP protection via policies and controls tailored to generative models. Many firms have enterprisewide guidelines to manage hidden or "shadow" AI, which is the use of AI applications by employees to enhance or accelerate their work without their employer's knowledge. Accepting this as reality — or at least a strong possibility — should spur you to create guidelines for safe usage. Guidelines that have surfaced so far provide whitelists of approved applications, blacklists of data types to avoid introducing to the models, and limitations on work functions that need to stay in the realm of "human intelligence" until governance can catch up.
- **Identifying use cases that can deliver value.** Given the pace of change with generative AI, there are many unproven use cases. Prudent leaders will focus on high-value applications with demonstrable impact rather than deploying unproven use cases. Prioritizing solutions that improve core workflows and provide clear productivity gains will ensure judicious adoption amid great hype.

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