Generating Success with Generative AI:

How Businesses Are Leveraging LLMs in Operations

By Ellora Sarkar, Dilina Abudurexiti, Carolyn Saund, Mauricio Matsumoto

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Introduction

Generative AI (GenAI) has moved from theoretical promise to practical deployment across industries, driven by its ability to automate tasks, improve quality, and drive innovation. This whitepaper consolidates the findings from Keystone's recent GenAI survey to provide a clear understanding of how companies of varying sizes and maturity levels use GenAI to meet strategic and operational goals. A few overarching themes emerge:

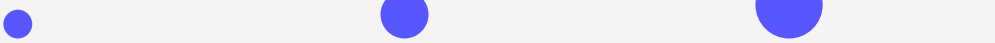
- **We're seeing stratification in the market and in GenAI strategies based on company size.** Small organizations use GenAI to scale beyond their size and expand their impact, while larger organizations are more likely to use GenAI to navigate internal complexity and drive efficiency.
- **A company's maturity in their digital transformation journey – and general data readiness – impacts how they think about GenAI tools.** Digitally mature companies are better equipped to extract more value from GenAI through automation and quality improvements, leveraging their established "AI Factory" infrastructure to measure and optimize results.
- **Successful GenAI deployment demands thoughtful governance.** Companies consistently report struggles to both pilot and roll out these solutions without a structured approach.
- **A year of experimentation reveals that LLMs and GenAI are especially valuable for corporate functions producing high-volume communications reliant on extensive knowledge repositories.** Sales, customer service, strategy, and marketing teams find the technology especially valuable.
- **Survey results suggest that corporate functions like supply chain, finance, and operations require more sophisticated AI solutions.** Unlike communications-heavy functions, these areas need custom enterprise AI tools that combine technical expertise with deep domain knowledge to build solutions that go beyond the capabilities of out-of-the-box LLMs.

Based on Keystone's survey, this analysis examines how companies of varying sizes, industries, and digital maturity levels are implementing GenAI. Our research offers insight into adoption goals, implementation challenges, and business impact across sectors.

Methodology & definitions

Keystone conducted the Generative AI Survey with tech executives from 238 organizations across different industries and levels of maturity. The survey focused on responses that reflected real-world experiences with GenAI adoption (i.e., behavioral data) rather than predictions of behavior, as real-world data collection tends to be more grounded in truth. Respondents were specifically asked to describe experiences with their most recent deployment. The survey was fielded in April 2024.

Company size definitions



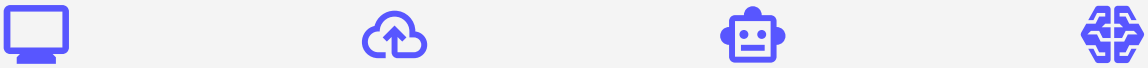
Small Business
100 or fewer employees

Midsize Business
1,000 or fewer employees

Enterprise Business
1,001+ employees

Tech maturity definitions

Keystone uses the following tech maturity stage categories, as originally published by Dr. Marco Iansiti of Harvard Business School and Microsoft CEO Satya Nadella in Harvard Business Review's May-June 2022 Edition.



Traditional

- Siloed business units
- Localized applications and decision-making
- Siloed data
- Business-unit-based Machine Learning models

Bridge

- Centralized data/ science team
- Agile development teams
- Elastically scalable cloud-based data platform
- APIs for sharing data internally

Hub

- Real-time insights shared across business units
- Business ownership of apps
- Unified, modular data platform
- Advanced and automated Machine Learning models

Platform

- App-enabled mature capabilities and insights
- Distributed innovation and citizen developers
- Integrated foundation of software, data, and AI with consistent architecture and integrated APIs
- Advanced AI development abilities

Industries

Companies in the following industries were included in the survey:

Accommodation and Food Services

Arts, Entertainment, and Recreation

Construction

Educational Services

Finance and Insurance

Healthcare and Social Assistance

Information and Technology

Manufacturing

Other Services (except Public Administration)

Professional, Scientific, and Technical Services

Real Estate and Rental and Leasing

Retail Trade

Transportation and Warehousing

Utilities

Key findings

01

Organizations surveyed mostly use GenAI in IT, strategy, R&D, Sales, and as a “general” tool

02

Only 10% of organizations surveyed experienced issue-free GenAI deployments

03

Our findings suggest that as organizations become more technologically mature, they tend to diversify their GenAI applications across a wider range of business functions, and their employees become more savvy at defining which tasks are best suited to “outsource” to GenAI

Goals of using GenAI

The survey revealed interesting patterns in how organizations of different sizes and maturity levels approach GenAI implementation and its intended outcomes.

Size-based trends

Prevalence of GenAI Use: Enterprise companies report, on average, over **3x** more GenAI deployments vs small companies and across **59%** more functions.

Application Goals

- Midsize companies are twice as likely to use GenAI to derive quality improvements (24% vs 11% (small) and 12% (enterprise), respectively), and less likely to focus on efficiency
- Small (72%) and enterprise (61%) companies focus more on employee efficiency vs only 46% for midsized

"In this use case, I had no staff. It was just me, and I didn't have the crew that we had in the past. I have unfortunately very little time. Given time constraints and lack of headcount, AI was the obvious solution."

– VP of Marketing and E-Commerce, Small Business, Retail

"It's actually a net positive when it comes to capabilities. It adds to the speed with which we do things. My team is 3-4 people. Everyone is so strapped for time. When ChatGPT was announced, we started looking into it. We were early adopters of whatever they were putting out."

– Director of Marketing, Small Business, Biotech

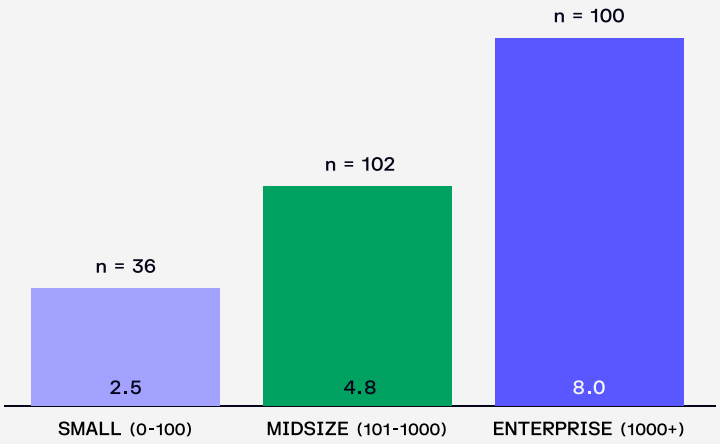
Internal vs. External Focus: Larger organizations are more likely to target GenAI internally.

- 66% of enterprise organizations and 62% of midsize organizations are targeting internal business, compared to only 53% of small businesses
- Enterprise (15%) and midsize (16%) organizations are least likely to target GenAI for B2C applications, compared to 28% of small businesses
- When considered in combination with insights on application goals, this may suggest larger firms find value in using GenAI to navigate complex organizational structures that support scale but not efficiency. Small organizations, however, are most likely to be overwhelmed by the ratio of staff to customers and require help to support a growing customer base.

Human Replacement vs. Complementary AI: Larger businesses are more likely to use GenAI as a complement to human efforts while technologically mature companies are more likely to replace human effort.

- Small and midsize companies report 47% of GenAI workflow complements employee efforts, while enterprises report slightly higher at 52%
- A small but notable percentage of midsize (7%) and enterprise (5%) companies report fully replacing humans, but this is not yet seen in small companies

Average GenAI Deployments by Company Size (n = 238)



Usage Policies: Enterprise companies have more stringent policies on the use of GenAI in their organizations.

- More than a quarter of small companies have no policy at all, and roughly 2/3 have guidelines but no formal policy
- This is in sharp contrast with large enterprises, more than half of which report having some sort of formal app review and approval requirements

Funding: Enterprise companies are more likely to establish central budgets from which GenAI apps are funded.

- 36% report having a dedicated GenAI committee with its own funding, and another 30% are applying GenAI in one-off use cases with central budgets established. These percentages are roughly consistent across industries.
- By comparison, 4x fewer small companies (8%) have dedicated committees with funding, but they're comparable in one-off use cases (28%)
- When considered in combination with reported usage policy guidelines, an interesting dynamic appears. Enterprises abide by more restrictive policies, which in theory might suggest fewer AI applications. However, larger companies' resources allow for investment in AI and corresponding legal guidance, allowing both to be developed concurrently. By comparison, policy development lags at smaller companies with fewer resources.

Customization of Applications: The larger the enterprise, the more likely it will need custom components to deploy GenAI applications. This may be related to more robust security requirements, lower appetite for risk, or more stringent internal policies on the use of GenAI.

Maturity-based trends

Prevalence of GenAI Use: More mature companies report a higher number of GenAI deployments, on average – 2.8 for Traditional, 2.4 for Bridge, 5.2 for Hub, 8.1 for Platform – and across more functions (1.8 traditional vs 3.9 platform).

Application Goals: Increased maturity drives increased use of GenAI for automation and quality goals.

- Traditional (75%) and Bridge (77%) companies predominantly use the technology for employee efficiency
- Usage for employee efficiency drops to 52% for Hub and 50% for Platform companies, which are 3x more likely to use GenAI for automation and 2-3x more likely to use it for improved quality
- These findings are reinforced by research published last year by Keystone affiliate expert and Harvard Business School professor Karim Lakhani, which found that the subjects who most effectively used AI did so either as "centaurs" who identified which tasks were best suited to AI and which were best suited to human work, or "cyborgs" who intertwined their human efforts seamlessly with AI in every task. In more tech mature organizations that adopted AI effectively, the "centaur" model of defining specific, AI-appropriate tasks minimized risk of incorrect outcomes and best enabled employees. Our survey suggests the same: More tech-mature organizations are focused on moving tasks to automation vs. making human tasks more efficient.

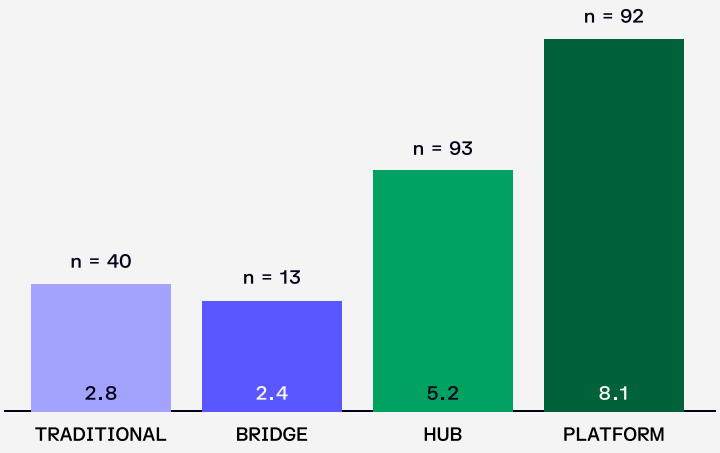
Internal vs. External Focus: More mature orgs are more likely to use GenAI for external or customer-facing purposes.

- 52% of Platform companies are using GenAI only for internal purposes vs 78% of Traditional companies

Human Replacement vs. Complementary AI: As organizations' tech abilities mature, the likelihood of full employee replacement increases.

- Of Traditional companies, 63% report GenAI is strictly used to complement employee workflows; this drops to 41% for Platforms
- In Hub and Platform companies, it becomes more likely to see split workflows or full employee replacement

Average GenAI Deployments by Tech Intensity Stage (n = 238)



Usage Policies: Like enterprises, more tech-mature companies have more stringent policies on the use of GenAI in their organizations.

- More than half of Platform companies report formal app review and approval processes, and 7% go further and ban anything not centrally made

Funding: As tech maturity increases, the likelihood of having a dedicated, centralized GenAI budget does too – 42% of Platform companies say they have dedicated committees with funding vs only 3% of Traditional companies – a 14x difference

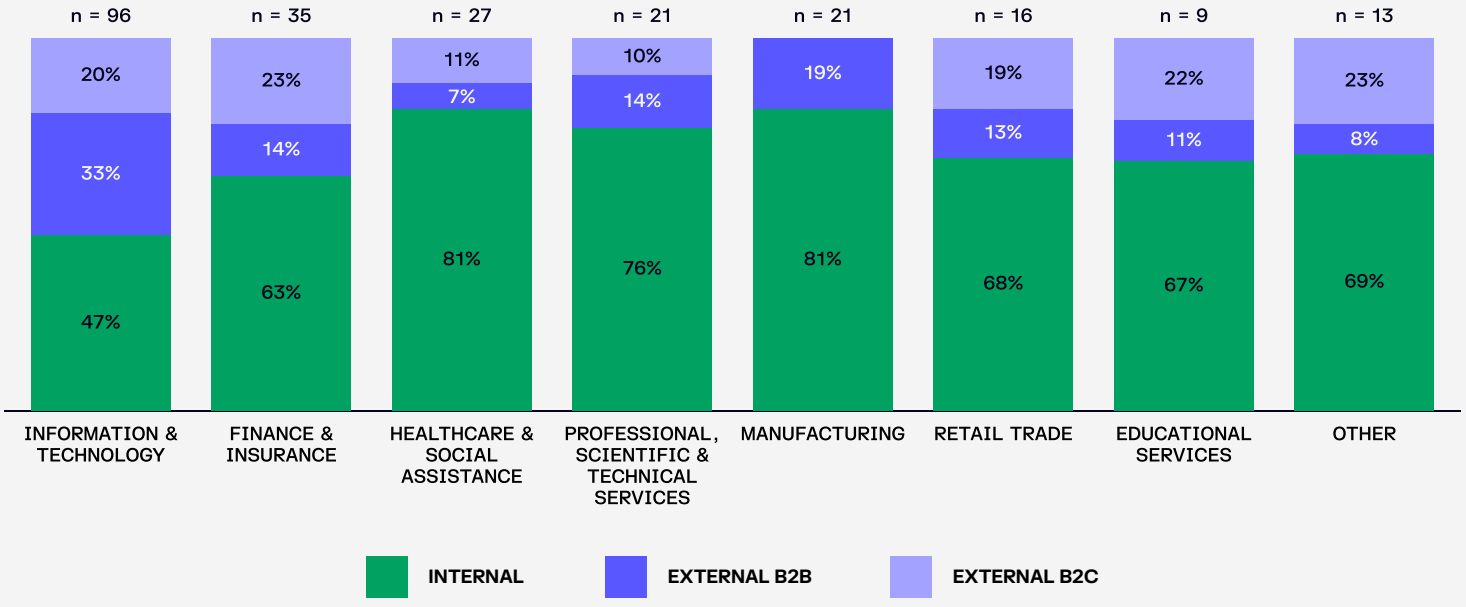
Customization of Applications: The more tech-mature the enterprise, the more likely custom components are used within GenAI applications – only 21% of Platform companies use out-of-the-box GenAI apps. Tech maturity has a more pronounced effect on customization than company size – 31% of enterprises use out-of-the-box solutions. This may be because Platforms are more likely to be using AI for quality improvements or may be more comfortable and familiar with building solutions as a tech organization.

Industry-based trends

The survey revealed significant variations in GenAI adoption and application across different industries.

- The Finance and Insurance industry is the most likely to use GenAI to automate activities
- Educational Services are most likely to use GenAI for employee efficiency, but this is seen as a major benefit across all industries
- Professional Services and Manufacturing industries see GenAI as a quality driver
- Technology and Financial Services companies are more likely to deploy AI with customers rather than focus on internal use cases, while Healthcare and Manufacturing are much more focused on internal
  - → This may speak to the risks and laws surrounding worker and consumer safety, an important consideration. Manufacturing also tends to be more focused on B2B interactions and may leverage GenAI for commercial activities related to internal operations.
- Few industries beyond Retail regularly find suitable out-of-the-box solutions for their GenAI use cases, and many make at least some adjustments
  - → 63% of Retail companies use out-of-the-box GenAI solutions while fewer than 50% of other industries report the same
  - → Information and Technology (38%) and Finance and Insurance (40%) are most likely to report a completely custom build for AI solutions

Build Audience by Industry (n = 238)



GenAI applications by business function

These function-specific applications show how firms are tailoring GenAI to address the unique challenges and opportunities in each area of business operations.

Information Technology	• High GenAI usage for automating routine tasks (34%) • Focus on streamlining workflows and improving efficiency
Marketing and Sales	• Most likely to use GenAI to improve quality rather than drive efficiency • Marketing most often uses image AI vs other corporate functions that are using LLMs for text – this is to be expected, as production of new images is a core function of marketing teams • Sales applications are often purchased out-of-the-box, commonly Salesforces' Einstein
Strategy	• High focus on employee efficiency (71%) • Often uses out-of-the-box solutions, e.g., Microsoft Copilot and ChatGPT Enterprise
Customer Service	• Strong focus on efficiency improvements (71%) • High deployment, especially in retail sector
Operations	• Requires the highest amount of customization in GenAI applications • A plurality focus on automation (40%)
Human Resources	• Balanced focus on automation (50%), and work quality improvement (50%)
Research & Development	• Mature organizations leveraged GenAI for advanced data analysis and decision-making • 50% of R&D respondents required custom solutions

> "We use Firefly a lot for branding colors. For example, when I need to create a PowerPoint or presentation and want to use imagery that reflects our branding colors, Firefly helps with that."
>
> **– Associate Director of Marketing, Manufacturing, Enterprise**

Challenges to adoption

Despite widespread adoption, organizations face various challenges in effectively implementing and using GenAI across security and legal scrutiny, business integration, and core tech.

Security

There is no shortage of discourse surrounding the concerns of GenAI's external security factors – i.e., confidentiality of information entered into LLMs. Still, many companies do not yet have the internal controls in place to ensure employees do not leak confidential information when using LLMs, especially those who may not have the knowledge or resources to distinguish between data that can and cannot be safely shared. Such controls can be exceedingly difficult – and costly – to implement.

Model Quality

52% of surveyed organizations experienced at least one model-related challenge in their most recent deployment, primarily related to output quality. Many organizations experienced model hallucinations that negatively impacted output accuracy or reported that fine-tuning their model was harder than expected. Grounding and RAG approaches can help, but niche and specific topics remain difficult to fine tune.

Measuring ROI

Measuring the business outcomes of GenAI can also be difficult, especially when quantifying abstract business enhancements like "productivity gains." This challenge may be mitigated as more standardized methods of measurement emerge.

Internal Processes

Our survey findings suggest navigating internal decision-making processes can impact how difficult it is to pilot and deploy GenAI.

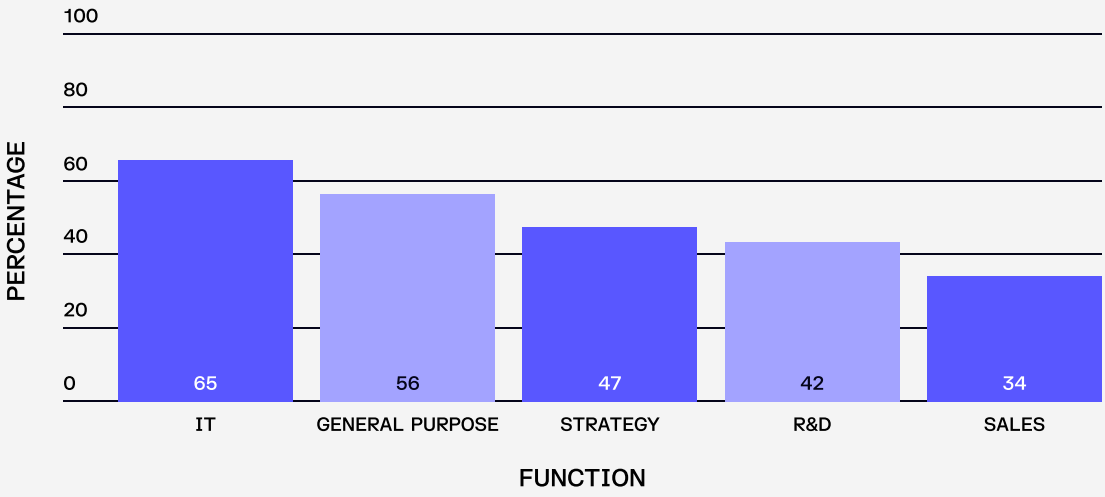
- Smaller businesses have an easier time piloting and deploying GenAI
  - → On a difficulty scale of 1-7 (easy to hard), small organizations rated piloting and rolling out GenAI across their organizations as a 3.9, vs 4.3 for midsize and enterprise companies
  - → This could speak to the bureaucratic difficulty of navigating large organizations or the dynamics of the formal policies more likely to exist within those enterprises
- More mature companies have more difficulty with GenAI pilots – perhaps due to more stringent requirements and formalized committees – but slightly easier rollouts
  - → Platforms rate GenAI pilots and roll outs across their organizations as a 4.5 on a scale of 1-7 (easy to hard) – less tech-mature organizations average 3.9 for ease to pilot, but 4.7 to roll out

The challenges related to fitting AI into an organization's normal course of operations while meeting performance standards highlight the technology's nascency. Further, it's clear organizations must evolve as they continue to adopt AI by changing their operating models and measurement approaches.

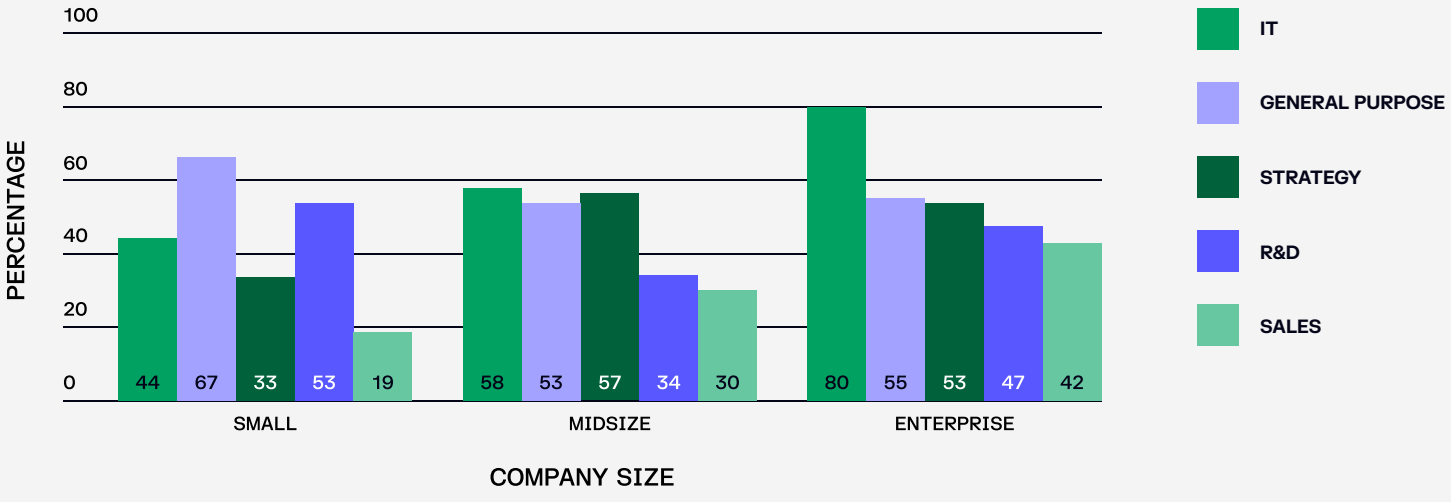
Charted insights

Our survey revealed that organizations are leveraging GenAI across various business functions, with some clear trends emerging based on company size and technological maturity.

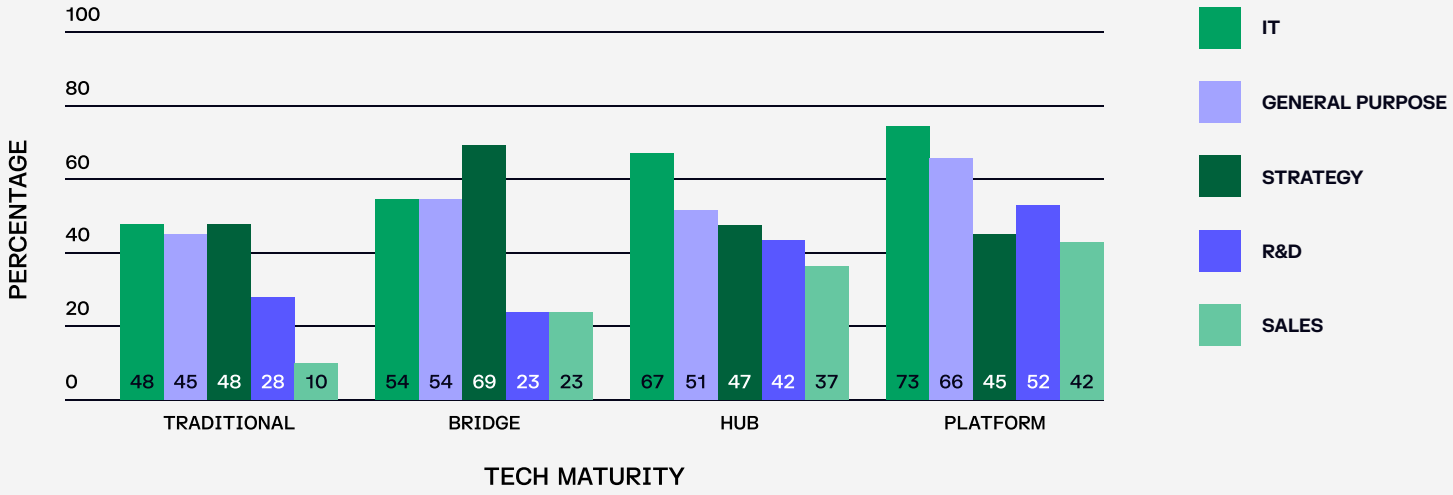
GenAI Usage by Company Function



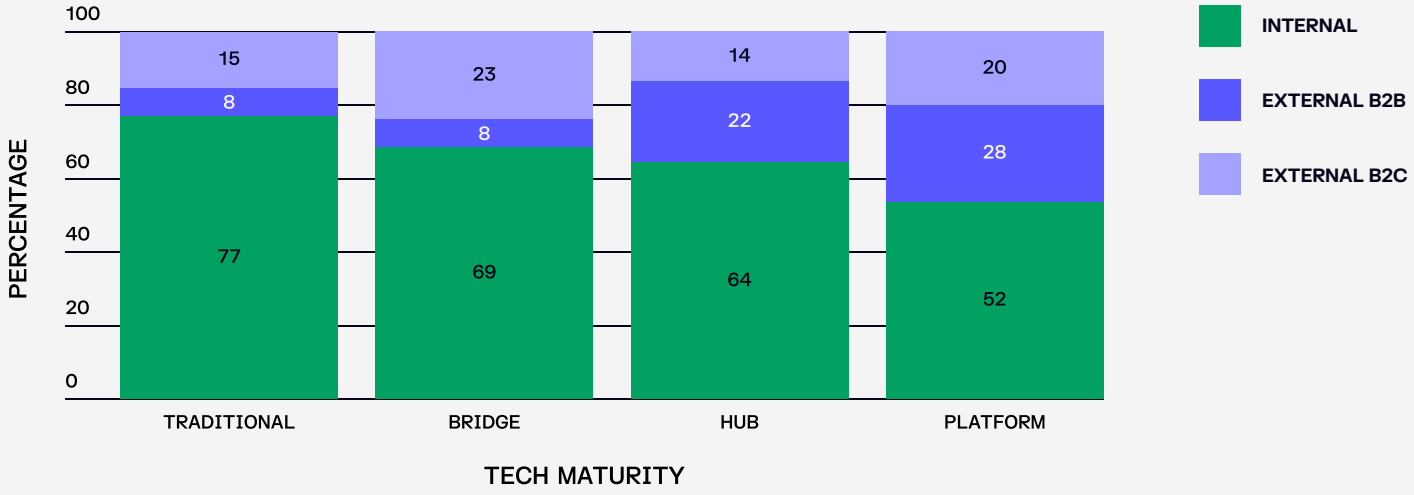
GenAI Deployments by Company Size and Function



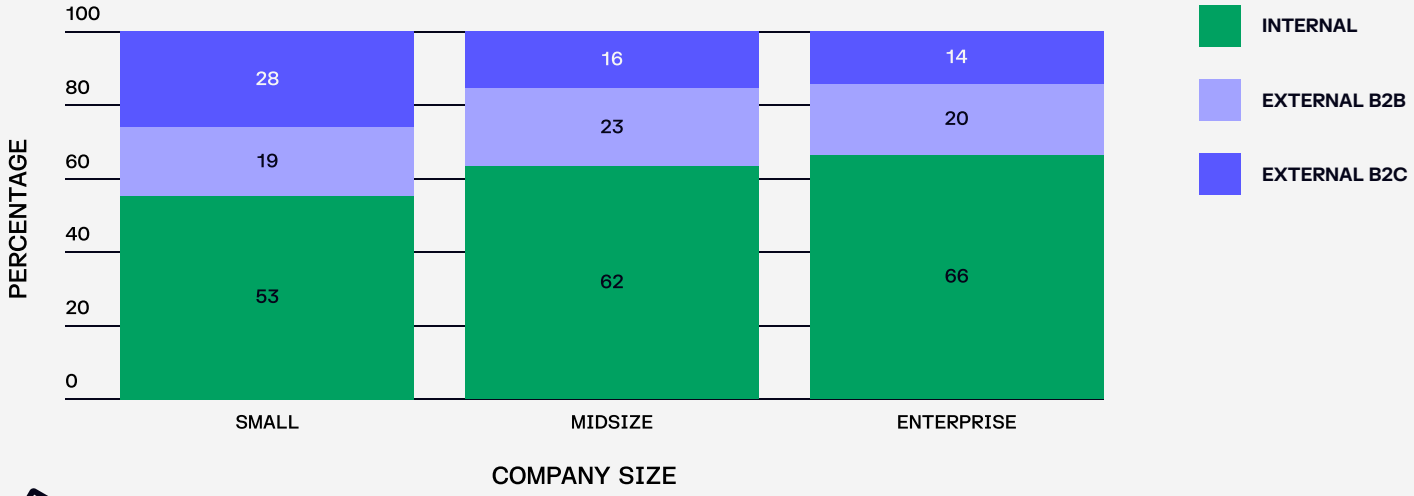
GenAI Deployments by Tech Maturity and Function



GenAI Deployment Audiences by Tech Maturity



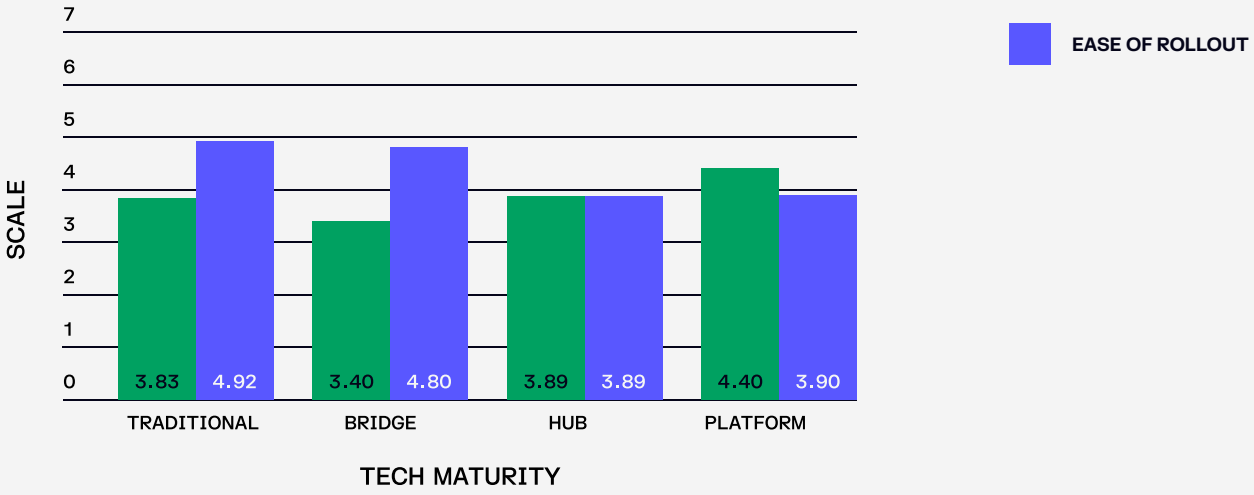
GenAI Deployment Audiences by Company Size



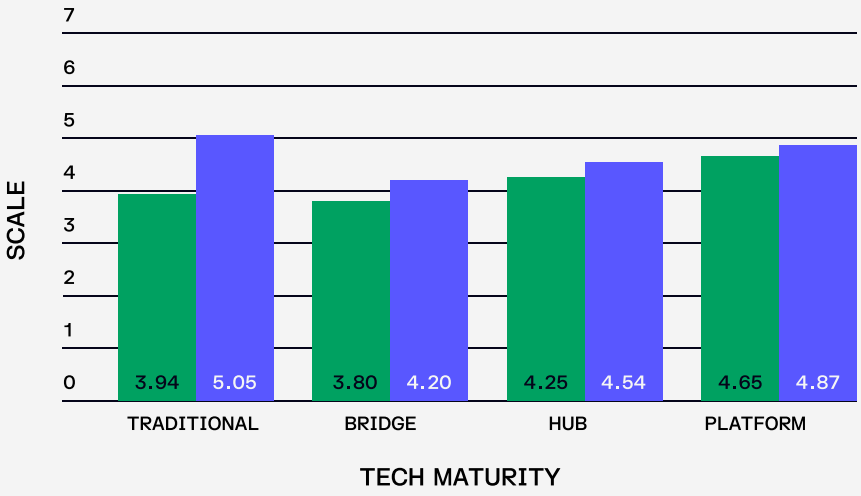
Ease of Pilot and Ease of Rollout by Tech Maturity

Measured on a scale from 1 – 7 (1 = extremely easy, 7 = prohibitively difficult)

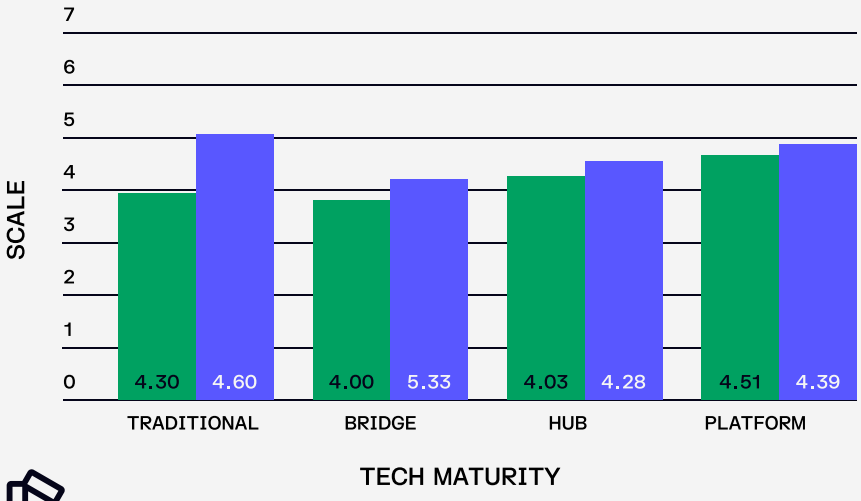
Small



Medium



Enterprise



Conclusion

In our assessment, more technically mature companies generally have better data governance, appear to invest more significantly to figure out automation use cases, and tend to be better able to customize and apply new Generative AI technology in specific use cases that work best for them. These companies operate in a fundamentally different way compared to traditional enterprises in the early stages of digital transformation that are more likely to be using external out-of-the-box solutions and strategies. Without the right digital infrastructure, using external solutions introduces risks and challenges like internal data security.

We believe that to compete effectively in the age of AI, it takes more than out-of-the-box solutions that address symptoms of fundamental business issues. For the most successful businesses in the future, AI is an internal and intentional way to self-disrupt at the core of the operating model and commercial functions. For the least successful, AI will be used as a short-term way to cut costs, managed by programs owned and controlled by external suppliers.

To learn more about AI solutions from Keystone, contact info@keystone.ai.

About the authors

Ellora Sarkar

Principal

Ellora joined the San Francisco office in 2018. Previously, she worked in the AI practice at Publicis.Sapient and was drawn to the intersection of technology and strategy and how it could be applied to business. She holds a B.S. in Economics from Caltech.

In her free time, Ellora enjoys reading, knitting, and cooking up a storm. One of her most unique experiences was preparing an Indian meal for Stephen Hawking and Kip Thorne.

Carolyn Saund

Engagement Manager

Carolyn is an Engagement Manager in the San Francisco office. She has hands-on startup experience in robotics, AI, and cognitive modelling. Her PhD is from University of Glasgow where she studied generative AI for social behavior. At Keystone, she works on technical anti-trust litigation for the Department of Justice and follows evolving AI regulation and policy.

She sometimes pretends to be a triathlete and is training for her first Iron(wo)man.

Dilina Abudurexiti

Senior Consultant

Dilina joined Keystone in 2021 and is currently a Senior Consultant in the New York office. She has a B.A. in Philosophy, Politics, and Economics from the University of Pennsylvania and an MBA and MS from the University of Oklahoma. In her role at Keystone, Dilina has worked with major tech companies on matters relating to strategy, transfer pricing, M&A, and anti-trust and competition. Prior to joining Keystone, Dilina worked in strategy at a tech start-up, consulted in biotech, and founded a sustainable medical device start-up.

Outside of work, Dilina enjoys traveling, hiking, and cooking for friends.

Mauricio Matsumoto

Senior Economist

Mauricio is a Senior Economist in Keystone's New York office. He holds a Ph.D. in Economics from Princeton University, where he studied how a progressive tax system impacts firm dynamics and the consequences of job loss on workers' employment and credit outcomes. At Keystone, he has experience working in cases spanning both the litigation and CoreAI practices.

Outside of work, he enjoys sports, traveling, and exploring NYC by bike.

About Keystone

Keystone, LLC ("Keystone") is a leading innovative strategy, economic, and technology consulting firm dedicated to delivering transformative ideas and cutting-edge solutions to Fortune Global 500 companies, top law firms, and government agencies. Keystone combines experience in digital transformation, data platform design, analytics, AI and information risk to deliver bold strategies with far-reaching implications for business, consumers, and public policy.

It also possesses unique expertise in litigation, M&A, and regulatory policy in matters involving competition, consumer protection, IP, tax and transfer pricing, securities and finance, data privacy, and healthcare. Keystone boasts a roster of hundreds of top academic experts in the digital economy and innovation sectors, supported by more than 175 professionals. The firm has offices in New York, San Francisco, Boston, Seattle, and London.

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(212) 381-0712 keystone.ai info@keystone.ai