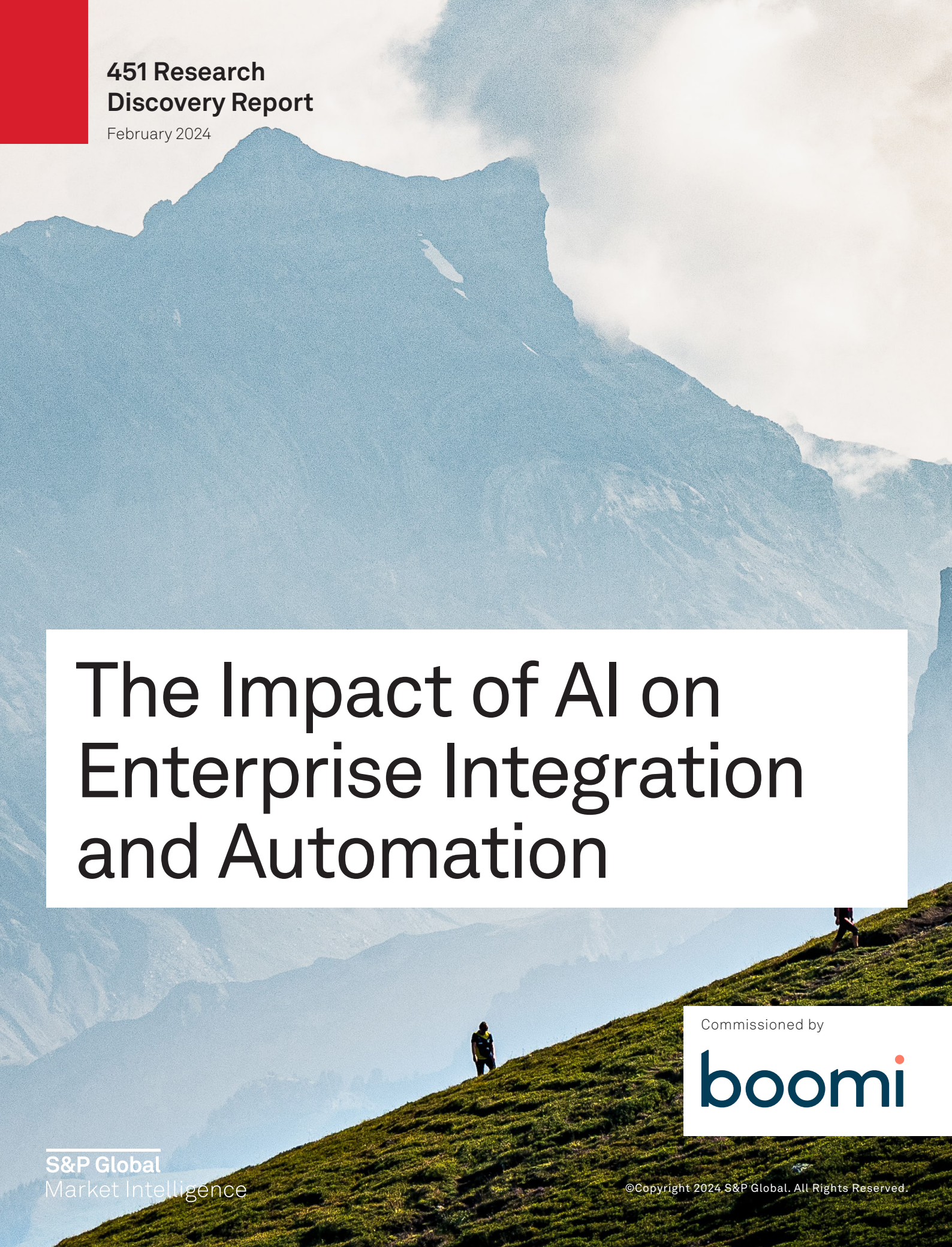

451 Research
Discovery Report

February 2024

The Impact of AI on Enterprise Integration and Automation

Commissioned by

boomi

S&P Global
Market Intelligence

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Introduction

During 2023, generative AI (GenAI) took many business and IT leaders by surprise. Indeed, they've been using various types of AI for years to make sense of unstructured data and documents, guide the behavior of call center representatives, and present contextual upselling opportunities during e-commerce engagements, among many other uses. But the natural language, conversational and creative capabilities of GenAI have sparked curiosity, concern and a sense of urgency to learn more.

Using natural language to interact with GenAI-equipped applications and systems gives rise to a broad range of opportunities because the technology can understand intent and context in a conversational style. In effect, the technology becomes a specialist in the field in which its large language models (LLMs) are trained, offering fresh ideas, new content and informed decisions. But concerns also arise as to how GenAI can be pragmatically applied and controlled to mitigate potential risks and realize consequential outcomes.

We, too, wanted to learn more and set out to do so by crafting a survey asking business and IT leaders about their perception and potential use of GenAI within their enterprises. While GenAI has the potential to impact all aspects of business and IT, in this survey we focused specifically on how it may be applied to the integration and automation initiatives of an enterprise's digital business strategy and operations.

The integration of applications, data and processes and the automation of enterprise business and IT operations have been among the top priorities of enterprise digital transformation strategies for several years. Automating enterprise processes and workforce activities can enable efficiencies that create unique competitive advantages among market rivals. It can also act as an IT force multiplier when skills are transferred through automated processes to others within an enterprise. However, the effort, technology and skills needed to facilitate enterprise automation can be difficult for some enterprises to muster and master.

Moreover, during their pursuit of digital transformation and the evolution toward cloud-native computing, enterprises have migrated and updated existing applications and created new ones, thus distributing data and logic across a broad range of on-premises infrastructure and cloud services. This has created challenges that call for new techniques and skills to provide speedy and adaptive integration across today's modern, yet often fragmented, hybrid IT architectures.

In the fourth quarter of 2023, we fielded an online survey asking 650 business and IT leaders across a broad range of industries about their attitudes and perceptions around GenAI; whether and how they believe it plays a role in automating business processes and workforce activities; and whether and how it can help automate data, application and process integrations in their organizations.

Key findings

- **GenAI is positively received by business and IT leaders:** Of all survey respondents, 88% say their organization's leadership views GenAI as "positive," indicating they consider it a game changer, or "somewhat positive," meaning they see potential benefits. Of C-suite respondents, 57% of IT CxOs and 47% of business CxOs view GenAI as "positive," and thus are likely to push forward with its use in their digital business operations — albeit with cautious optimism.
- **Levels of trust in GenAI differ within the C-suite:** When asked about the trustworthiness of GenAI, IT CxOs express a higher degree of trust: 82% either "completely" or "somewhat" trust the output of GenAI, versus 63% of business CxOs.
- **GenAI is highly valued for use in automation:** More than half of all respondents (53%) say GenAI is either "very important" for business process and workforce automation, meaning it's a high priority and they are currently executing, or it's "important," indicating pilots are in place and GenAI is part of near- and long-term strategic plans for automation.
- **AI is already in place and GenAI is highly valued for use in integration:** Just over two in five respondents (43%) are already using some form of AI-assisted integration platform; 55% say GenAI is either "very important" or "important" for integrating data, applications and processes.
- **GenAI for process automation is expected to bring many benefits:** Widely cited potential benefits include improved process accuracy and consistency (38%), cost reduction (38%), innovation and creativity (34%), streamlined operations (31%), optimized resources (28%), and enablement of competitive advantage (27%).
- **GenAI can reduce integration complexity:** Diverse types of integrations can benefit from GenAI. Respondents broadly agree that virtually any type of integration would benefit from GenAI-assisted integration platforms.
- **Enterprises seek unified intelligent automation and integration platforms:** Given the findings of this report, we believe enterprises would be wise to pursue a unified approach to automation and integration that applies GenAI, and other forms of AI, to support data-driven intelligent process automation.

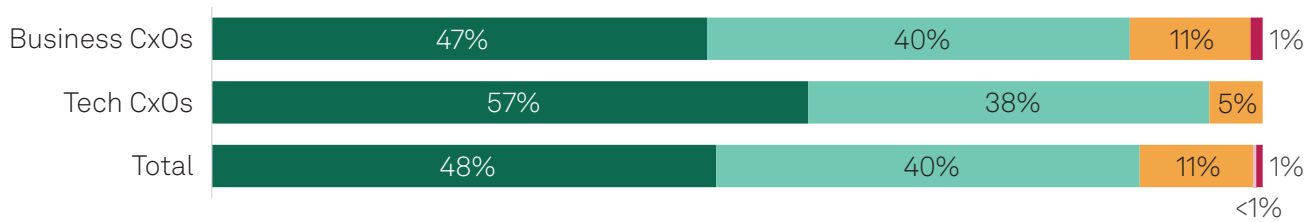
Executives' perceptions of AI

We first wanted to understand how business and IT leaders perceive GenAI for general use in their enterprises. The vast majority of survey respondents (88%) say their company's leadership sees GenAI as either "positive" — they believe it's a game changer and are broadly investing in applications that use it — or "somewhat positive," indicating that they see the benefits and are committed to experimenting and implementing GenAI once it demonstrates value (see Figure 1).

Despite the technology's nascency, only 11% of respondents express a cautious viewpoint, indicating they are investing in R&D but holding off on implementation until benefits can be proved and risks can be mitigated. Only 1% of respondents view GenAI as "negative," indicating their leadership is concerned about the risks and believe it is too early to use the technology.

Figure 1: Perception of GenAI

- Positive — see it as a game changer; broadly investing in applications
- Somewhat positive — see the potential benefits; committed to experimenting with implementing AI that delivers demonstrated value
- Cautious — investing in AI R&D, but holding implementation until benefits are proven and risks mitigate
- Somewhat negative — perception among leadership is limited, or varies widely and slows the use of AI
- Negative — leadership is concerned about the risks, or believes it is too early



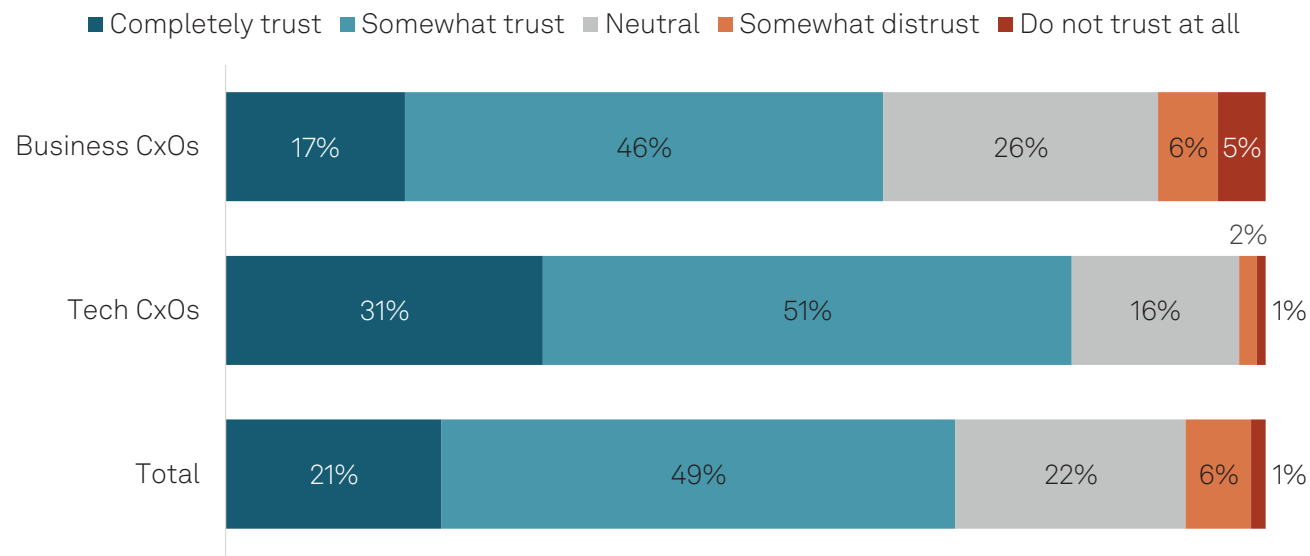
Q. Thinking of your company's business and IT leadership, what is their general perception of the use of GenAI technology?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

Of all respondents, 32% were C-level executives in either IT or business operations. Of the IT CxOs, 57% view GenAI positively, seeing it as a game changer, and 38% view it somewhat positively. Of the business CxOs, 47% have a positive view and 40% somewhat positive. Tech CxOs seem more confident in GenAI overall: Only 5% express a "cautious" view, versus 11% among business CxOs and among all respondents.

Overall, we believe the general perception of GenAI is positive, and the C-suite is likely to push forward with the use of GenAI in their digital business operations, albeit with cautious optimism.

Next, we wanted to understand how business and IT leaders trust the output from GenAI for tasks such as content generation and decision-making. Surprisingly, 21% of respondents say they "completely trust" the output of GenAI. The remainder are more cautious: The largest segment, 49%, say they "somewhat trust" it; 22% are "neutral"; 6% "somewhat distrust" it; and 1% say they "do not trust it at all."

Figure 2: Trust in GenAI for content generation and decision-making



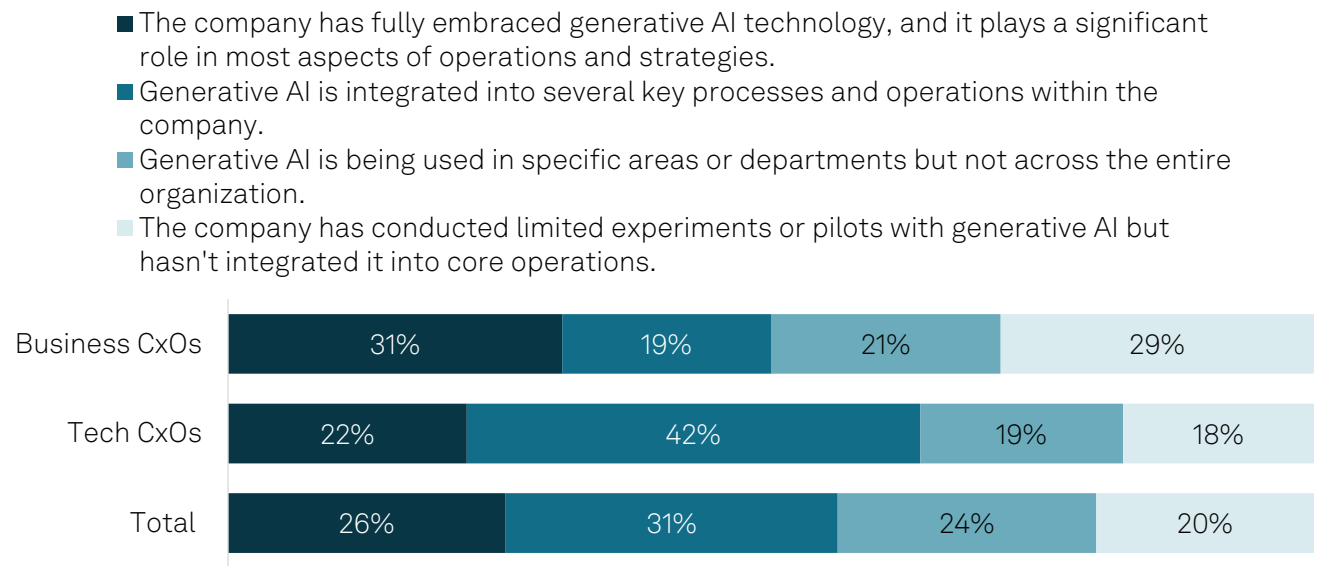
Q. How much do you trust GenAI technologies for tasks such as content generation and decision-making?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

IT CxOs' responses to this question reflect a high rate of trust: 31% express complete trust, while 51% say they somewhat trust the output of GenAI. Business CxOs are less inclined to trust GenAI outputs, with 17% expressing complete trust and 46% saying they somewhat trust the output.

With a technology that has only been in the public domain for roughly a year, one might expect that trust levels in its output would be lower. On the contrary, trust levels are relatively high, but with some caution. We believe this is because, in that brief one-year time frame, many companies rushed ahead with piloting and implementing GenAI, fearing they would be left behind by more aggressive rivals ready to serve demanding customers. This was revealed when we asked the extent to which respondents' organizations are currently leveraging GenAI technologies.

Of the respondents, 26% say their organization has fully embraced GenAI and that it plays a significant role in most aspects of operations; 31% say that GenAI is integrated into several key processes and operations; 24% say it is being used in specific areas or departments but not across the entire organization. Only 20% of respondents say their organization has conducted limited experiments or pilots but has not integrated GenAI into core operations.

Figure 3: Extent of GenAI use



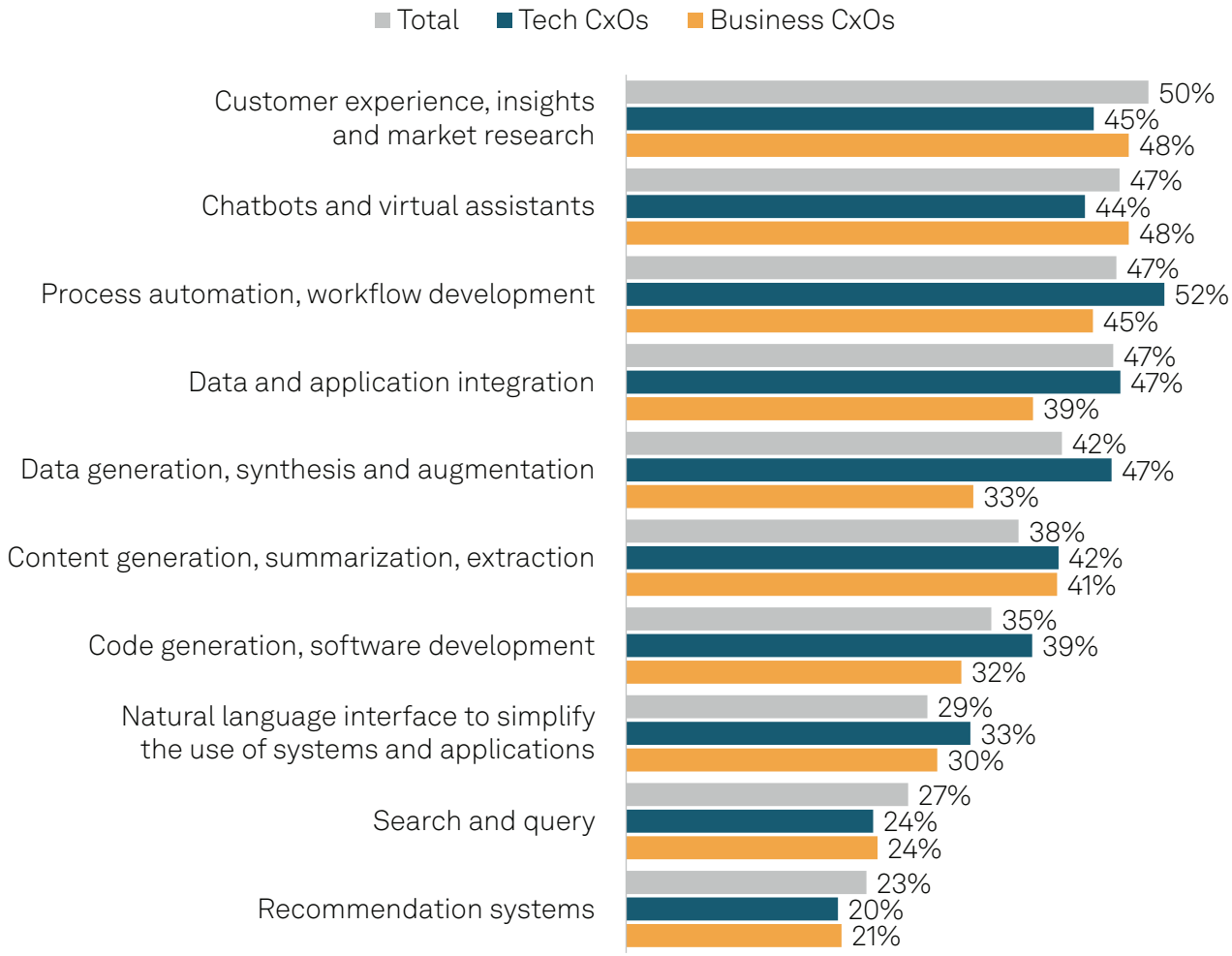
Q. To what extent is your organization leveraging GenAI technologies?
Base: Respondents whose company is using GenAI technologies (n=399).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

This reflects a relatively high penetration rate for what can realistically be considered an early-stage technology. Of course, as we acknowledged earlier, AI has been around in various forms for decades. However, GenAI is its newest form, and this may merit a more cautious approach to its use. Nevertheless, the tectonic market potential and global bandwagon appeal of GenAI has already driven rapid adoption and scaling across enterprises. Lessons learned from that process may have helped to justify the trust levels noted in Figure 2.

We also wanted to know, among those who trust GenAI output, why they trust it. More than half of respondents (57%) noted the accuracy and quality of AI outputs, 48% cited the consistency and reliability of AI outputs, and 44% said transparency in AI decision-making. So, it seems that survey respondents' experiences have been, for the most part, positive and successful, and this will likely drive further adoption within their organizations.

This brings us to how business and IT leaders view the top use cases for GenAI (see Figure 4). Many respondents believe the technology can be valuably applied to improve customer experiences, offer insights into customer behavior and support market research (50%). Another widely cited use case, chatbots and virtual assistants (47%), can be applied both internally and externally to help with workforce productivity and customer experiences. Indeed, productivity of operations is also a high priority: 47% say GenAI will be applied to process automation and workflow development, and the same percentage believe GenAI will be used for data and application integration within and across their organizations.

Figure 4: Top GenAI use cases



Q. In your opinion, what could be the top use cases for GenAI in your company?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

In the C-suite, IT and business CxOs see nearly eye-to-eye on the top use cases for GenAI, with the exception of data application and integration, and code generation and software development. IT CxOs see these latter use cases as higher priorities than business CxOs.

At this point, we narrow the focus of this analysis to two of the top GenAI use cases identified by respondents: process automation, and data and application integration.

GenAI's value and use in integration and automation

Many organizations have a formal digital transformation strategy. A common priority of such strategies is to automate in greater numbers, and with greater quality, business and IT processes that span an enterprise, while also automating manual and repetitive workforce tasks and activities. To do so, enterprises have implemented digital automation platforms for process automation, and robotic process automation technology for workforce task automation.

Moreover, enterprises have been modernizing their IT infrastructure and application development environments to support and run on cloud-native computing architecture. These efforts have distributed data and logic broadly across a diverse set of on-premises infrastructure and cloud services. Consequently, new approaches and capabilities within integration platforms need to address the challenges associated with such distributed, and often fragmented, hybrid IT architectures.

The following section examines how leaders consider the value and use of GenAI as part of their enterprise automation and integration strategies and the technologies they use to enable them.

GenAI's value and use in integration

There are many ways to integrate data, applications and processes within an enterprise, and several different types of platforms available to support these objectives. To better understand how respondents believe GenAI can assist with integration, we first wanted to know about the integration methods currently used in their organizations.

About a third of respondents (34%) say they use AI-assisted low-/no-code application and web development platforms, and 23% use non-AI-assisted low-/no-code application and web development platforms. Meanwhile, 15% say they use some form of middleware, and 12% use manual coding. About one in 10 (9%) say they use AI-assisted low-/no-code integration technologies (e.g., integration platform as a service — iPaaS), and 8% say they use non-AI-assisted low-/no-code iPaaS as their primary method for integration.

The key finding from this data is that 43% of respondents are already using some form of AI-assisted integration platform. Some iPaaS offerings have included earlier types of AI for several years. Primarily, AI was used to reveal patterns of design and development and expose those patterns to developers in the form of recommendations as they begin new projects.

We sought to understand the importance of GenAI in such environments for its use in data, application and process integrations. Figure 5 illustrates that 55% of respondents believe GenAI is either "very important" for integrating data, applications and processes — it's a high priority, and they are currently executing — or "important," meaning pilots are in place and GenAI is part of near- and long-term strategic plans for integration. One-third (33%) say it is "somewhat important," indicating they are researching and exploring the risks and benefits and will soon launch pilot projects. Only 12% believe GenAI is "somewhat unimportant" — they are curious but concerned with the risks — or "unimportant," suggesting it is too risky and doesn't make sense for their organization.

Figure 5: Importance of GenAI for integrations

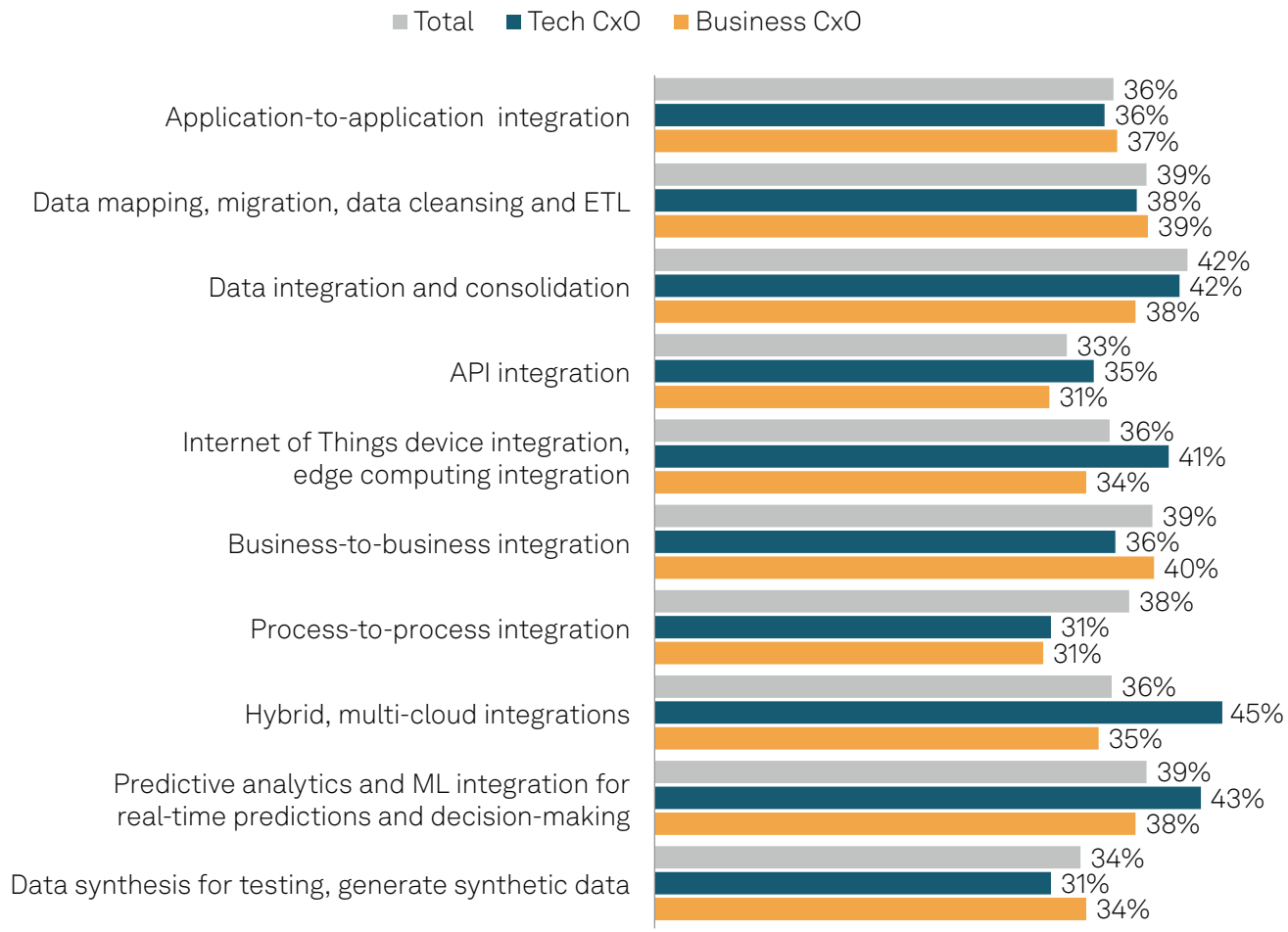
Q. How important do you consider the role of GenAI in integrating data, application and processes within your organization?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

Benefits

We took a slightly different tack when asking about the benefits of GenAI for integrations. Rather than asking about the business outcomes, we asked what integrations could benefit most from GenAI.

Figure 6 illustrates that the top response is data integration and consolidation (42%), followed closely by business-to-business integration (39%); integration for real-time predictions and decision-making (39%); data mapping, migration, cleansing and ETL (39%); process-to-process integration (38%); application-to-application integration (36%); hybrid and multicloud integrations (36%); and IoT/edge computing integration (36%).

Figure 6: Integrations that can most benefit from GenAI



Q. What are the main integrations you believe can benefit the most from using GenAI?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

The key finding here is that many respondents believe virtually all types of integrations would benefit from GenAI-assisted integration platforms.

Challenges

When it comes to challenges associated with integration, there is a greater difference among survey respondents. Nearly half (46%) cite cybersecurity and data privacy concerns, followed by integration with legacy software systems (40%), and accessing data in different departments (37%). Further down the list of challenges are difficulty incorporating real-time or live data (32%), cost and complexity of integration due to existing technical debt (27%), mapping a few high-value connections to a few critical business systems (26%), standardizing noisy data in different formats (23%), and mapping several low-value connections to several business systems (22%).

The key finding here is that most of these are complex challenges, and enterprises would welcome the opportunity to reduce complexity using GenAI.

GenAI's value and use in automation

Figure 7 illustrates that 53% of respondents believe GenAI is either "very important" for business process and workforce automation, meaning it's a high priority and they are executing, or it's "important," indicating pilots are in place and GenAI is part of near- and long-term strategic plans for automation. One-third (34%) believe it is "somewhat important" — they are researching and exploring the risks and benefits and will soon begin pilot projects. Only 13% of respondents rate GenAI as either "somewhat unimportant," meaning they are curious but concerned with the risks, or "unimportant," indicating they consider it too risky and believe it doesn't make sense for their organization.

Figure 7: Importance of GenAI for business process and workforce activity automation

Q. How important do you consider the role of GenAI in automating business processes and workforce activities within your organization?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

These findings align with the findings noted in Figure 3, which call out the extent to which GenAI is used generally within the enterprise.

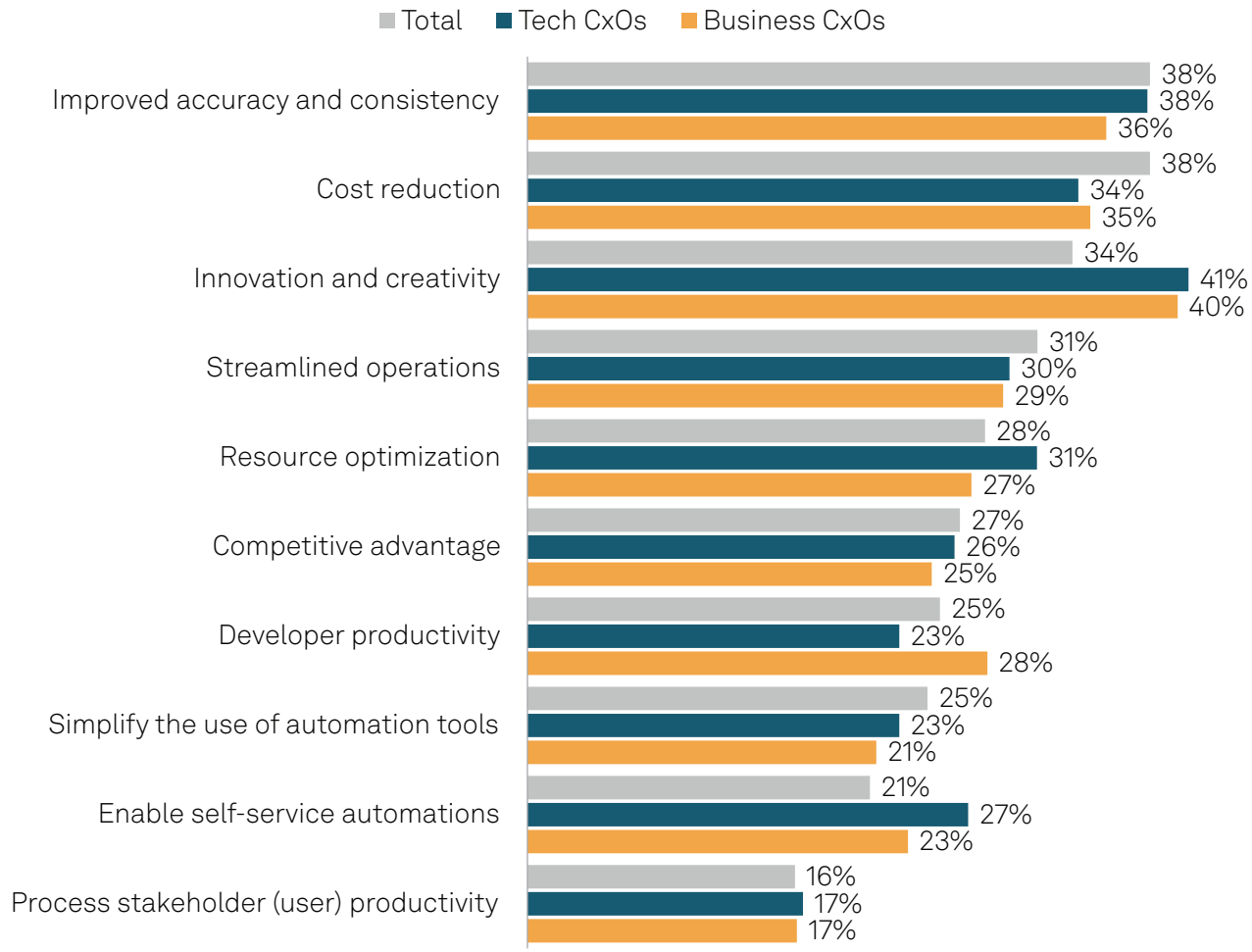
When it comes to using GenAI for automation, C-suite executives see things a bit differently. Of the IT CxOs, 39% consider it very important, and 33% consider it important. Of the business CxOs, 20% consider it very important and 26% consider it important. Only 22% of the IT CxOs view it as somewhat important and are still researching the risks and benefits, compared to 41% of business CxOs.

We believe one reason that IT CxOs place greater importance on the use of GenAI for automation, compared to business CxOs, is because IT organizations are typically more resource-constrained than other areas of an enterprise. Therefore, IT groups need to capture skills through automations to make them repeatable across the IT organization and throughout the enterprise. Business CxOs, on the other hand, are resource-constrained in a different way: They spend their time running a business and don't necessarily have the time or resources to focus on innovative technologies such as GenAI. We have found that in such circumstances, business leaders often turn to third parties and vendors for assistance when their IT organization is slow or unable to respond.

Benefits

Among the top expected benefits of GenAI for automation, respondents cite improved process accuracy and consistency (38%), and cost reduction (38%). One-third (34%) believe their organizations can benefit through innovation and creativity, while significant proportions say GenAI-equipped automation platforms can help streamline operations (31%), optimize resources (28%) and enable competitive advantage (27%).

Figure 8: Benefits of using GenAI for automation



Q. What do you see as the primary potential benefits of using GenAI to automate business processes and workforce activities?
Base: All respondents (n=650).
Source: S&P Global Market Intelligence 451 Research, AI Impact on Automation and Integration survey, 2023.

Lower on the list, but indeed beneficial, GenAI-equipped automation platforms are expected to enable developer productivity (25%), simplify the use of automation tools (25%), enable self-service automation (21%), and help improve user productivity (16%).

The ranking of these benefits suggests that, for now, respondents believe GenAI-equipped automation platforms primarily support the creation and development of automated processes, versus using GenAI to assist the stakeholders involved in executing automated processes. We believe that as the use of GenAI increases within organizations, the balance will gradually shift toward benefiting process stakeholders at greater rates.

Challenges

The use of GenAI for process automation is not without its challenges. About a third of respondents (34%) say security and privacy is a challenge, while 29% cite data quality and availability. Cost, integration with in-place systems, and lack of available skills and expertise are also key challenges, each chosen by 27% of respondents. Other challenges noted include regulatory compliance (25%), model training accuracy and reliability (23%), resistance to change within the organization (21%), governance (e.g., rules, policies, controls) (20%), and change management (20%). About one in five respondents (19%) cite algorithm bias and fairness as an issue.

Selecting partners for success

Our research into enterprise IT strategy over the years has seen a consistent pattern of leadership seeking as much functionality from as few IT vendors as possible. They seek tools that interoperate within a unified platform for a given IT function. This holds true for integration and automation technologies. In most enterprises, these are separate platforms that need to interoperate, but they often don't do so effectively, thus adding complexity and expense that diminishes the productivity of IT organizations.

Architecturally, however, these platforms have similar design, development and runtime capabilities. Each must deal with process flows, and each must deal with the connectivity, exchange and quality of data.

Some integration and automation vendors have built out their platforms with capabilities for both process automation and data, application and process integration. Given the findings of this report, we believe enterprises could benefit from a unified approach to integration and automation that applies GenAI, and other forms of AI, to develop data-driven intelligent process automations. Such platforms are maturing into next-generation frameworks that we refer to as intelligent integration and automation platforms.

Conclusions

The findings of this research and analysis illustrate that enterprises have pragmatically applied AI in certain use cases for many years. Its latest manifestation, GenAI is positively received among business and IT leaders alike. IT C-level executives have slightly higher levels of confidence in its capabilities and outputs compared with business CxOs. Regardless, the extent of use is considerable for such a nascent technology. Many respondents say their organizations have fully embraced the technology into most aspects of their operations or are integrating it into several of their key processes and operations.

Top use cases for GenAI include enhancing customer experience, generating customer insights and facilitating market research, as well as improving the quality and capabilities of chatbots and virtual assistants. GenAI is widely seen as a productivity improvement technology. Respondents overall, and C-level executives in particular, view GenAI as a valuable tool to support the quality and capabilities of their process automation initiatives and their data, application and process integrations. Given the relatively high confidence level in GenAI, we believe most organizations are likely to push forward with its use in their digital business operations, albeit with cautious optimism.

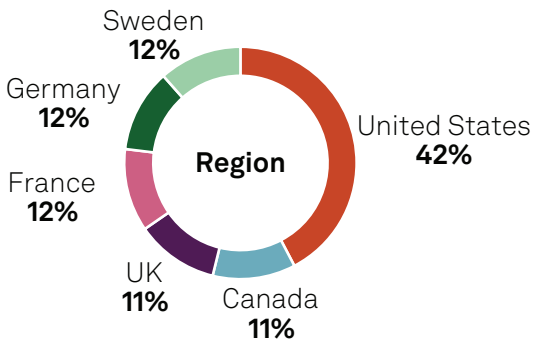
Part of the process of adopting and scaling GenAI will include efforts to expose its capabilities not just for technical professionals but for other stakeholders across the entirety of respondents' organizations. In closing, we asked respondents to what extent they plan to democratize the use of AI, in general, throughout their organizations. Only 23% plan to limit access to technical development personnel; 74% say they would like to provide access to GenAI to users without specialized AI or technical knowledge, or are already seeking ways to do so.

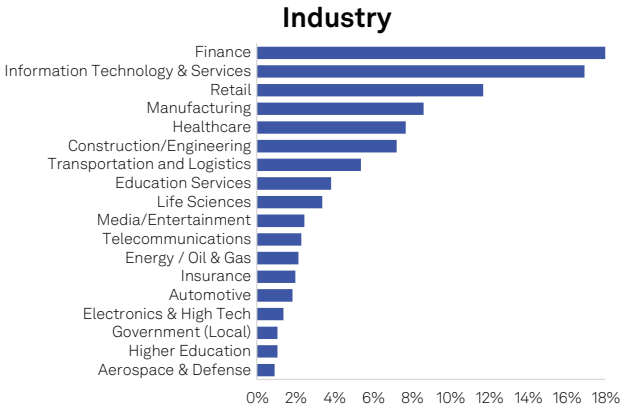
If the unprecedented public enthusiasm for AI hasn't sparked the interest of business and IT leaders, perhaps the research findings in this report will. Indeed, while there is great optimism, respondents view the technology with respect and, consequently, are proceeding steadily but cautiously in its use for integration and automation within their enterprises, as might be expected with any new groundbreaking technology.

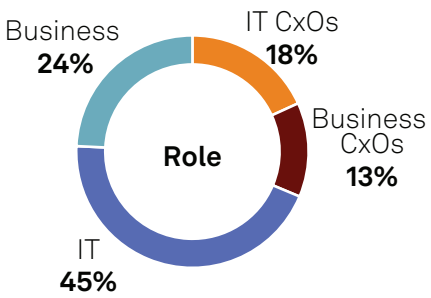
Methodology

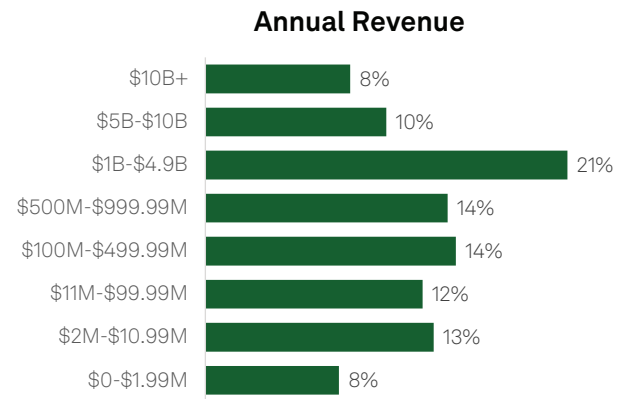
The findings presented in this report draw on a survey fielded in North America and Europe in Q4 2023. The survey targeted 650 business and IT decision-makers/influencers in companies ranging in size from under 100 to over 25,000 employees, and $2 million to over $10 billion in annual revenue. The study prioritized respondents with intimate knowledge of automation and integration technology across a broad range of diverse industries asking them about their perception of, and propensity to use, AI technologies of various types, but more specifically about their use of GenAI. The job descriptions of respondents were a mix of executives ranging from Analyst/Manager grade to C-level Executives. This report also draws on contextual knowledge of additional research conducted by S&P Global Market Intelligence.

Demographics









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About this report

A Discovery report is a study based on primary research survey data that assesses the market dynamics of a key enterprise technology segment through the lens of the "on the ground" experience and opinions of real practitioners — what they are doing, and why they are doing it.

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