

JANUARY 2024

REGION FOCUS: ASIA/PACIFIC

CIO Playbook 2024

It's all about **Smarter AI**



Dr. Chris Marshall

Vice President
Data, Analytics, AI, Sustainability
and Industry Research , IDC

eBook, sponsored by

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Executive Summary

In 2024, Asia/Pacific CIOs must respond to the tsunami of excitement, hype, fear, investment and application in artificial intelligence (AI) across their businesses. After many AI winters, the success of generative AI (GenAI) heralds a new AI summer, when these technologies can deliver on their promises to deliver greater transforming business by enabling greater efficiency and **potentially competitive differentiation**.

This Playbook draws insights from custom research commissioned by Lenovo, based on a survey of 900 IT and business decision-makers (ITBDMs) from selected organizations across Asia/Pacific. The research offers insights into prevailing attitudes and approaches toward AI adoption in Asia/Pacific, as well as business and IT investment priorities, key challenges, and spending imperatives in accelerating their digital business agenda in 2024.

Research results are organized into four sections in this Playbook:

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Read on to discover the key insights and takeaways for CIOs charged with navigating AI in Asia/Pacific in 2024.

Executive Summary

CIO Strategic Imperatives

IDC’s survey of 900 IT and business decision makers (ITBDMs) reveals the following insights and strategic considerations for Asia/Pacific CIOs looking for a competitive edge from AI in 2024:

Key Insights

Considerations for CIOs in 2024

1

The tectonic shift – 45% increase in spending of AI

Recognizing the pivotal role of the digital economy, CIOs are keen to embrace AI that confers a competitive edge. **Yet, the intricacies of AI, entailing complex connections with infrastructure, data, and human resources, pose a challenge.**

CIOs are pivotal in enlightening the C-Suite on the nuanced journey toward sustainable AI initiatives. **There are no swift triumphs here; strategic excellence is requisite, addressing intricacies across people, processes, and technology.**

2

AI holds the potential for transformative impact – a conviction 46% of CIOs held.

A misalignment exists between business and IT leaders. Business leaders emphasize AI as a catalyst for customer engagement and revenue growth. The most affected domains are predicted to be cybersecurity, infrastructure automation, and operational efficiency. CIOs consider customer engagement to be #4 on the impact list.

With an “AI for All” approach, enhance operations using AI. The end goal is to **operationalize AI throughout the organization**, aligning with business goals like profitability, customer satisfaction, and increased revenues.

3

GenAI creates excitement, but CIOs are Cautious – #4 in CIOs' tech priority wish list

While GenAI brings a new world of possibilities for the business, CIOs remain cautious due to two key concerns: **the challenge of identifying the right use case, and the complexity of building the right IT infrastructure and ecosystem to support.**

IT and Business Leaders will need to **identify the right AI Model** (Predictive/Interpretation AI vs GenAI), **define the appropriate use case categorization** and then explore **suitable implementation models**, as highlighted in this ebook (page 42).

4

Bring AI to the data – 69% of CIOs prefer AI workload in a non-public cloud environment

On average, 31% of AI workloads will be deployed on the public cloud, 28% on the private cloud, and 28% on hybrid cloud solutions. Additionally, the allocation of 13% of AI workloads at the traditional data center level signifies **a growing recognition of the importance of edge computing, bringing AI capabilities closer to the source of data generation.**

Performance, security and regulations are key considerations when choosing where to run AI workloads. Increasing Edge investments also suggest a desire for greater performance amongst organizations, which should be a key consideration for CIOs in 2024.

5

The linchpin is IT talent – 45% of CIOs encounter challenges in securing AI-related roles

Acquiring IT skills for effective AI implementation is proving challenging. Those who can overcome this **challenge and swiftly cultivate a “data culture” can achieve early success.**

Creating AI centers of excellence (COEs) can help build a data culture within the organization, as well as address training needs and skills gaps. Key areas of focus for training **are foundations in statistics and programming languages.**

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Why Lenovo

Insight #1

Emerging Technologies are Accelerating Digital Businesses



“AI holds the key to challenging industry held norms and delivering an exceptional customer experience.”

Rick Chandra
Chief Information Officer,
Secure Parking, Australia

Excerpts from Spotlight Discussions

Top business priorities	2023	2024	Rank change	Top business challenges CIOs foresee in 2024
Leveraging emerging technologies (e.g., GenAI)	-	#1	NEW	#1 Cybersecurity & data privacy
Customer experience & satisfaction	#4	#2	▲ +2	#2 Digital transformation
Revenue & profit growth	#1	#3	▼ -2	#3 Data management & analysis
Improve sustainability	#9	#4	▲ +5	#4 Customer experience
Business agility & responsibility	#7	#5	▲ +2	#5 Talent acquisition & retention

Prompted by ChatGPT, GenAI has raised executives' expectations regarding the potential usefulness and applicability of AI in delivering operational and business value. The fear of missing out (FOMO) is real among business leaders, as they worry about falling behind competitors in the AI landscape. They are scrambling to find relevant use cases and are demanding IT support to achieve this.

Greater alignment is required between IT and business as **business leaders and IT leaders hold different perceptions regarding GenAI**. GenAI has rapidly emerged in the minds of business leaders over the past year, making AI not only a business priority but *the* top business priority for 2024.

However, CIOs have shorter-term operational priorities and face challenges in areas such as cybersecurity, data management, and talent acquisition/retention. Many of these challenges are further complicated by the emergence of GenAI. It's not surprising that CIOs do not view GenAI as urgently as the rest of the C-Suite does. One exception is AIOps, which CIOs believe can be a valuable lever to reduce their costs.

Additionally, in a challenging economic environment, CIOs are under pressure to achieve more with a limited budget. They are already grappling with integrating new technologies into legacy systems, all within a more competitive IT marketplace.

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Insight #2

GenAI: Business Leaders are Excited, but CIOs are More Cautious

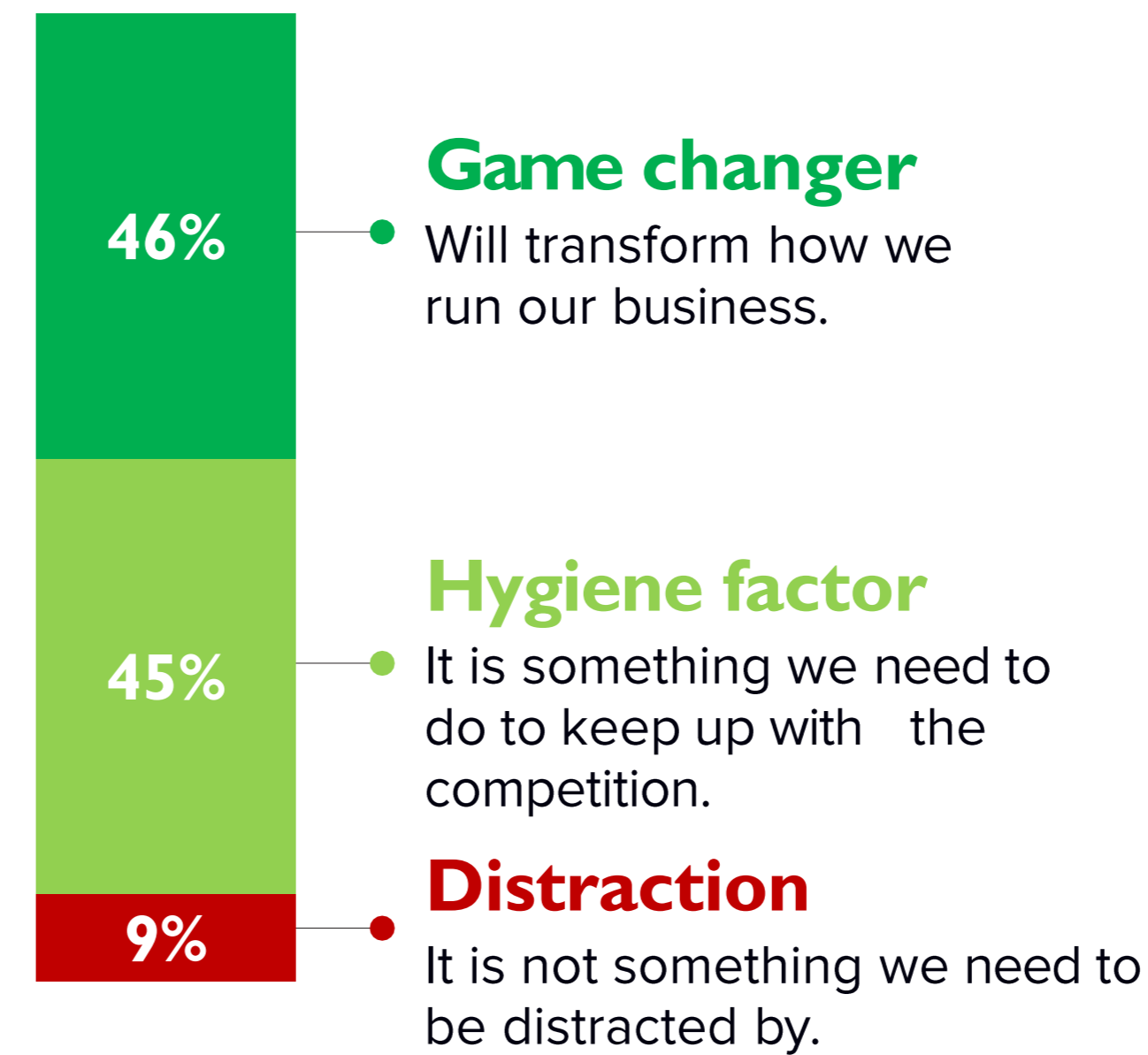
Top technology investment priorities in 2024



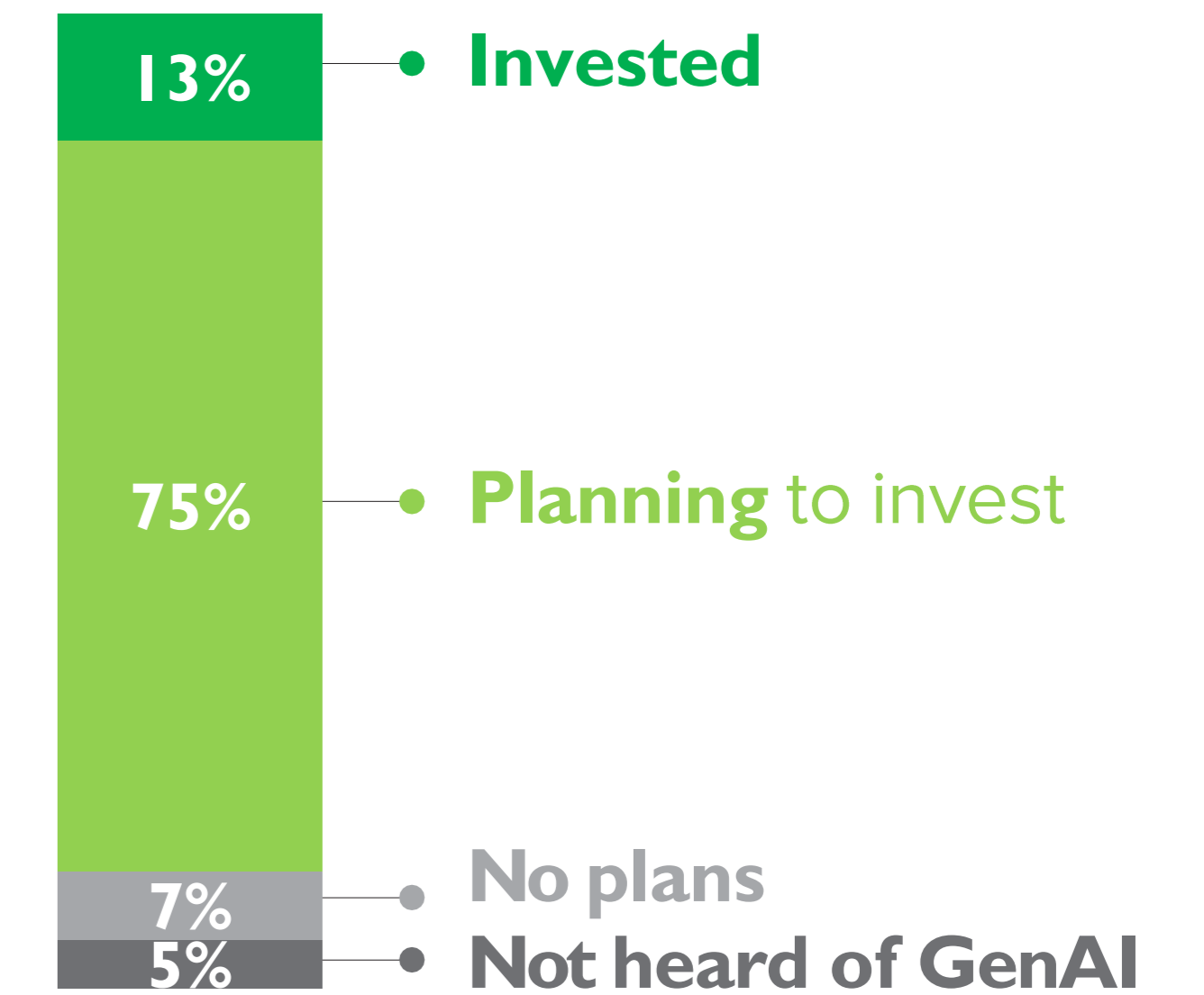
Top technology investment priorities are enabled by or directly related to AI

- #1 Automating digital infrastructure management & security
- #2 High-performance compute platforms for AI/ML workloads
- #3 Better cyber resiliency to address ransomware & malware attacks
- #4 Generative AI
- #5 Modernizing infrastructure for microservices-oriented architecture

Importance of AI for organizations



GenAI investment



GenAI is yet to be a technology priority for CIOs and ITDMs for two key reasons. First, the challenge of identifying good use cases, and second, the need for data, skills, and infrastructure to support these use cases.

Consequently, most tech spending is currently focused on laying the foundation for GenAI. This involves making essential investments in areas like infrastructure, security, data, high-performance computing, and more, all of which are necessary for future AI investments.

CIOs tend to be risk-sensitive and adopt a generally defensive stance regarding GenAI's potential role. They express concerns about infrastructure security, cyber resilience, and AI performance. Notably, a few CIOs (9%) even consider AI to be a distraction.

However, **over 90% of CIOs believe that GenAI will eventually become a source of competitive advantage.** Among them, around half, typically representing larger and more mature enterprises, view GenAI as a potential game-changer capable of providing a significant competitive edge for their company.

Organizations in **Korea** and **India** are most enthused by GenAI, with more than 20% of organizations stating that their organizations have started to invest in GenAI. Similarly, **Banking, financial services and insurance (BFSI)** organizations are also most excited by GenAI's potential, where approximately 20% of organizations have invested in and begun their journey with GenAI.



"When making investment decisions on AI implementation, it is necessary to weigh the incremental cost against the scalability and additional features for the future, and the technical officers as well as the sales officers who participate in the discussion need to be able to understand the technology."

Shigeyuki Morimoto
Representative Director & President, AXSEED, Inc., Japan

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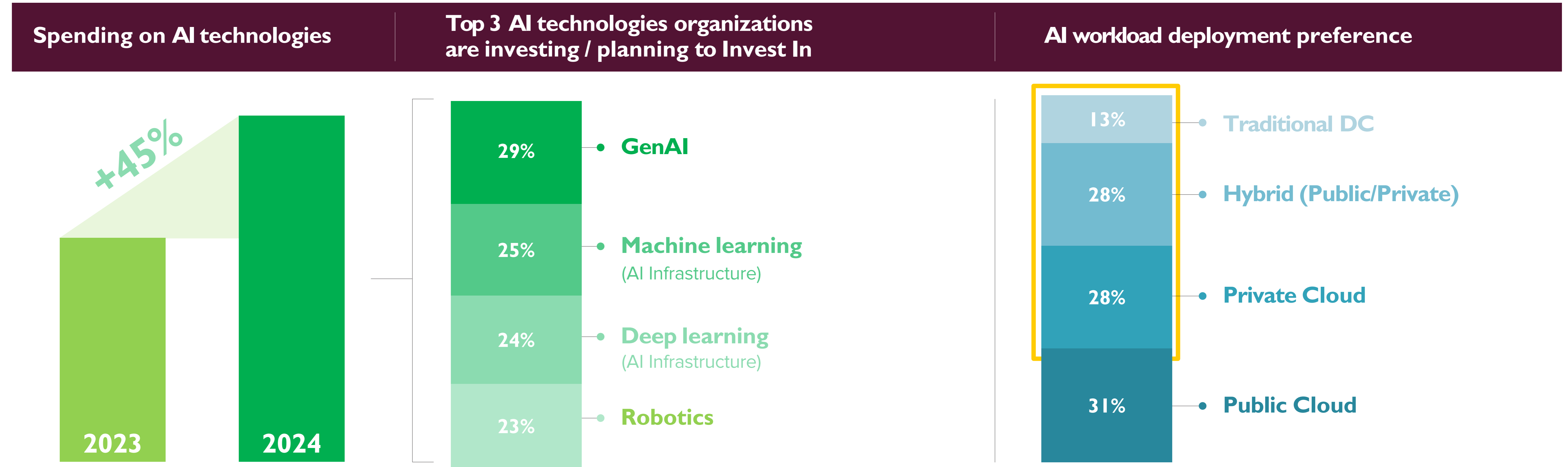
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Insight #3

AI Investments are Set to Increase Significantly in 2024



Earlier, CIOs and senior IT leaders in the Asia/Pacific region indicated that AI is top of mind. Companies are planning to **increase AI spending by a noteworthy 45%** in 2024 compared to the current AI spending in 2023. This increased investment aligns with how the majority of CIOs/IT leaders perceive AI – as either a game-changer or a hygiene factor that must be adopted by all businesses. For 2024, businesses are most interested in investing in GenAI and machine learning (ML), followed by deep learning systems, underscoring their desire to elevate operational efficiency, security, decision-making processes, and customer experiences.

Furthermore, the survey unveils that companies will adopt a balanced approach to AI workload deployment. On average, 31% of AI workloads will be deployed on the public cloud, 28% on the private cloud, and an additional 28% on hybrid cloud solutions. Additionally, the allocation of 13% of AI workloads at traditional data centers signifies a growing recognition of the importance of edge computing, bringing AI capabilities closer to the source of data generation.

“Companies will no longer be able to ignore the advanced nature of AI. There are two main types of work that AI can help with: one is labor-intensive work, and the other is knowledge-intensive work”

Shigeyuki Morimoto
Representative Director & President, AXSEED, Inc., Japan

Excerpts from Spotlight Discussions



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Insight #4

CIOs' Technology Plans Need to Better Align with the Business

Top TECHNOLOGY areas most impacted by AI



- #1 Cybersecurity & threat detection
- #2 Intelligent automation & robotics
- #3 Automation & efficiency
- #4 Enhanced analytics & insights
- #5 Personalization & customer experience

Top BUSINESS areas most impacted by AI



- #1 Improved client journey
- #2 Improved quality, inspection & maintenance
- #3 Greater product/service differentiation through innovation
- #4 Better data-driven decision-making
- #5 More optimized & personalized customer/employee care



AI will impact different aspects of IT and business. IT leaders primarily emphasize the key technology areas that will be affected, with a focus on IT and AIOps, such as cybersecurity, intelligent automation, and analytics. In the short term, their emphasis appears justified, given the presence of internal data and skills to support these use cases.

On the other hand, business leaders anticipate more substantial business impacts in areas like client engagement, quality, and product differentiation. These areas are expected to serve the long-term interests of businesses, fostering competitive advantages through efficiency improvements, increased Productivity, and differentiation.

It is critical for CIOs to strike a balance by education the C-Suite on how and where AI can be more rapidly deployed and where there are longer term investments required as the underlying assets are enabled to ensure successful and ongoing projects. For that 9% of CIO's that see AI as a distraction, this the opportunity to educate and communicate the challenges to the business leaders. Ultimately AI will become a hygiene factor for all organizations, so embrace the education opportunity early and set the right foundations for successful implementations

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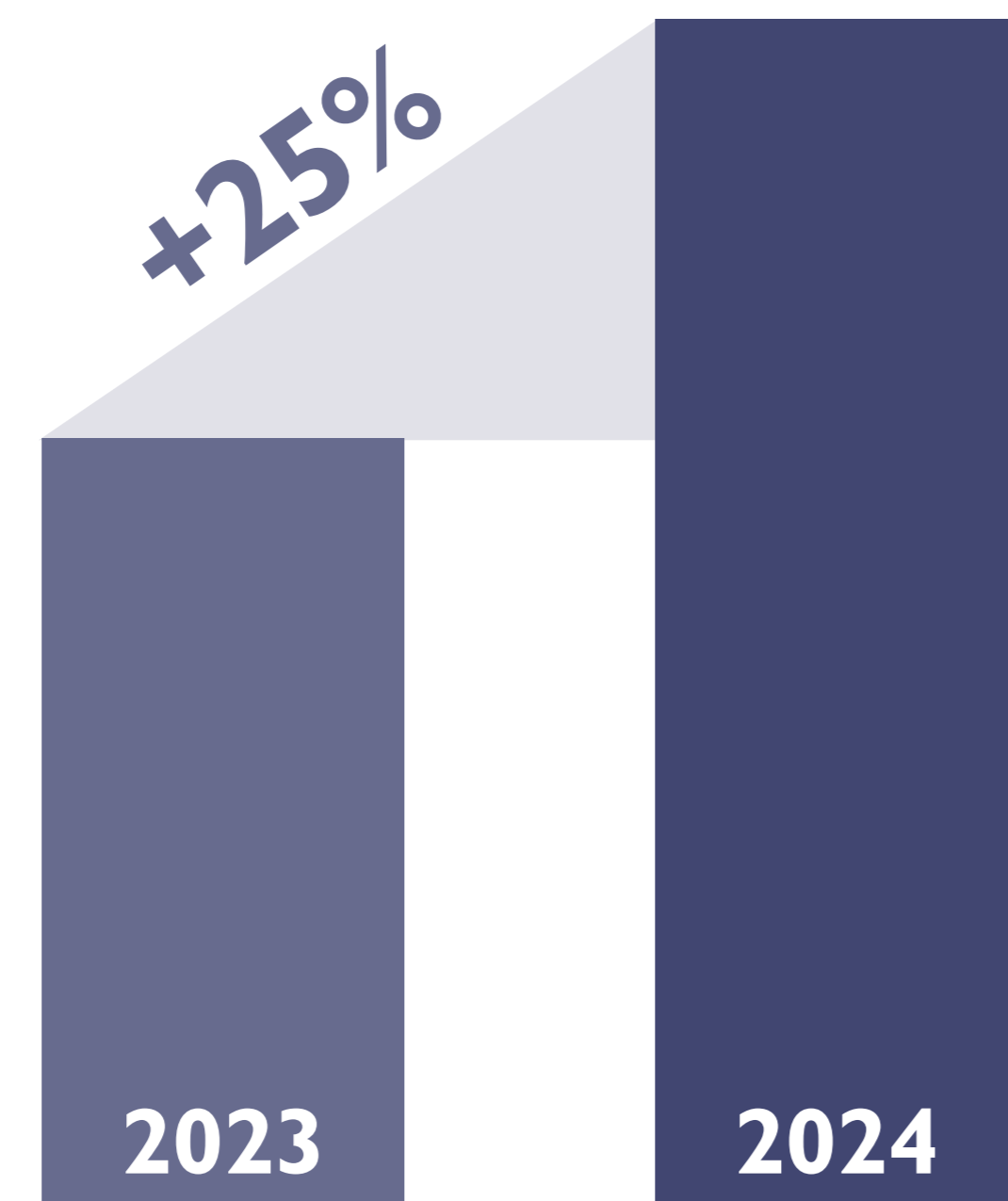
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Edge Implementations will Supercharge AI

Edge computing spending in 2023 and 2024

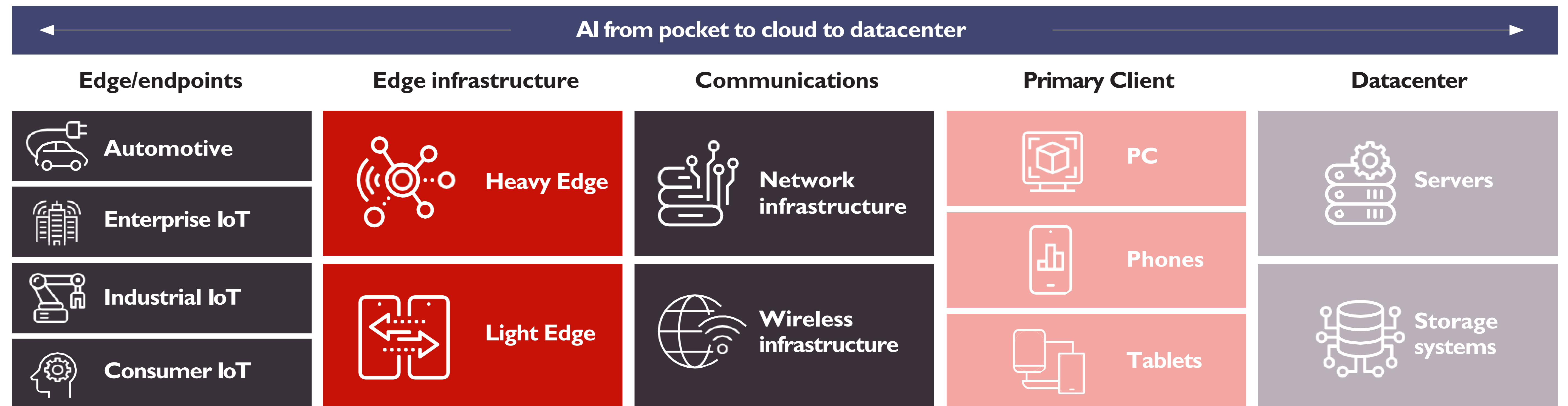


Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 Retail & customer experience
- 3 IoT device management

A 25% increase in Edge technology spending is poised to boost AI and the capabilities of underlying platforms, particularly in industries such as retail and manufacturing.

Edge devices will generate significantly more data, often in real-time, for AI models to support a host of new use cases. However, existing centralized architectures face major latency issues. Therefore, a flexible combination of cloud and edge computing will become necessary to handle the different requirements of model training and inference.



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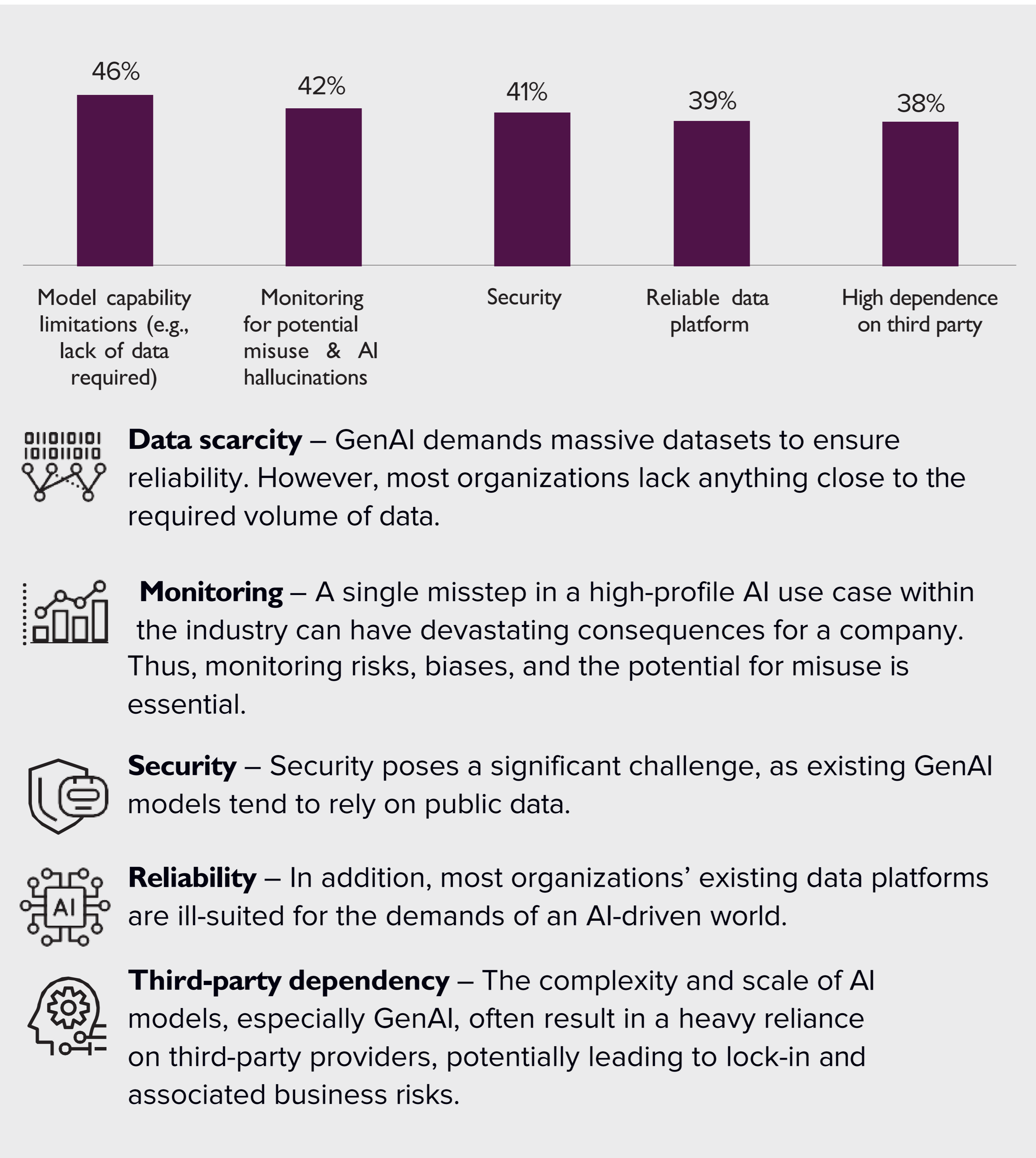
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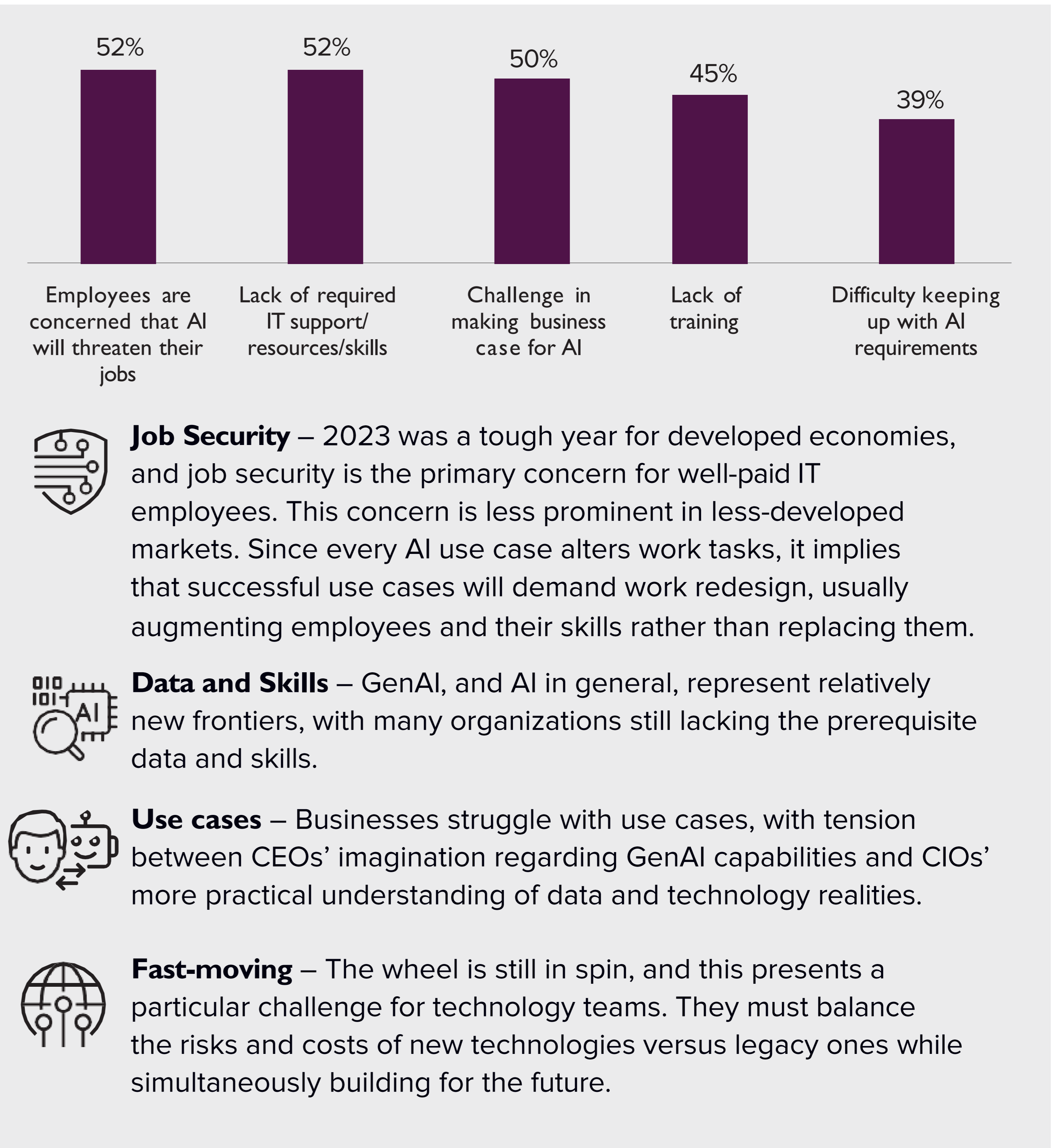
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Data, Security and Skills are the Key Challenges for AI in 2024

Top technology challenges when adopting GenAI



Top business challenges when deploying AI in general



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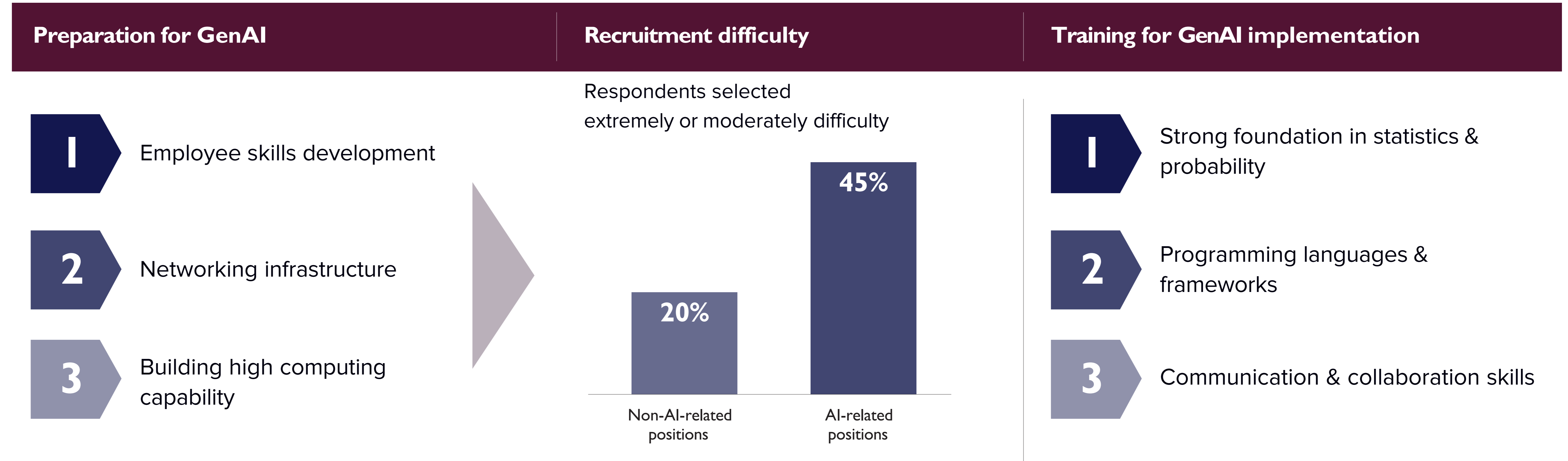
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Insight #7

45% of Enterprises Struggle to Hire for AI



In anticipation of the GenAI wave, companies are strategically investing in employee skills development, networking infrastructure, and high computing capabilities. This proactive stance aims to fortify organizational readiness for the impending technological shift. However, a noteworthy challenge arises as companies express the difficulty of hiring for AI-related positions, more than doubling the usual hiring effort. This talent gap compels organizations to pivot towards internal solutions, emphasizing the imperative to upskill existing employees.

To bridge this gap, companies are planning comprehensive training programs. The focus areas include **instilling strong foundation in statistics and probability, mastering programming languages and frameworks, and enhancing communication and collaboration skills**. This targeted approach not only addresses the immediate hiring challenges but also positions companies to navigate the complexities of the GenAI landscape by cultivating a versatile and adept workforce. It reflects a forward-looking strategy in which talent development becomes a cornerstone for sustained success in the evolving technological landscape.

Job security across the Asia/Pacific region is highest in the Indian market, although the bigger concern there is sufficient skills for automation deployment, whereas Japan is more concerned about making the business case.

Since velocity will become a determining factor for early success—how quickly AI can be implemented—the focus needs to be on training and education. The more informed will be able to advise both IT and the business leaders on potential use cases, outcomes, and architectures AI will provide and demand.

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Data Ops

% of organizations using AI to enhance its DataOps

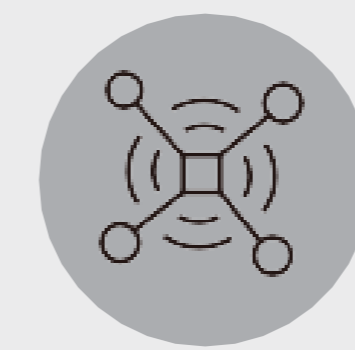
75%

AI usage in DataOps

- 1 Data access & data quality through self-service
- 2 Data governance framework & process
- 3 Metadata management

AI relies on a robust DataOps program, but it can also enhance DataOps capabilities. Currently, only 30% of organizations have an enterprise-wide DataOps strategy in place, serving as the foundation for any comprehensive internal AI usage plan. Bridging this gap requires a substantial amount of work.

Once that foundation is established, a continuous process of 'classifying at ingest' must be implemented to ensure that all incremental data sources can be properly indexed and leveraged by AI models.



Sec Ops

% of organizations using AI to enhance its security framework (SecOps)

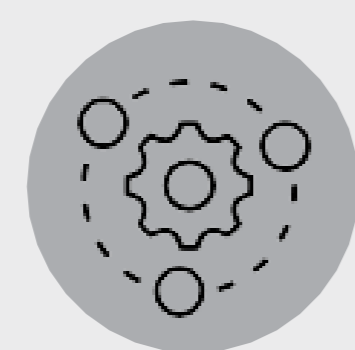
75%

Top deployment of security/trust related AI tech

- 1 Data discovery & identification
- 2 Curated recovery
- 3 Anomaly detection

IDC's advice is that AI embedded within security vendors' offerings will deliver the desired improvements and experiences. The design and development in this field are highly specialized and demand access to significant data volumes—a resource typically available only to the largest security vendors.

The shift from static to dynamic security is the driving force behind this adoption. The necessity for continuous situational awareness in the face of thousands of risks per second makes it an industry concern best addressed by vendors.



DevOps

Parts of DevOps transformed by AI

AI usage in DevOps

- 1 Intelligent infrastructure resource utilization & management
- 2 Troubleshooting errors & anomalies improving the DevOps credibility
- 3 Enhance automation

The use of GenAI will fundamentally transform the role of developers over time, as it can be employed to:

- Generate code
- Explain code
- Develop code documentation
- Assist in testing and quality control
- Enable code translation between languages

Much of this shift will require time to absorb, understand, and accept. Nevertheless, the ultimate impact will be substantial, giving rise to new roles centered on prompt engineering, fine-tuning, and enhancing model outputs through the incorporation of 3rd party data feeds.



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CIO Spotlight

Navigating AI for Business Transformation

A conversation with Secure Parking, Australia



Rick Chandra

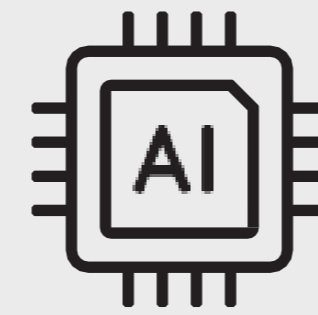
Chief Information Officer,
Secure Parking, Australia

“AI isn’t just a buzzword; it’s a **transformative force reshaping our business**. As we navigate this journey, embracing shared challenges and experiences, while understanding our customers will be instrumental in fully realizing the potential of AI in our business.”

Rick Chandra
CIO of Secure Parking

Secure Parking was established in 1979 with the vision to be the leader in the markets they operate. The company offers a wide range of user-friendly parking facilities, with more than 600 Secure Parking car parks throughout Australia and New Zealand.

In the dynamic landscape of modern business, seizing the potential of AI technology presents a unique opportunity for market disruption. Despite operating within a traditional business model, the integration of AI holds the key to challenging industry norms and elevating the overall customer experience.



Data as the Foundation

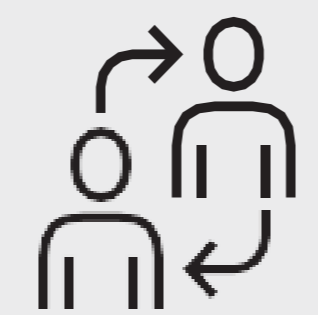
At the core of AI lies data. In collaboration with Lenovo, Secure Parking developed a solution to digitalize its car parks, generating vast amounts of data. The company’s focus now shifts to leveraging this data for a more connected experience, while ensuring ethical considerations and respecting customer privacy.

“One of the core investments we made as a business two years ago was to develop our data lake. It’s tremendously important to have a single source of truth regarding business and customer data prior to adding additional layers of complexity that comes with implementing AI, whether it’s generative or otherwise.”



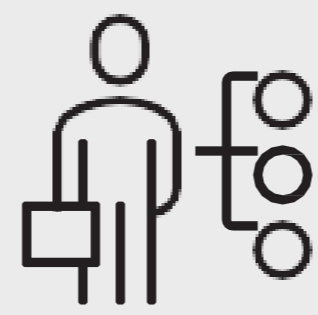
GenAI for Faster Integrations and Reporting

GenAI is revolutionizing the company’s business processes, enabling faster integrations between systems and streamlining report development. What was once time-consuming has now become more efficient, thanks to the capabilities of GenAI.



Choosing the Right Partners

Partner selection is critical, emphasizing the need for collaborators who understand the industry and share Secure Parking’s values. The success of AI implementation relies on the talent and expertise of these partners.



AI and Customer Experience

A pivotal driver for the company is customer experience, and AI plays a central role in meeting evolving expectations. The transformative potential of AI extends beyond being a destination; the company is actively researching how it can support and enhance the entire customer journey, offering a connected and enriched experience.

CIO Spotlight

Inculcating an AI Nation

A conversation with AI Singapore



Laurence Liew

Director, AI Innovation

Laurence Liew is the Director for AI Innovation at AI Singapore. He is tasked to drive the adoption of AI within the Singapore ecosystem through the 100 Experiments, AI Apprenticeship Programmes and the Generational AI Talent Development initiative.

AI Singapore is a government-funded programme focused on advancing AI skills, promoting AI adoption, and positioning Singapore on the global AI map. The national programme encompasses five programs, emphasizing the significance of AI research, governance, ethics, and two major initiatives: “100 Experiments” for industry adoption and product development of AI and “LearnAI” to develop generational AI literacy from students to professionals.

In navigating the AI landscape, AI Singapore provides valuable insights, emphasizing education, ethical considerations, and the collaborative effort required for successful AI implementation. As the AI journey unfolds, staying informed, adapting to evolving technologies, and fostering diverse expertise will be key to realizing the full potential of AI.



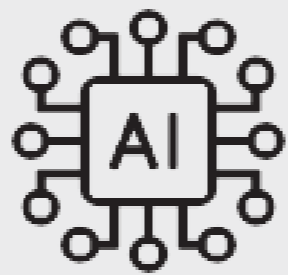
Diverse Expertise for Future AI

The conversation underscored the growing importance of domain expertise as AI tools become more accessible. AI Singapore’s advice emphasized hiring based on diverse backgrounds and domain expertise, rather than solely on traditional computer science qualifications, recognizing the horizontal impact of GenAI.



Planning and Dealing With Skills Shortage

There is a critical importance to planning, assessing ROI, and having the necessary data sets and teams for AI projects. AI Singapore highlighted its role in building skills through apprenticeship programs and creating a talent pipeline framework to address the global AI skills shortage.



Ensuring Successful AI Implementations

Successful AI implementation requires a team effort and engagement across the entire employee ecosystem. Highlighting the role of domain experts in ensuring the relevancy of AI decisions and stressing the need for clear communication about project plans.



AI Ethics and Governance

Addressing AI ethics, the advice is to adopt checklists or governance frameworks, with AI Singapore having its own internal checklist. Attention is drawn to the importance of staying aware of changing rules, especially regarding data privacy and copyright laws.

“We still need some form of governance framework. For CIOs adopting a checklist or some form of governance framework is super important... So these (frameworks) are coming on stream and large organization need to think through how they’re going to govern the use of AI, whether as an end user or a consumer or as a producer of AI systems.

We simplify it when talking to engineers – consolidating a 50-page document into a two-page checklist. And we encourage engineers to look at this checklist, review and feedback before we start, accept or deploy a project.”

CIO Spotlight

Integrating AI Organization-Wide

A conversation with AXSEED, Inc., Japan



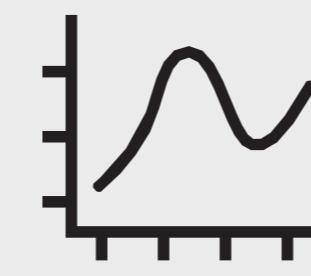
Shigeyuki Morimoto

Representative Director & President

Shigeyuki Morimoto is the Representative Director & President of AXSEED, Inc., a Softbank Corp. company that develops and provides mobile device management (MDM) services with security functions.

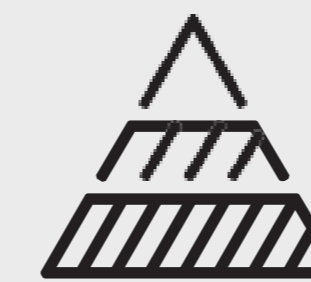
He is also in charge of developing applications including AI and cloud computing in the corporate business at Softbank Corp.

AXSEED, Inc., a Softbank Corp. subsidiary, specializes in secure MDM services. In discussions with IDC, the advanced nature of AI is emphasized. AXSEED, Inc. sees AI as a significant strategic and technological enabler. During our discussion he shared his experience, learnings and perspective of implementing AI across his organization:



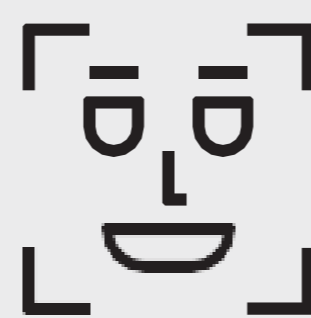
The Learning Curve

Applying AI to **existing systems often yields** more success than creating entirely new AI solutions, as seen with AXSEED, Inc.'s FAQ chatbot. Despite initial glitches and odd responses, iterative adjustments enhanced its functionality. Relying solely on cost-effectiveness assessments can be limiting; **what seems unfeasible now might prove beneficial as technology progresses**. Whether software is developed in-house or outsourced, the ability to internally review the code is essential, ensuring informed decisions that factor in future scalability and associated costs.



The Foundations of AI

Cloud technology is pivotal for AI's computational demands in knowledge-intensive tasks. On-premises servers struggle to meet this need. Additionally, the **rising importance of API technology**, present in both edge and cloud devices, is evident. AI advancements hinge on these APIs, necessitating engineers skilled in this domain. Executives must grasp this technical landscape; decisions about AI investments require balancing incremental costs with future scalability and features, necessitating the comprehension of technical and sales stakeholders.



AI's Impact on Roles

AI will increasingly automate labor-intensive tasks like accounting, consolidating them in the cloud and freeing humans for more valuable activities such as data analysis. As tasks evolve, employees may transition to becoming "data engineers," focusing on interpretation rather than routine operations.

This shift is especially pertinent in Japan due to a population decline leading to labor shortages. Consequently, the exploration of cost-effective labor alternatives abroad becomes a consideration, emphasizing the growing importance of English proficiency over the mastery of low-code programming for Japanese personnel.

CIO Playbook 2024

Vertical insights

BFSI Overview (1/2)

Historically, financial services institutions (FSI) have been significant investors in AI, particularly in risk and compliance areas such as anti-money laundering (AML), credit scoring and know your customer (KYC). However, with AI gaining traction, FSIs are gearing up to execute AI at the core. Banks and insurance companies are particularly keen on adopting holistic AI strategies and are piloting GenAI solutions in areas such as cybersecurity and AIOps. GenAI-powered chatbots and virtual assistants are helping front-office processes such as account inquiries and retail banking, as well as being utilized in wealth management by offering investment advice and financial planning assistance. Other functional use cases for GenAI in FSI are in legal contract management and HR.

CIOs' top business priorities in 2024

- 1 Leveraging emerging technologies (e.g., GenAI)
- 2 Driving digital business innovation
- 3 Higher customer experience & satisfaction

Top tech investment priorities in 2024

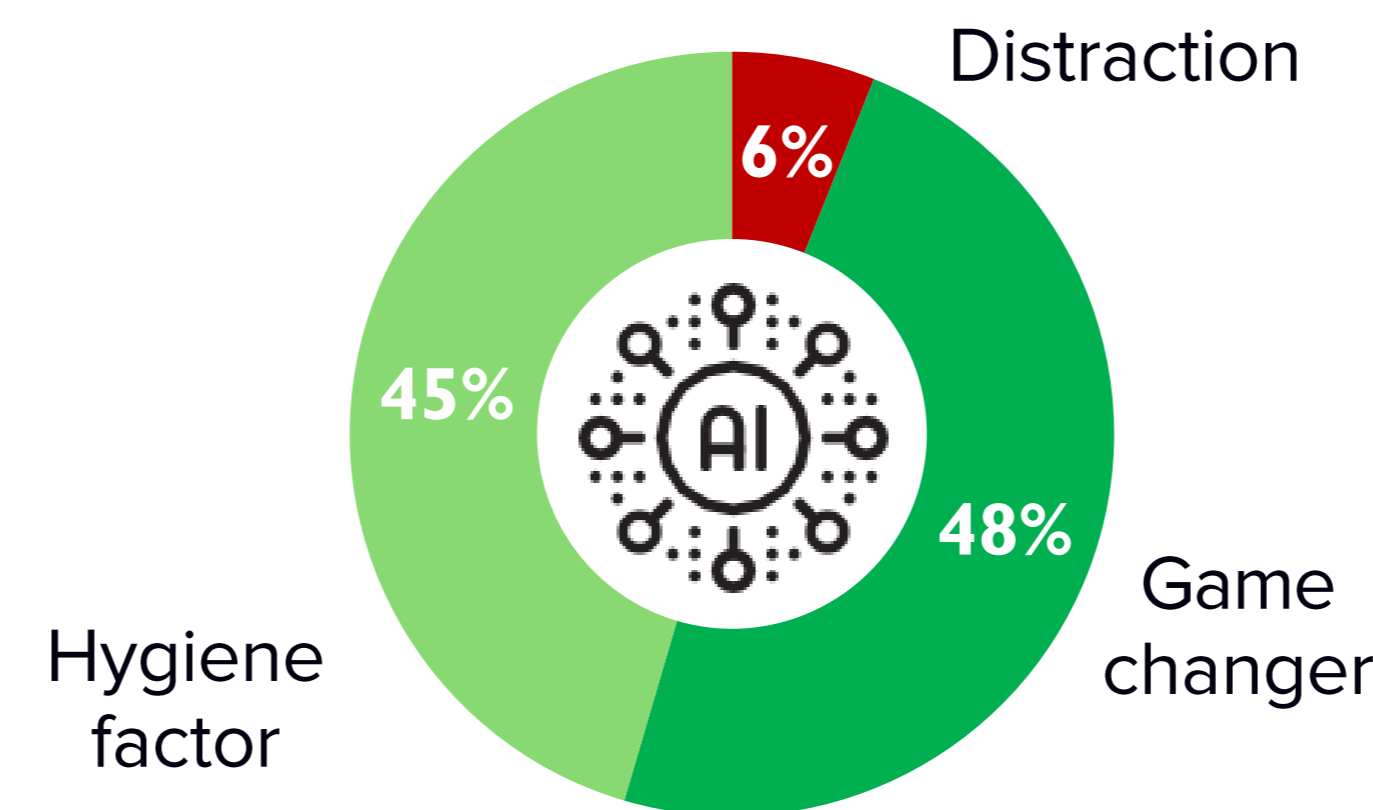
- 1 High-performance compute platforms for AI/ML workloads
- 2 Better cyber resiliency to address ransomware & malware attacks
- 3 Modernizing infrastructure for microservices-oriented architecture

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Data management & analytics
- 3 Digital transformation



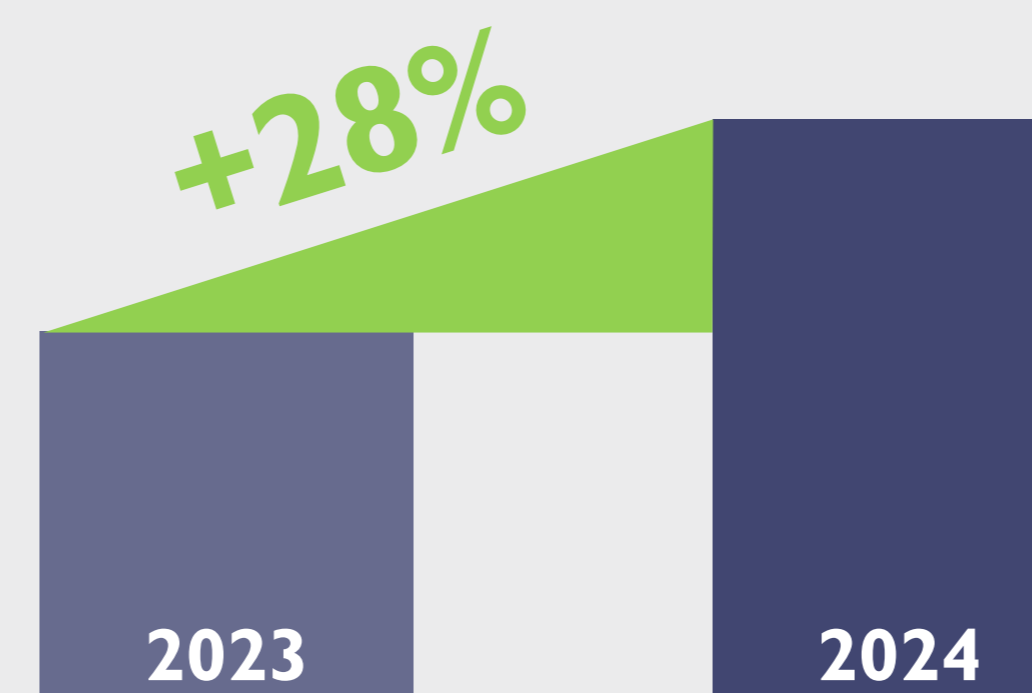
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Cybersecurity & threat detection
- 2 Intelligent automation & robotics
- 3 Automation & efficiency

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Retail & customer experience
- 2 Remote monitoring & telehealth
- 3 Real-time analytics & insights

BFSI Overview (2/2)

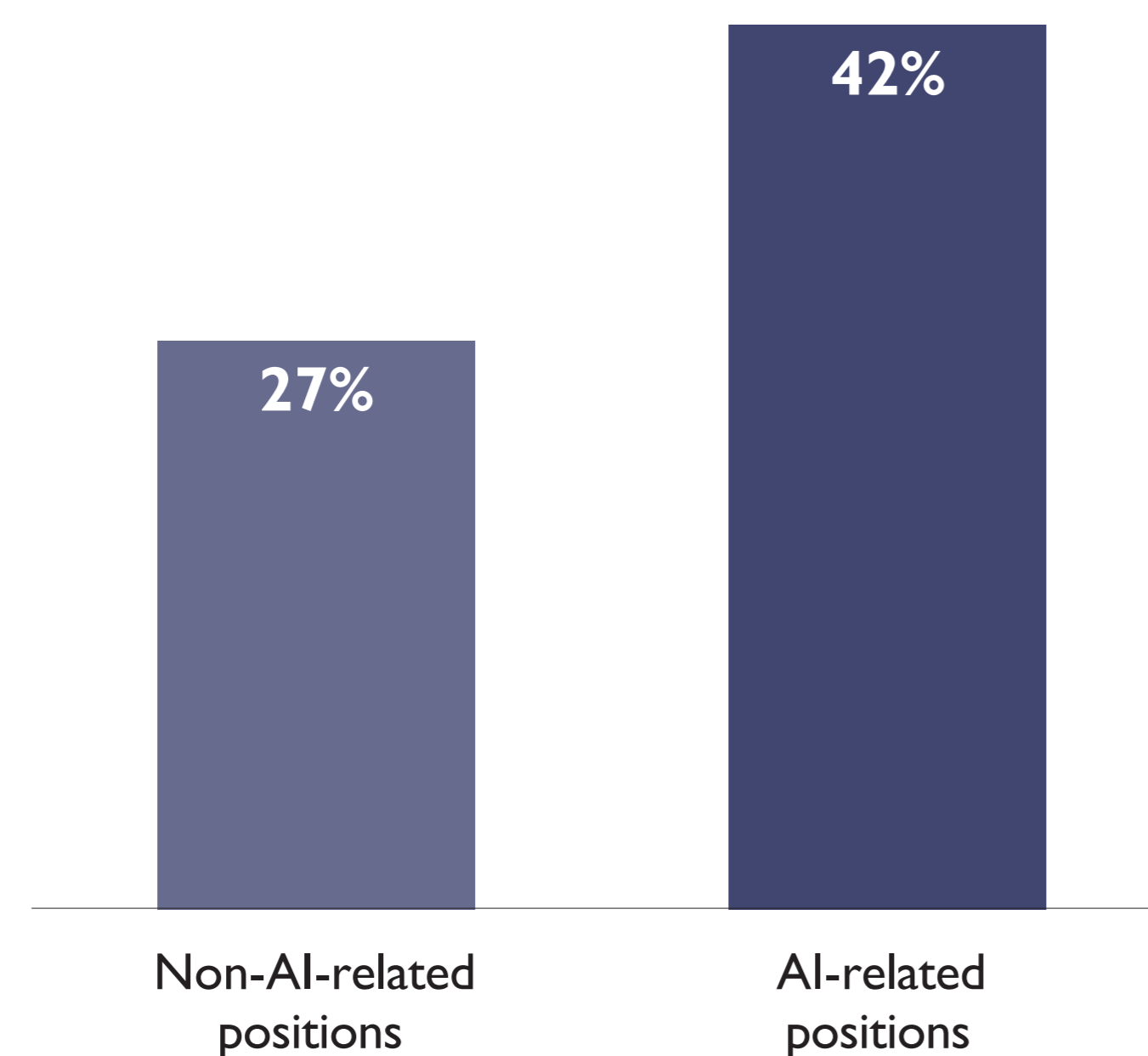
FSIs boast a greater proportion of high-salaried employees than any other industry in Asia. Hence, it's not surprising that job security, skills availability and need for training are ranked as top challenges for this sector, especially in developed markets such as Australia, New Zealand, Singapore and Japan. As such, productivity-focused use cases are a big focus, as they look to GenAI to decrease costs by replacing relatively expensive professionals.

Top challenges when deploying AI

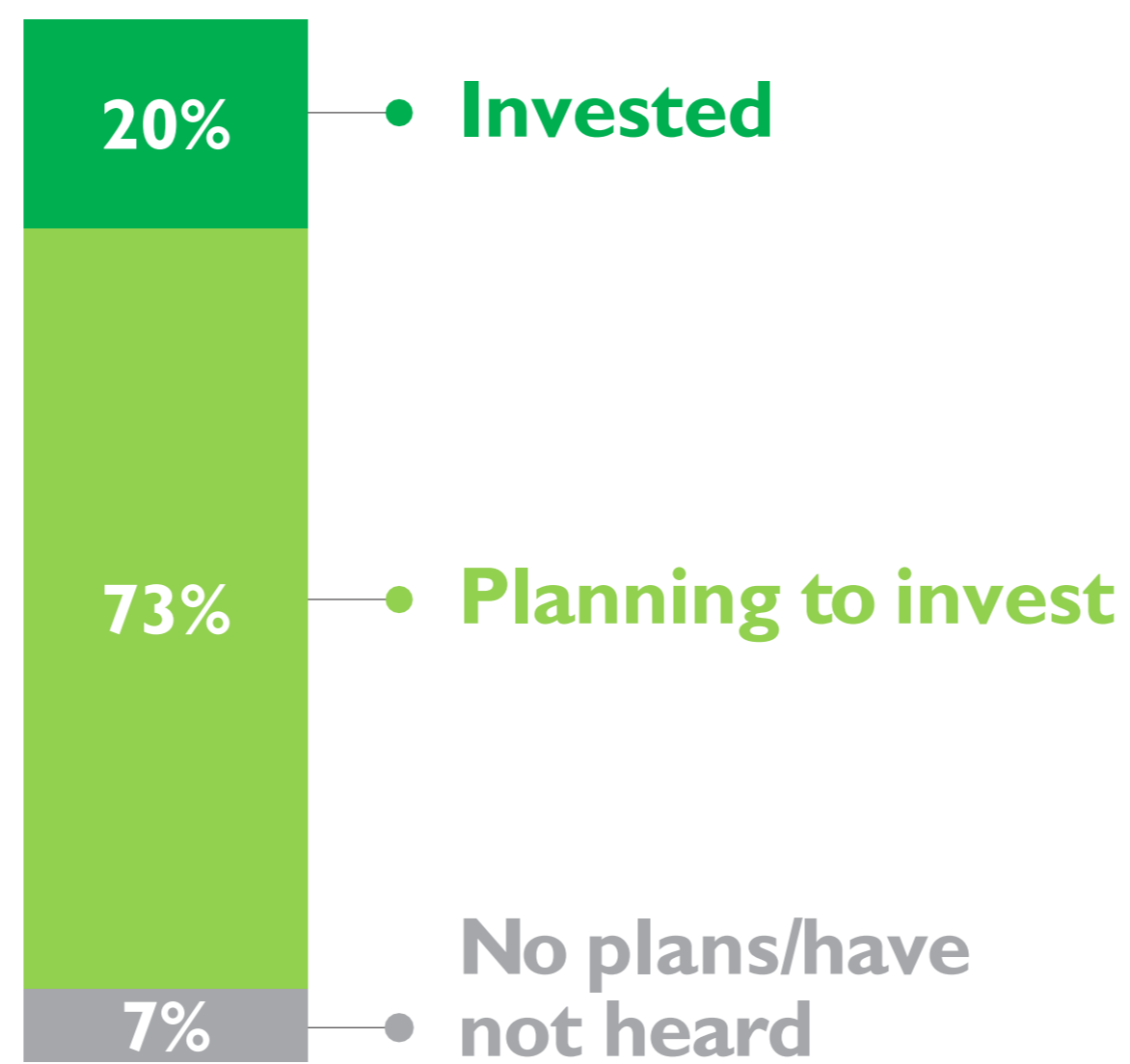
- 1 Lack of required IT support / resources / skills for successful automation deployment
- 2 Employees are concerned that AI will threaten their jobs
- 3 Lack of training for use of self-service AI tools (low- or no-code apps)

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Employee skills development
- 2 Networking infrastructure
- 3 End-to-end network security

GenAI types of interest

- 1 Business intelligence (e.g., KYC)
- 2 Conversational AI (e.g., conversational AI & automatic speech recognition)
- 3 Productivity (e.g., credit risk analysis & underwriting)

Top challenges when adopting GenAI

- 1 Model capability limitations (e.g., lack of data required)
- 2 Monitoring for potential misuse & AI hallucinations
- 3 High dependence on third party



Manufacturing Overview (1/2)

AI is becoming an increasingly pivotal force in manufacturing, propelling advances in Business intelligence, Productivity, and Conversational AI. Industry leaders are acknowledging this trend, prioritizing digital transformation, and leveraging AI through edge computing and key edge use cases to support business strategies that enhance competitiveness and customer satisfaction. Advanced AI algorithms help manufacturers better ingest, analyze and extract insights from increasing volume of operational data generated from smart manufacturing processes and workflows. This helps manufacturers identify bottlenecks, optimize processes and predict potential issues to reduce downtime and increase production throughput.

CIOs' top business priorities in 2024

- 1 Leveraging emerging technologies (e.g., GenAI)
- 2 Improved sustainability
- 3 Higher customer experience & satisfaction

Top tech investment priorities in 2024

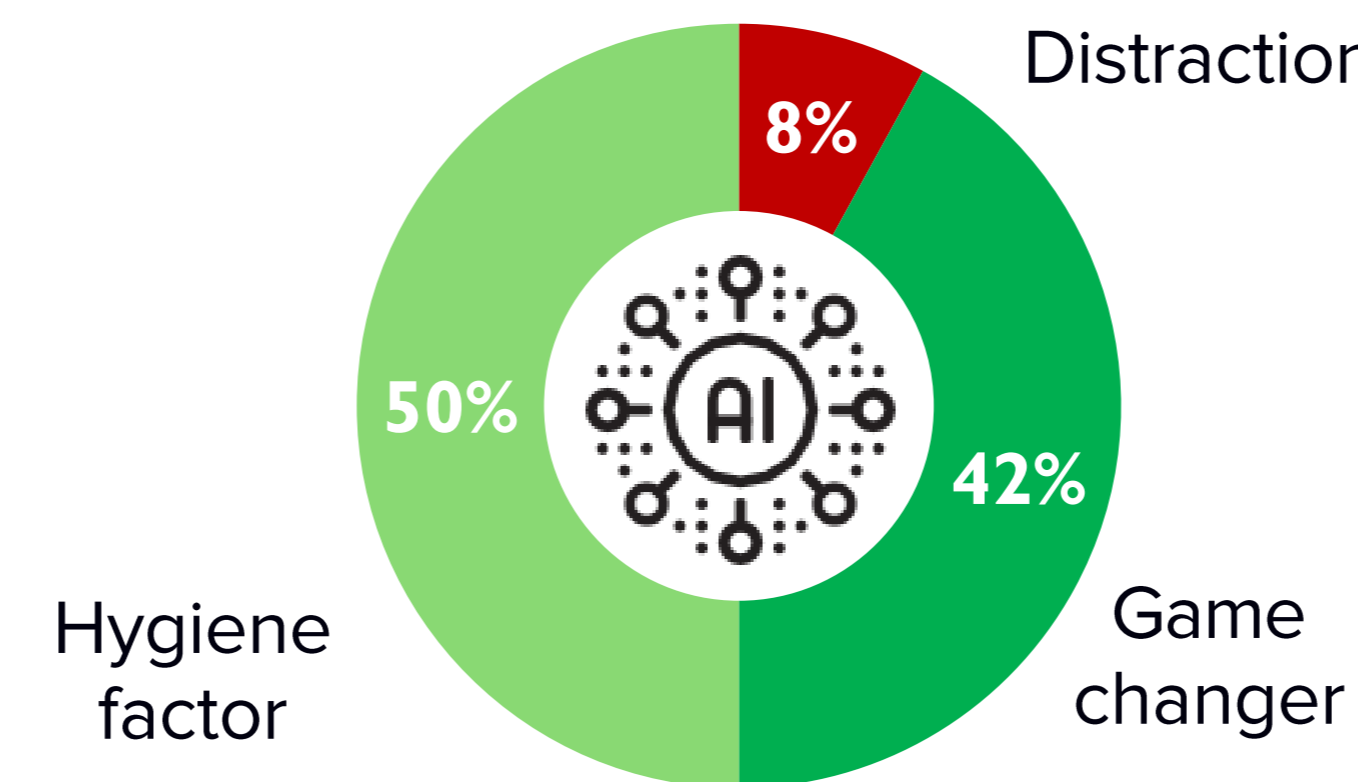
- 1 Generative AI
- 2 Automating digital infrastructure management & security
- 3 Unified management control plane for all digital infrastructure resources

Challenges CIOs foresee in 2024

- 1 Digital transformation
- 2 Cybersecurity & data privacy
- 3 Data management & analytics



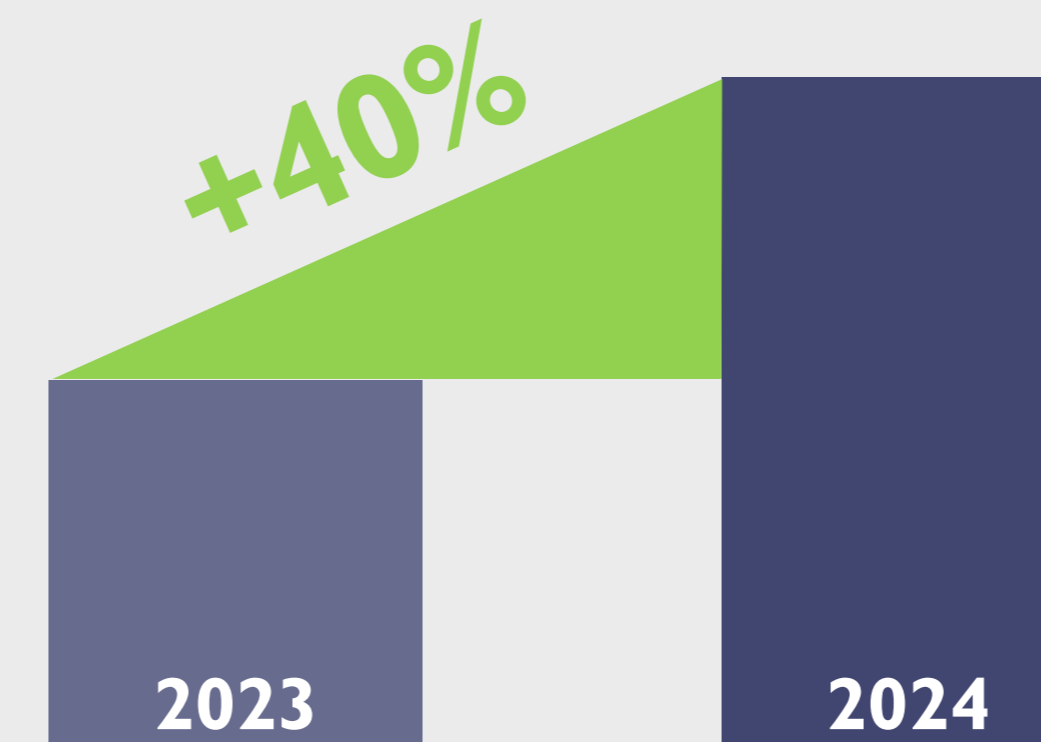
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Intelligent automation & robotics
- 2 Automation & efficiency
- 3 Cybersecurity & threat detection

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Industrial automation & manufacturing
- 2 IoT device management
- 3 Real-time analytics & insights

Manufacturing Overview (2/2)

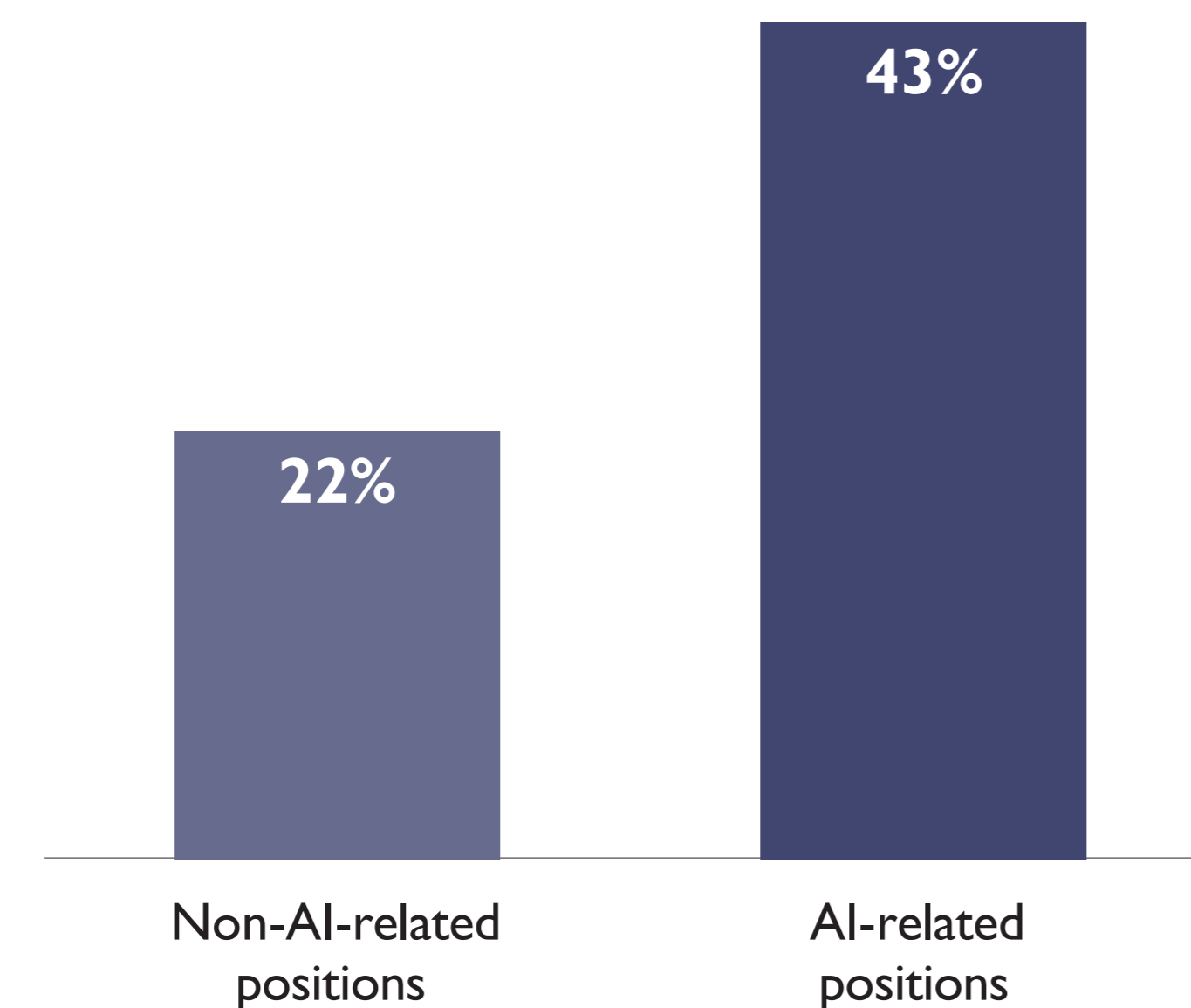
AI promises enhanced Business intelligence amid intense competition and evolving customer demands, posing challenges in upskilling the workforce in IT and establishing secure AI infrastructures. Addressing this is vital for businesses to harness AI's full potential, especially with advancing edge devices in manufacturing, demanding seamless cloud-to-edge operations. Manufacturing AI incurs substantial infrastructure costs due to the fragmented nature of data. GenAI transcends process optimization, innovating designs and materials. Its capability to produce realistic synthetic data enhances model training accuracy, reducing costs and time.

Top challenges when deploying AI

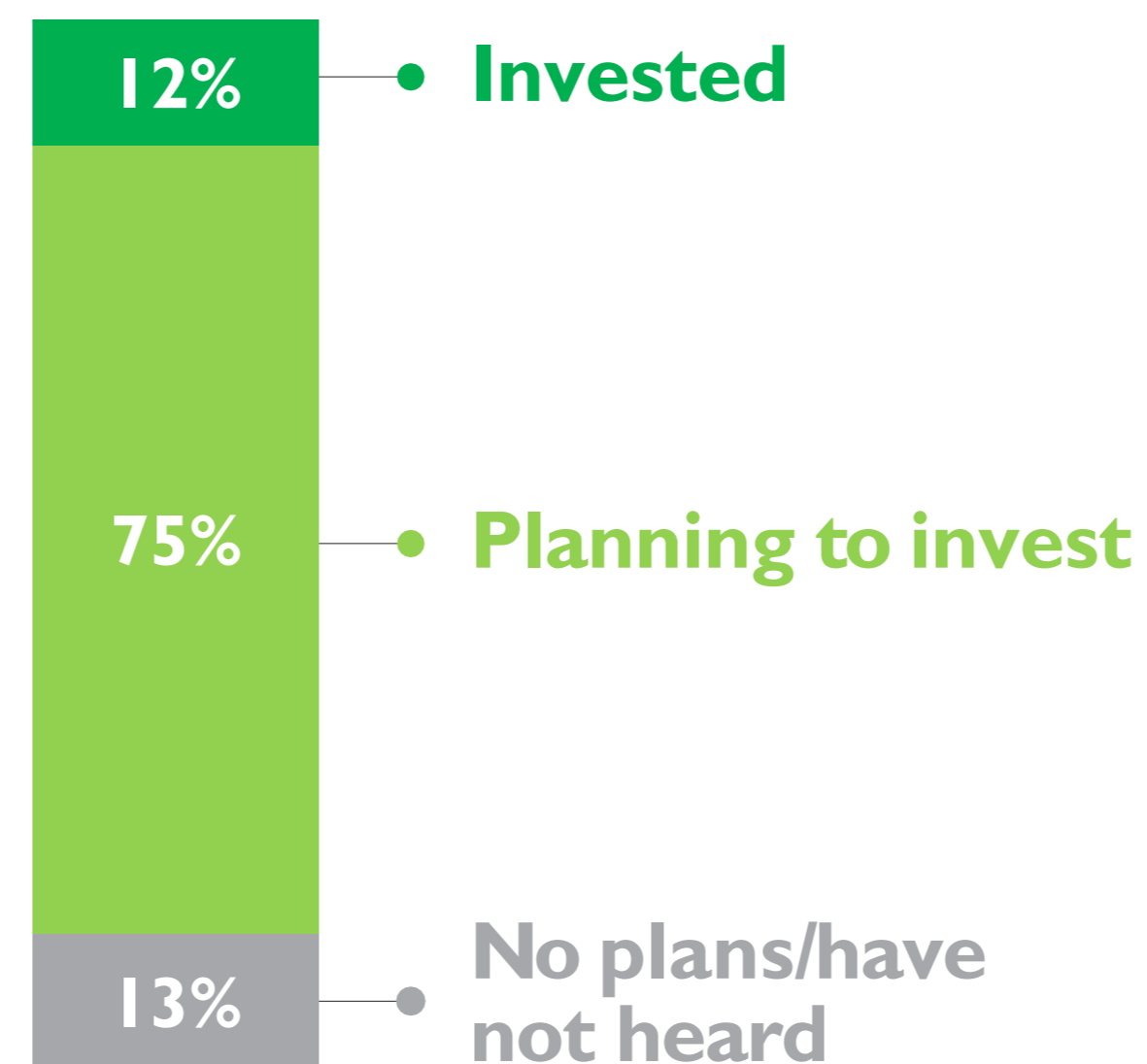
- 1 Lack of required IT support / resources / skills for successful automation deployment
- 2 Making a business case for AI
- 3 Lack of training for use of self-service AI tools (low- or no-code apps)

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

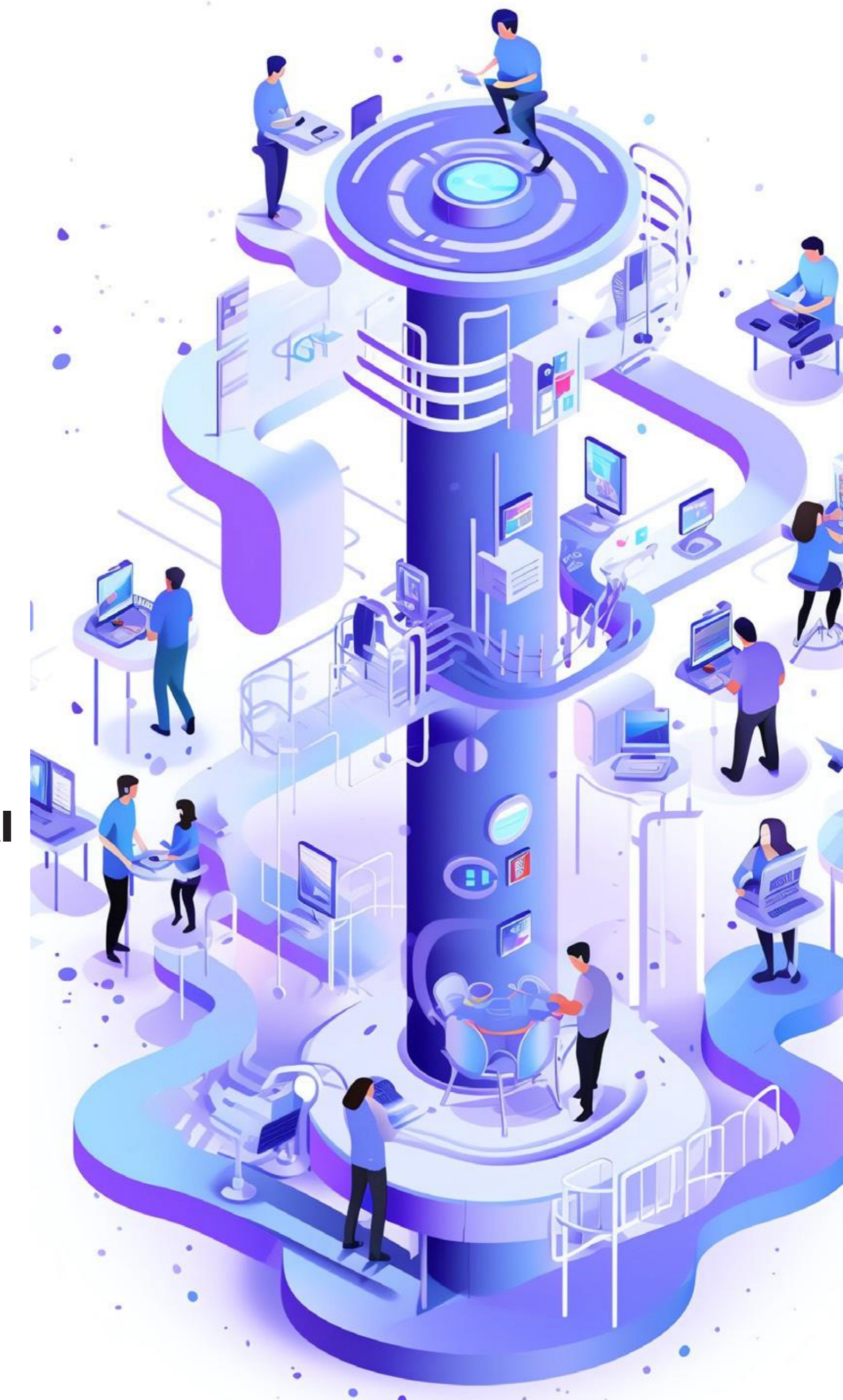
- 1 Employee skills development
- 2 Networking infrastructure
- 3 Building high computing capacity

GenAI types of interest

- 1 Business intelligence (e.g., predictive/prescriptive analysis)
- 2 Productivity (e.g., quality control & defect detection)
- 3 Conversational AI (e.g., inventory management via virtual assistants)

Top challenges when adopting GenAI

- 1 Model capability limitations (e.g., lack of data required)
- 2 Monitoring for potential misuse & AI hallucinations
- 3 Security



Retail Overview (1/2)

The Asia/Pacific retail industry is prioritizing customer experience (CX), necessitating substantial investments in AI and edge computing for personalized customer interactions, including product recommendations, payments, shopping inventory, and special offers. CIOs from developed markets in the region such as Australia, Singapore, Japan, and Korea consider emerging technologies such as AI to play a crucial role in enhancing which offer various benefits that can enhance efficiency, customer experience, and overall business operations. They also believe that AI can help retailers stay competitive in this rapidly evolving market.

CIOs' top business priorities in 2024

- 1 Leveraging emerging technologies (e.g., GenAI)
- 2 Higher customer experience & satisfaction
- 3 Driving digital business innovation

Top tech investment priorities in 2024

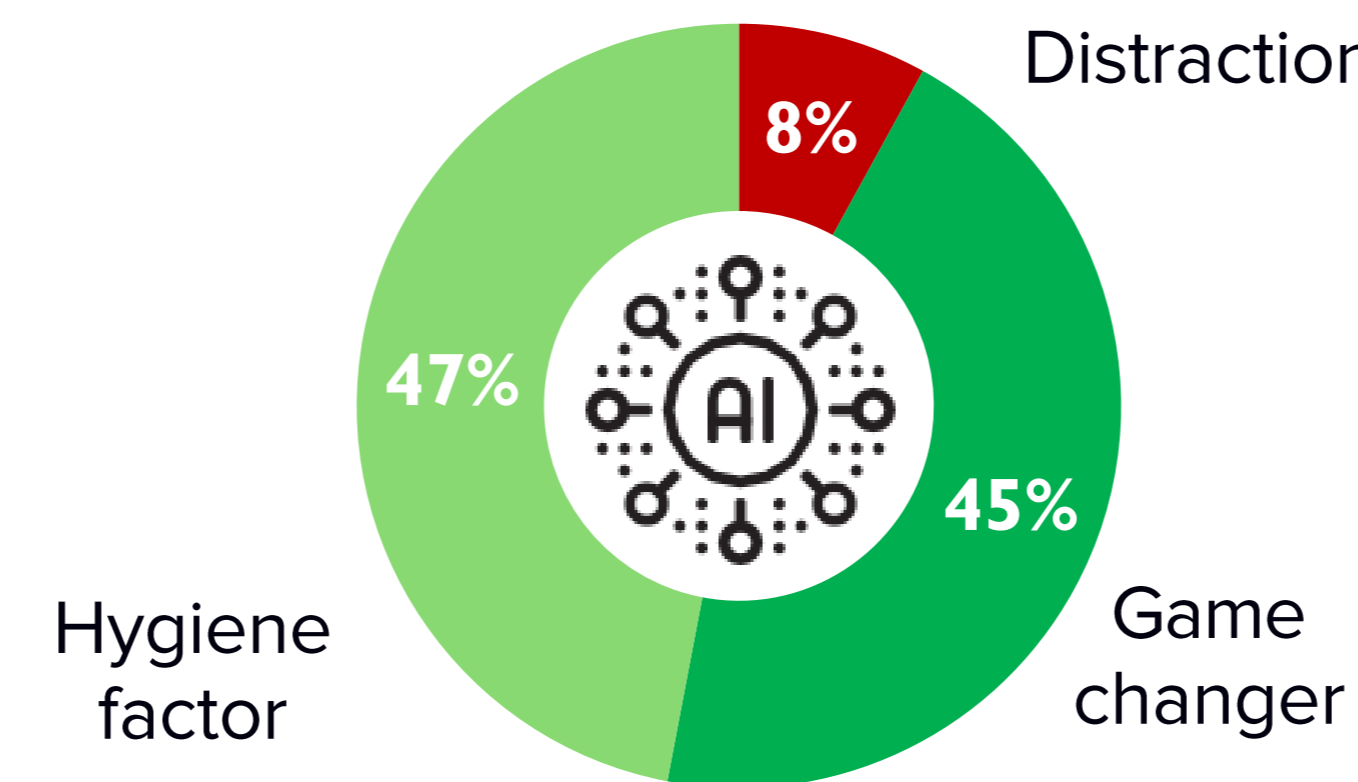
- 1 Automating digital infrastructure management & security
- 2 High-performance compute platforms for AI/ML workloads
- 3 Modernizing infrastructure for microservices-oriented architecture

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Digital transformation
- 3 Talent acquisition & retention



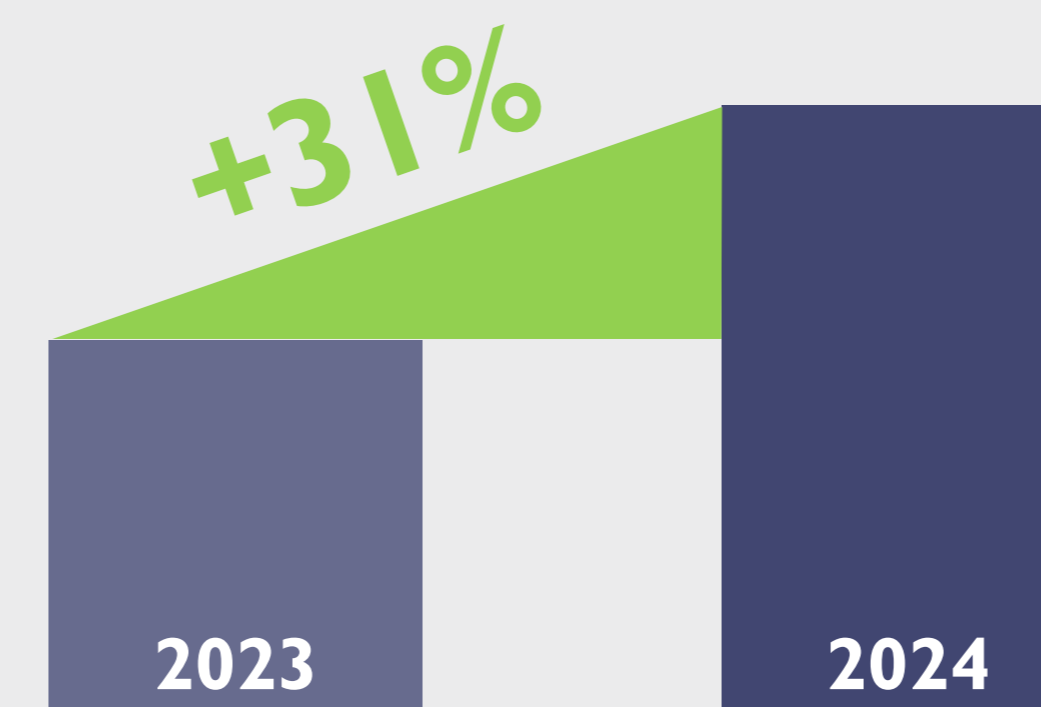
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Automation & efficiency
- 2 Cybersecurity & threat detection
- 3 Personalization & customer experience

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Retail & customer experience
- 2 Real-time analytics & insights
- 3 IoT device management

- BFSI
- Manufacturing
- Retail
- Telco
- Healthcare
- Government

Retail Overview (2/2)

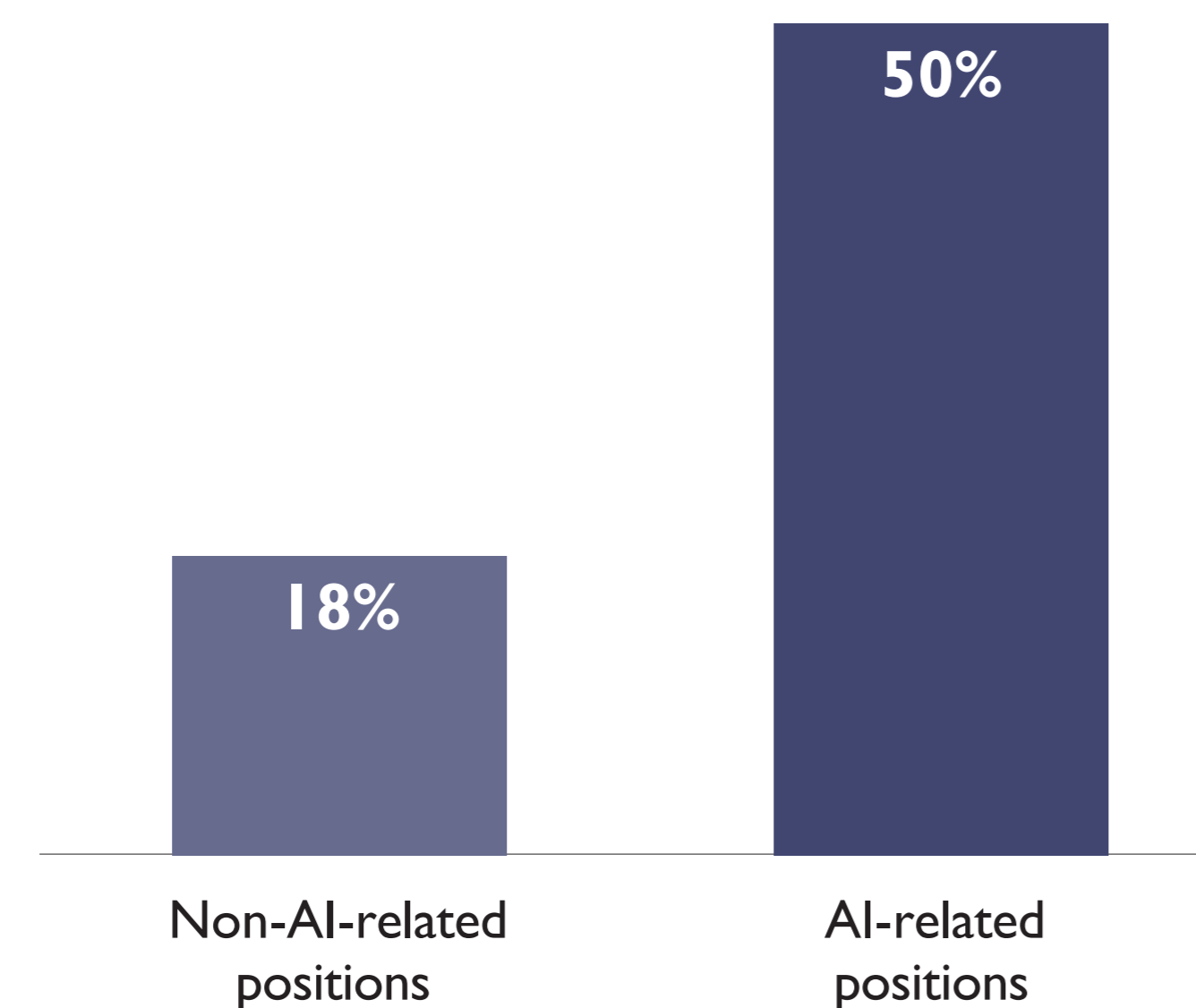
For most AI enthusiasts including CIOs in the Asia-Pacific region, the market is already wide open. However there remains certain challenges as to how AI tech delivers business value and how organizations will benefit. AI can be cool and shiny. However, it is not a silver bullet that addresses all business problems. The challenge remains as the real value and ROI for AI in business depends on how well it can drive outcomes.

Top challenges when deploying AI

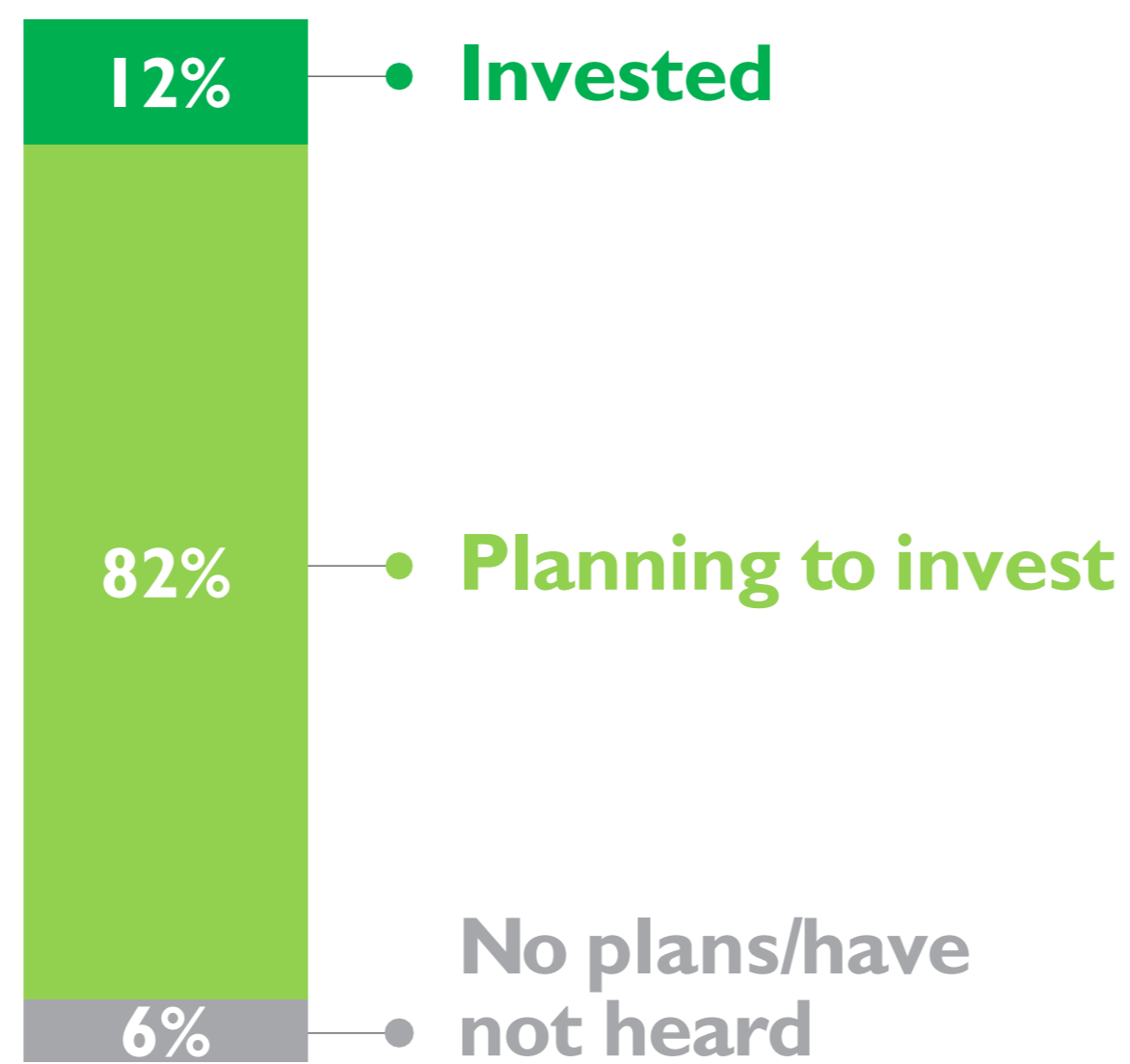
- 1 Making business case for AI
- 2 Employees are concerned that AI will threaten their jobs
- 3 Lack of required IT support/ resources/skills for successful automation deployment

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Networking infrastructure
- 2 End-to-end network security
- 3 Building high computing capacity

GenAI types of interest

- 1 Productivity (e.g., price optimization based on customer behavior)
- 2 Conversational AI (e.g., customer support & order tracking)
- 3 Business intelligence (e.g., heat mapping of retail stores)

Top challenges when adopting GenAI

- 1 Security
- 2 Model capability limitations (e.g., lack of data required)
- 3 Reliable data platform



Telco Overview (1/2)

The telco industry is excited about AI applications such as network optimization, predictive maintenance, and enhancing customer experiences through personalized services and virtual assistants. AI contributes to security with fraud detection and benefits 5G networks by optimizing resource allocation. Telcos leverage AI for data analytics, operational efficiency, and explore edge computing for IoT integration. Open source initiatives are gaining traction for collaborative development. Telcos see AI as transformative, optimizing operations, improving customer interactions, and unlocking new revenue opportunities.

CIOs' top business priorities in 2024

- 1 Leveraging emerging technologies (e.g., GenAI)
- 2 Higher customer experience & satisfaction
- 3 Accelerating revenue & profit growth

Top tech investment priorities in 2024

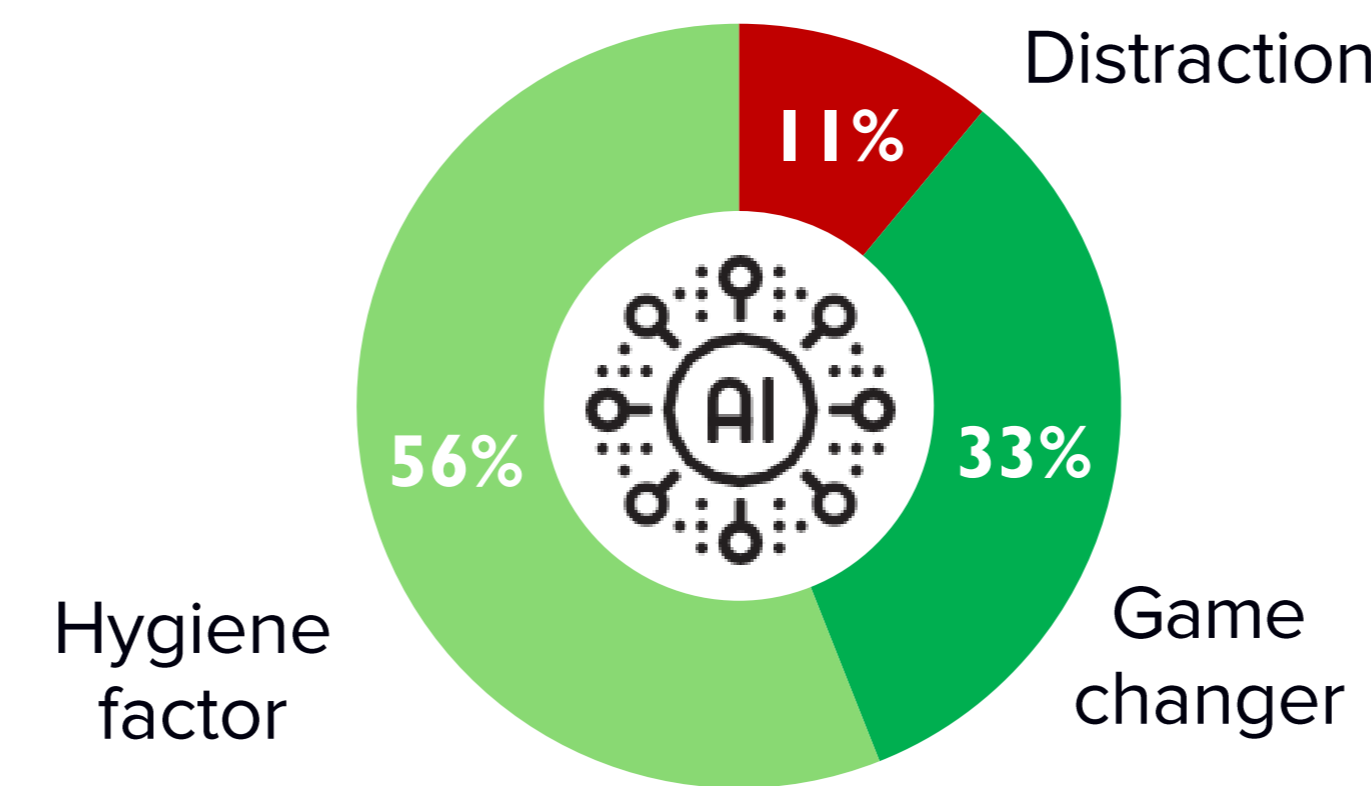
- 1 Automating digital infrastructure management & security
- 2 Better cyber resiliency to address ransomware & malware attacks
- 3 Modernizing infrastructure for microservices-oriented architecture

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Digital transformation
- 3 Data management & analytics



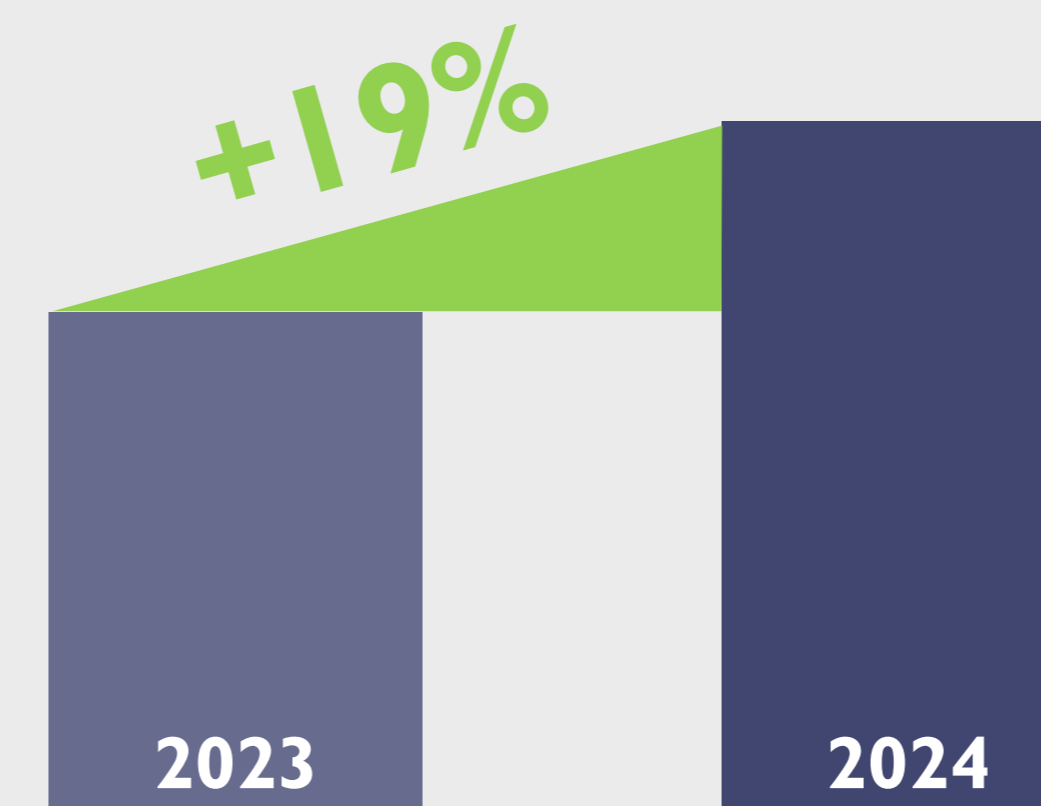
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Cybersecurity & threat detection
- 2 Talent & workforce management
- 3 Natural language processing & chatbots

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 Retail & customer experience
- 3 IoT device management

Telco Overview (2/2)

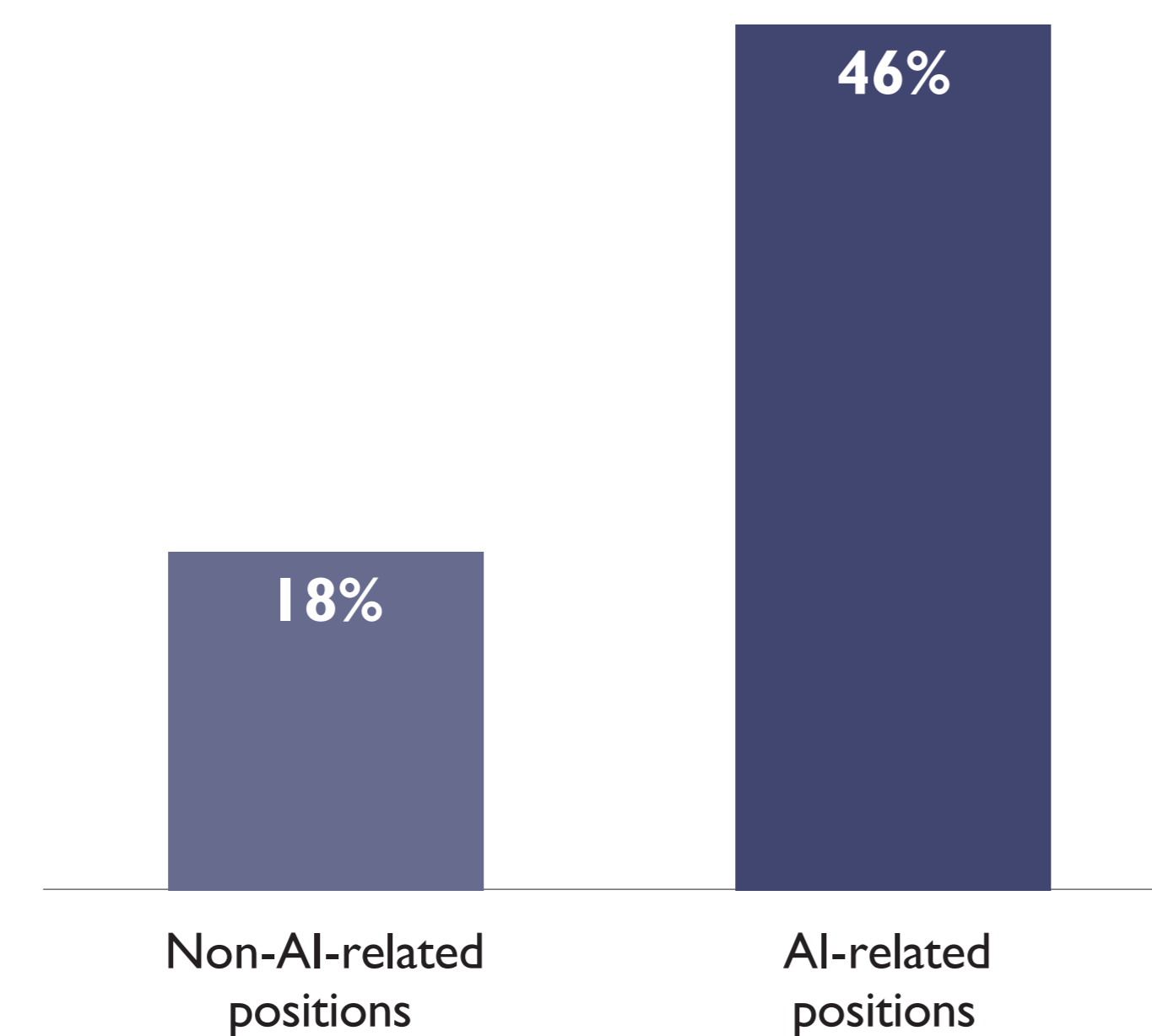
Leaders in the telecommunications industry emphasized that formulating a compelling business case for AI, along with managing human resources effectively, poses two primary challenges during AI implementation. A majority is gearing up to invest in GenAI, drawn by its potential to deliver significant advantages in Business intelligence, Productivity, and cost optimization. The adoption of GenAI can enhance network management, customer service, and predictive analytics, enabling greater efficiency for telecommunications service providers.

Top challenges when deploying AI

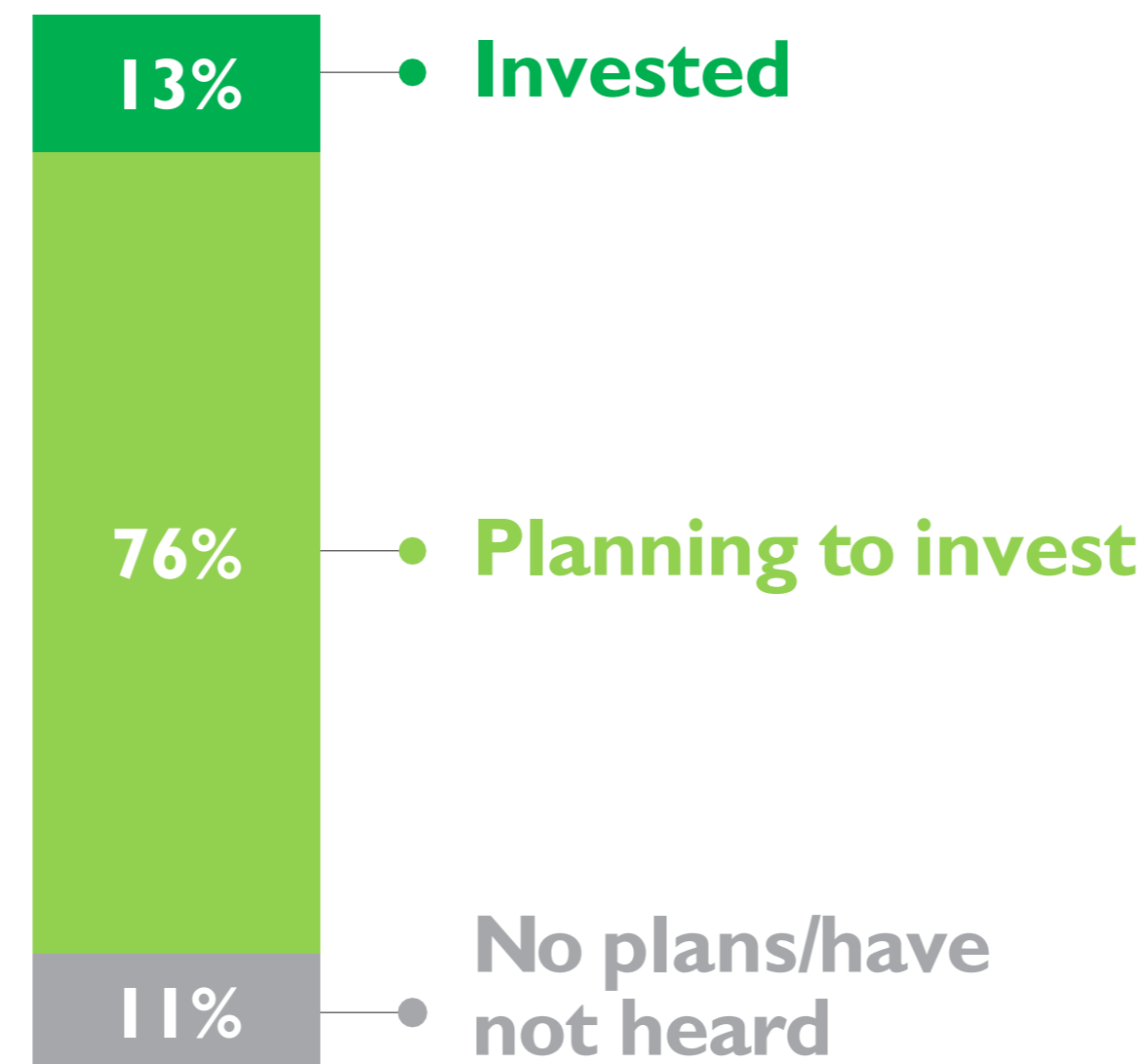
- 1 Making a business case for AI
- 2 Lack of required IT support/ resources/skills for successful automation deployment
- 3 Employees are concerned that AI will threaten their jobs

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Building high computing capacity
- 2 Networking infrastructure
- 3 End-to-end network security

GenAI types of interest

- 1 Productivity (e.g., safe code generation from proprietary data)
- 2 Business intelligence (e.g., read & analyze sensitive machine data such as network data/logs)
- 3 Customer interaction management (e.g., virtual assistants for customer enquiries)

Top challenges when adopting GenAI

- 1 Model capability limitations (e.g., lack of data required)
- 2 Security
- 3 Poor data governance/literacy



Healthcare Overview (1/2)

Healthcare institutions are on the verge of the “intelligence revolution”, where AI will accelerate a variety of use cases. In patient-centric care, key investment priorities include real-time analysis of clinical data and enhancing patient experiences. For example, AI-embedded systems capable of real-time vitals analysis with triggers that immediately highlight abnormalities for more accurate and faster imaging diagnostics. While such use cases are promising, healthcare institutions will need to balance data security and integration to ensure patient and clinical data are not only protected but accessible and accurate.

CIOs’ top business priorities in 2024

- 1 Driving digital business innovation
- 2 Higher customer experience & satisfaction
- 3 Accelerating revenue & profit growth

Top tech investment priorities in 2024

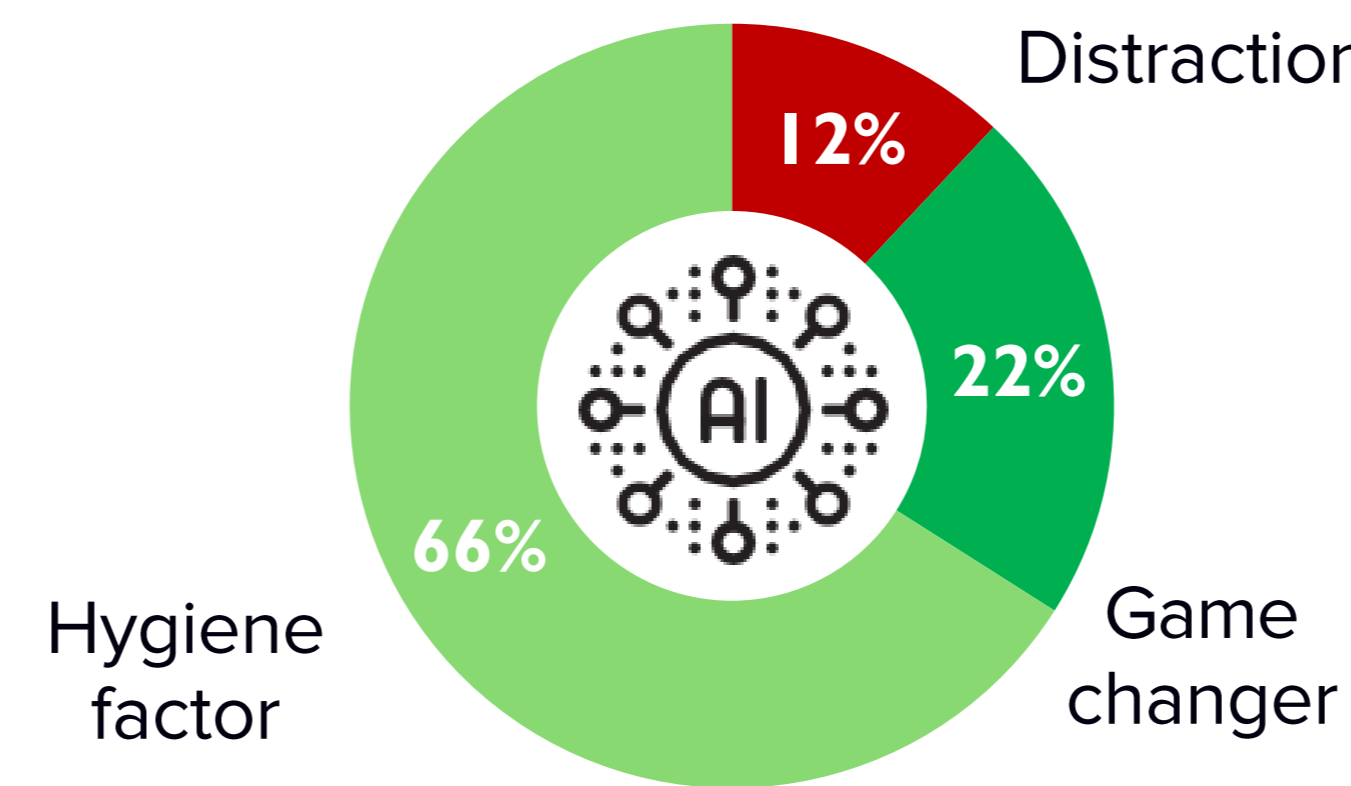
- 1 Automating digital infrastructure management & security
- 2 Common data management platform
- 3 High-performance compute platforms for AI/ML workloads

Challenges CIOs foresee in 2024

- 1 Digital transformation
- 2 Data management & analytics
- 3 Cybersecurity & data privacy



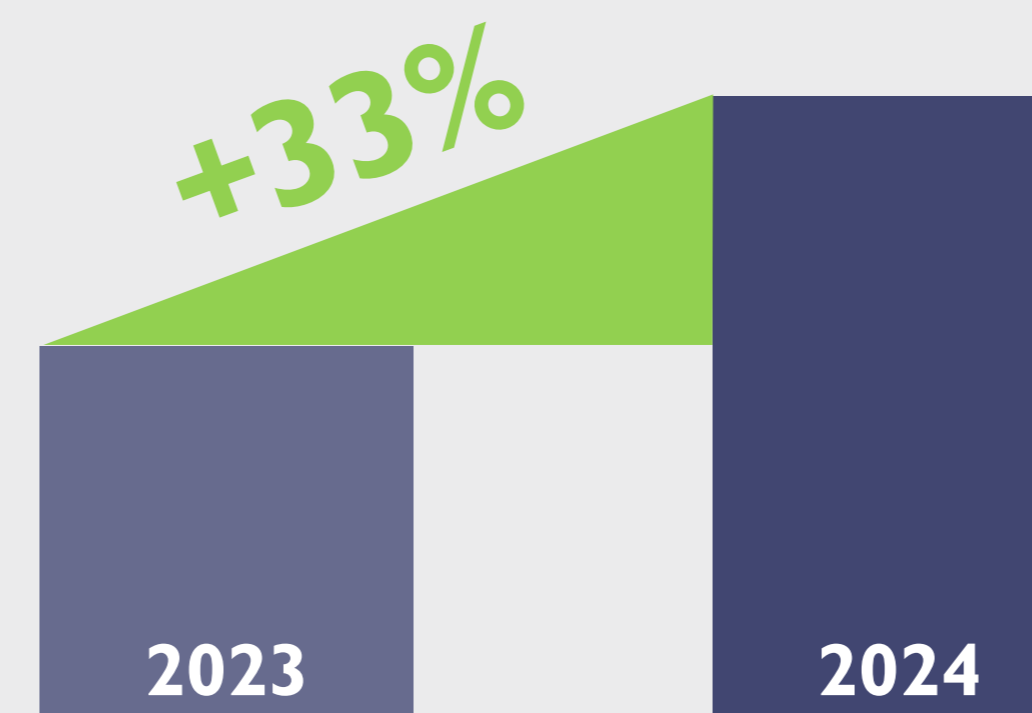
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Natural language processing & chatbots
- 2 Enhanced analytics & insights
- 3 Predictive maintenance & IoT

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 Retail & customer experience
- 3 Remote monitoring & telehealth

- BFSI
- Manufacturing
- Retail
- Telco
- Healthcare
- Government

Healthcare Overview (2/2)

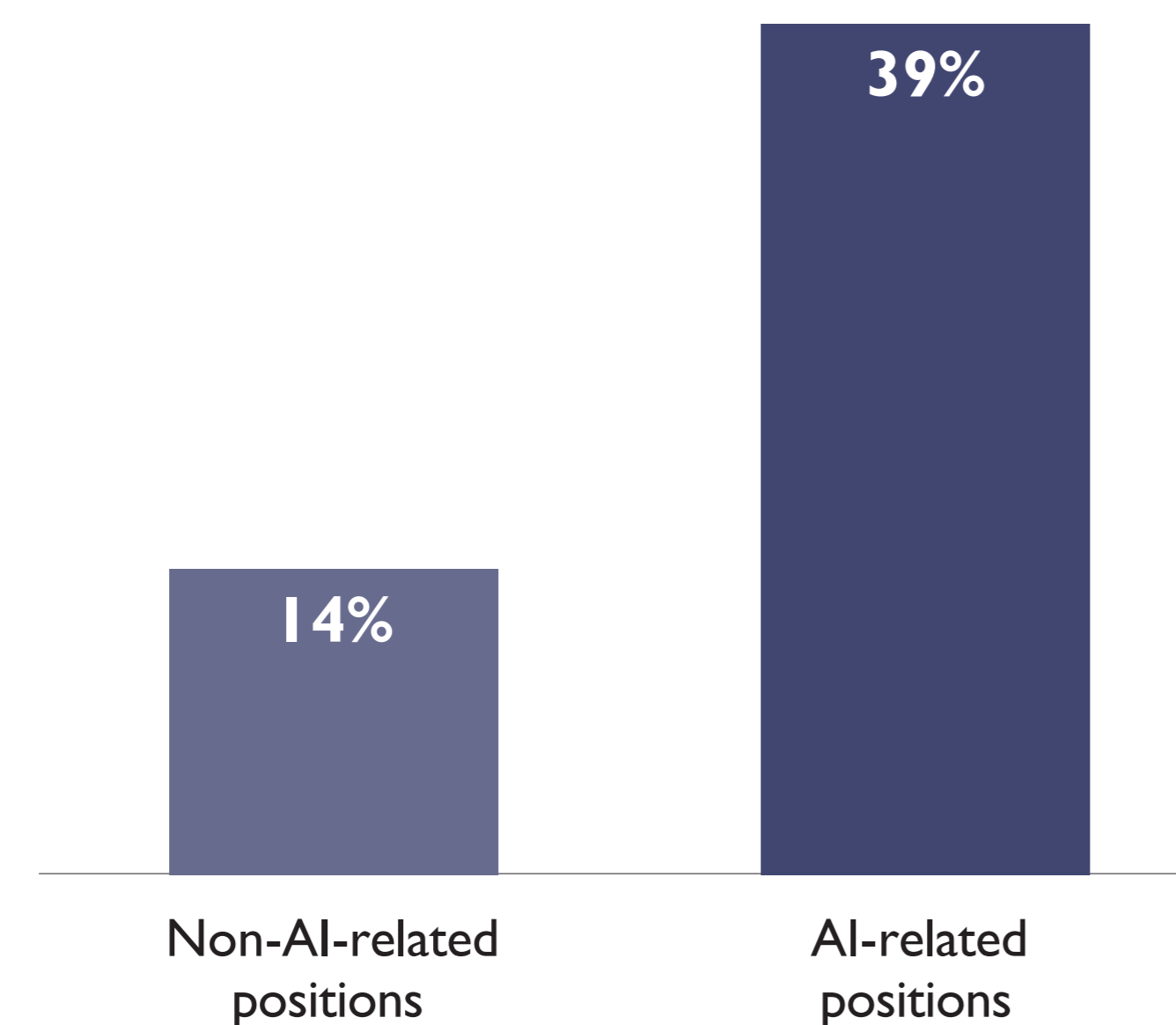
Healthcare organizations are investing in GenAI by bolstering their infrastructure and security as well as upskilling their people to ensure sustainable adoption of AI. GenAI brings possibilities in impacting administrative and operational tasks such as clinical documentation. As clinical data structure and digital infrastructure evolve, there is an expectation of growth in the number of uses cases in diagnostics, early disease detection and hyper personalization of patient experiences. Anticipated challenges on the horizon include the lack of structured and curated clinical data, regulatory compliance, and the skills gap to leverage the massive data needed for adoption of AI strategies. In healthcare where mistakes can be life-threatening, topics such as explainability and data security are important to address the risks of AI.

Top challenges when deploying AI

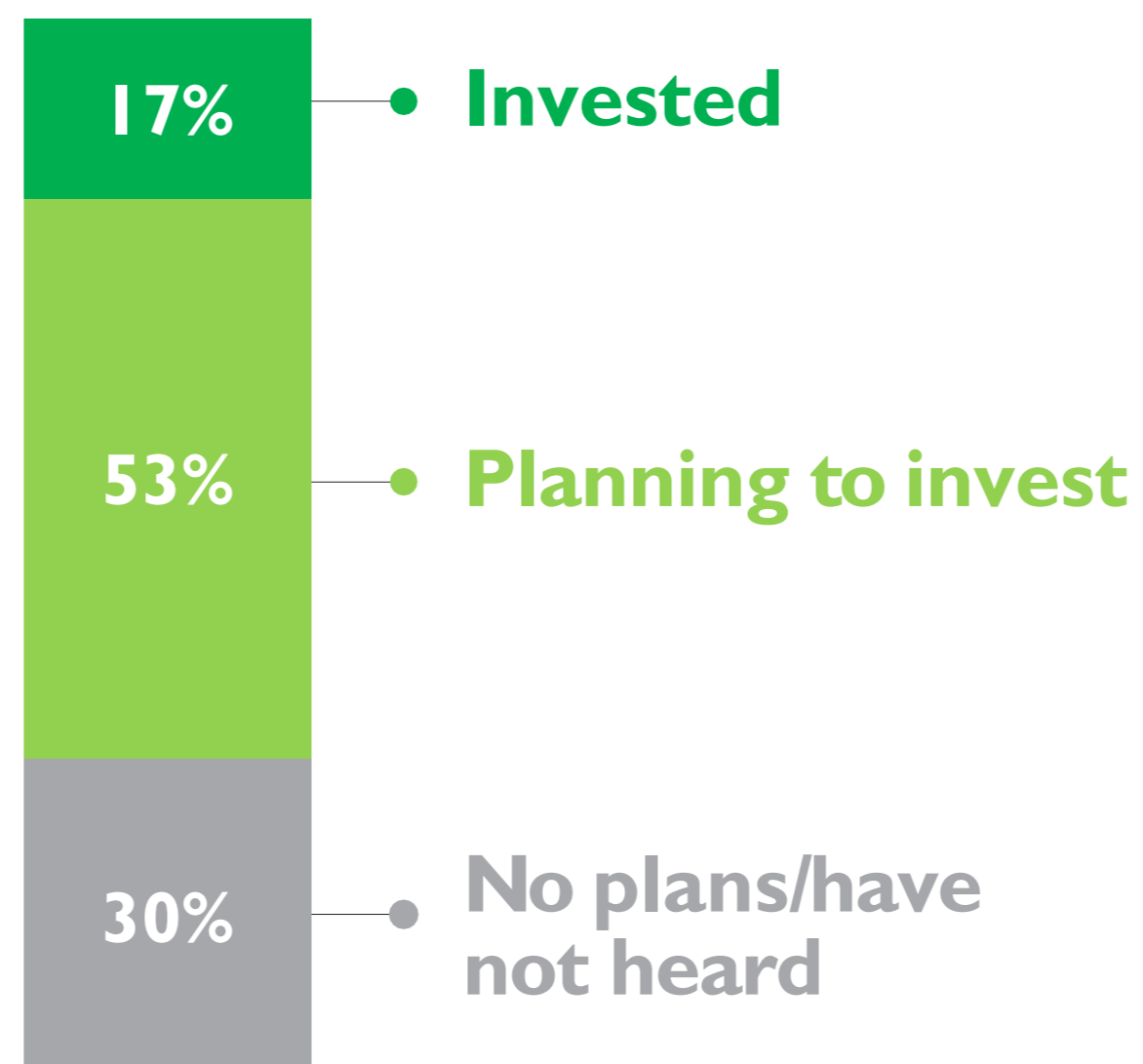
- 1 Employees are concerned that AI will threaten their jobs
- 2 Making a business case for AI
- 3 Difficulty keeping up with AI tech requirements

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 End-to-end network security
- 2 Networking infrastructure
- 3 Employee skills development

GenAI types of interest

- 1 Business intelligence (e.g., compliance & fraud detection)
- 2 Conversational AI (e.g., virtual assistants for claim management)
- 3 Enhancing Cost Efficiency (e.g., reducing manpower on clinical outcomes such as imaging/diagnostics)

Top challenges when adopting GenAI

- 1 Monitoring for potential misuse & AI hallucinations
- 2 Security
- 3 Model capability limitations (e.g., lack of data required)



Government Overview (1/2)

For governments, AI adoption streamlines tasks, promotes data-driven decisions, and boosts citizen engagement. It strengthens safety in crime prevention, border control, and cybersecurity, while spurring economic growth in sectors like agriculture, remote healthcare, and education. This technology addresses public service challenges, aiding governments in navigating today's complexities. In 2024, prioritizing a control plane approach enhances capabilities across agencies, extending to remote delivery. Coupled with secure digital infrastructure investments, this accelerates AI-ready foundations. Rapid modernization empowers governments with insights, improving citizen engagement, Productivity, and public service transformation.

CIOs' top business priorities in 2024

- 1 Higher customer experience & satisfaction
- 2 Cost optimization & savings
- 3 Increased business agility & responsiveness

Top tech investment priorities in 2024

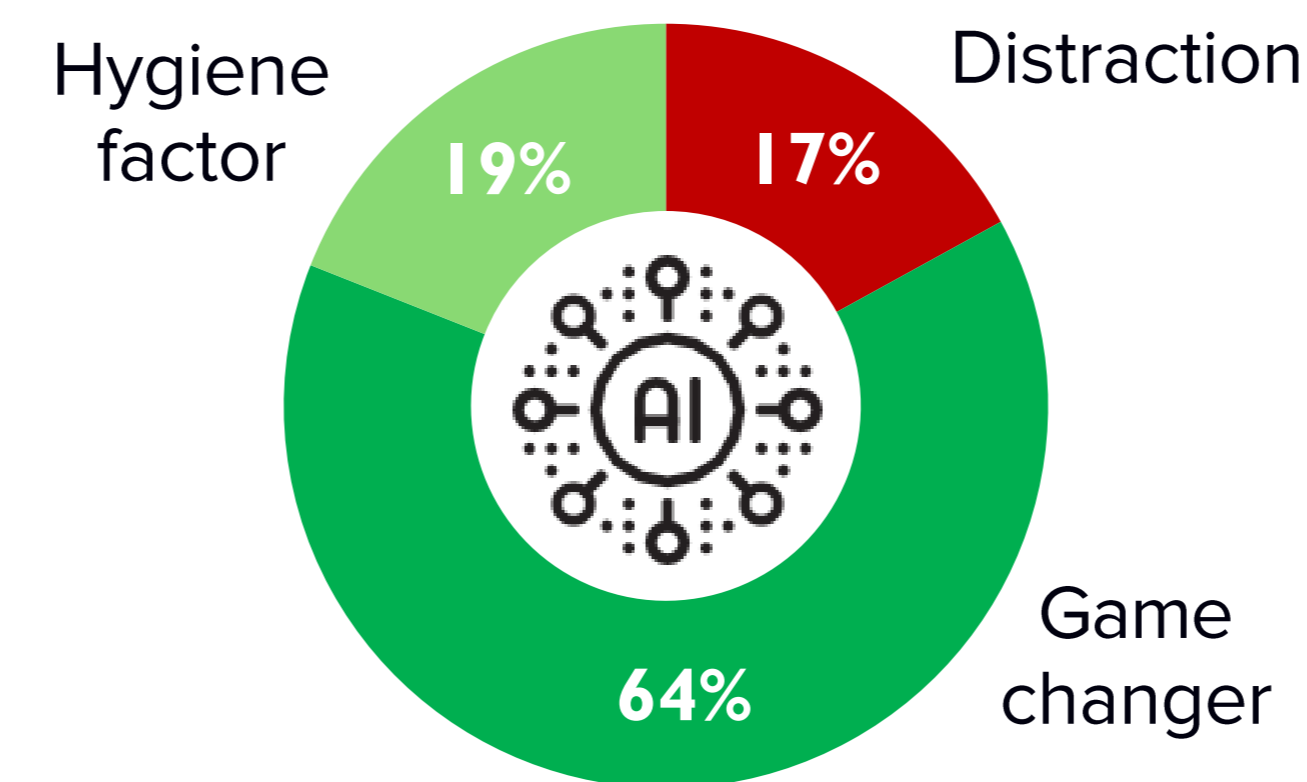
- 1 Unified management control plane for all digital infrastructure resources
- 2 Better cyber resiliency to address ransomware & malware attacks
- 3 Automating digital infrastructure management & security

Challenges CIOs foresee in 2024

- 1 Talent acquisition & retention
- 2 Customer experience
- 3 Digital transformation



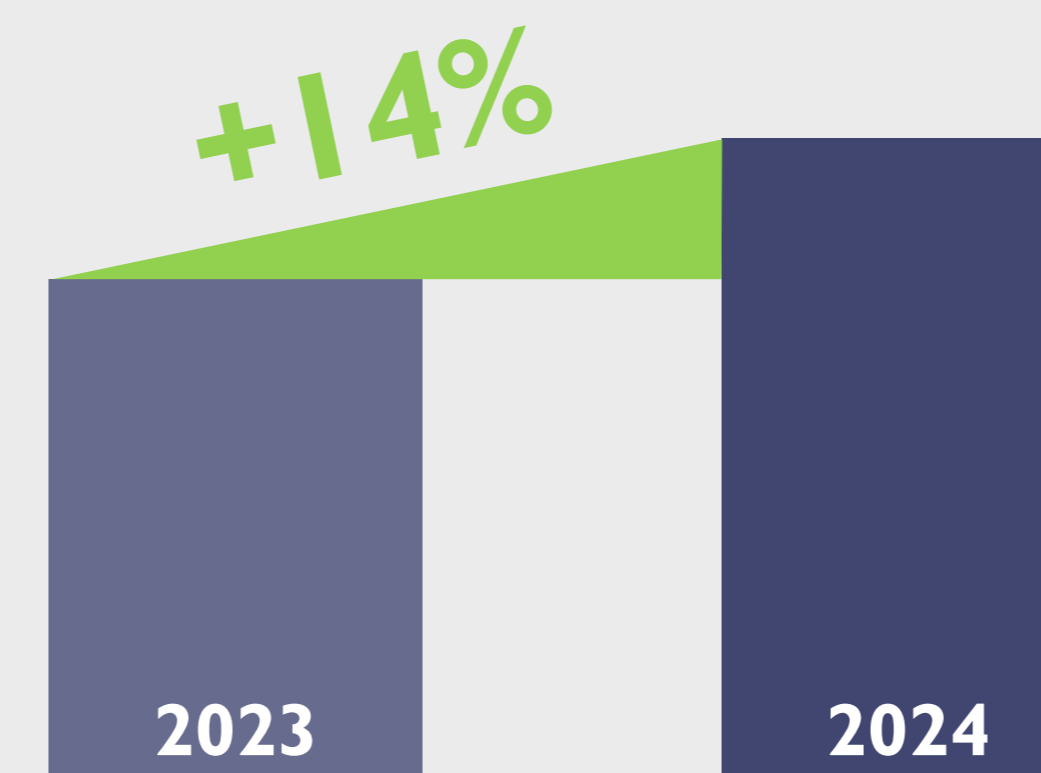
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Personalization & customer experience
- 2 Automation & efficiency
- 3 Cybersecurity & threat detection

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 Video surveillance & security
- 3 Industrial automation & manufacturing

- BFSI
- Manufacturing
- Retail
- Telco
- Healthcare
- Government

Government Overview (2/2)

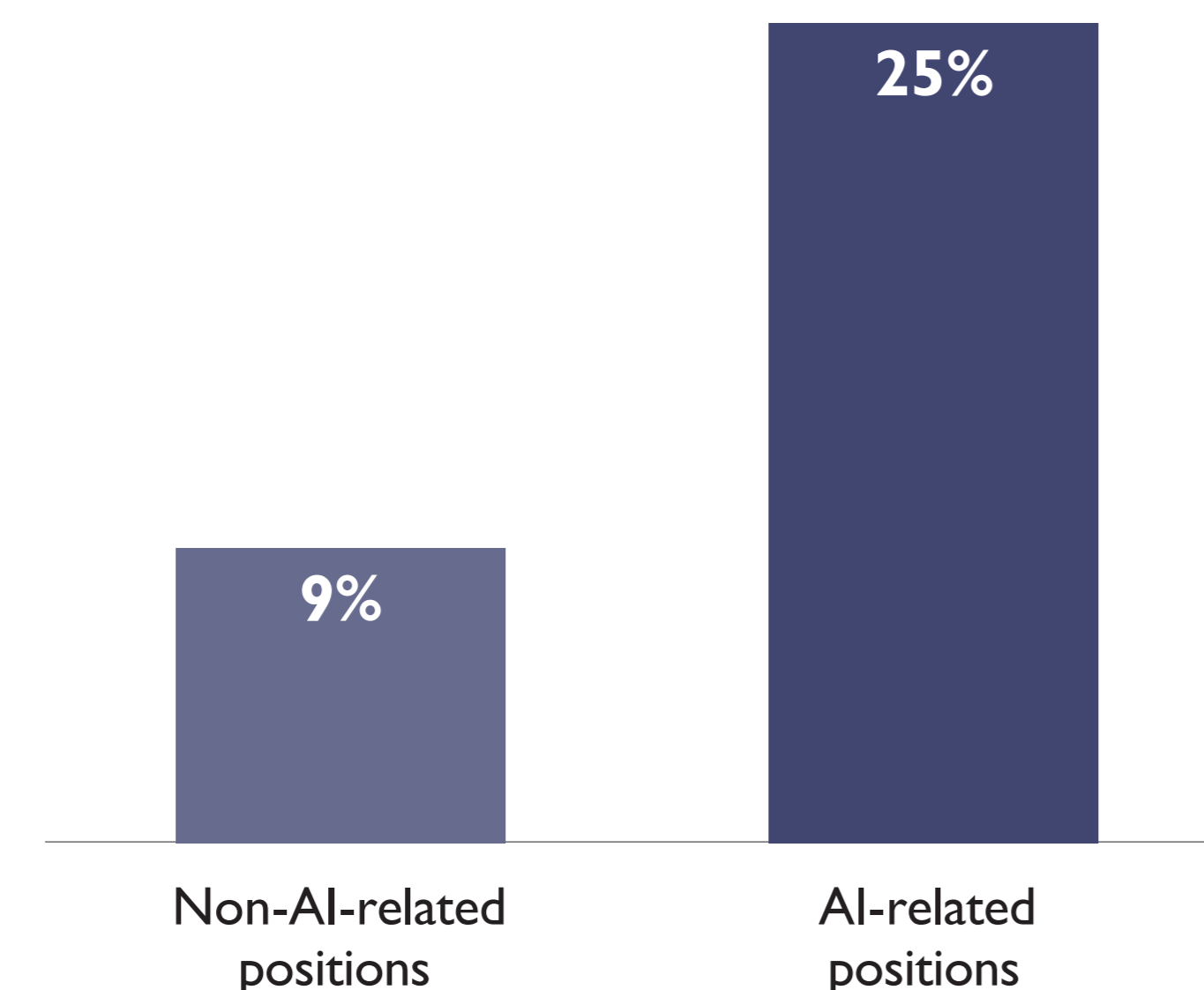
Governments in the region are actively exploring GenAI via pilot programs covering citizen experiences, efficiency, and compliance areas. Tasks like data synthesis for investigations demand private AI platforms for security. Political challenges and the evolving roles of government agencies can hinder adoption, leading to reliance on third-party expertise for GenAI integration. This creates tensions between agencies and the private sector, emphasizing the need for specialized skills. A strategic approach using external expertise is essential for effective GenAI implementation in public services.

Top challenges when deploying AI

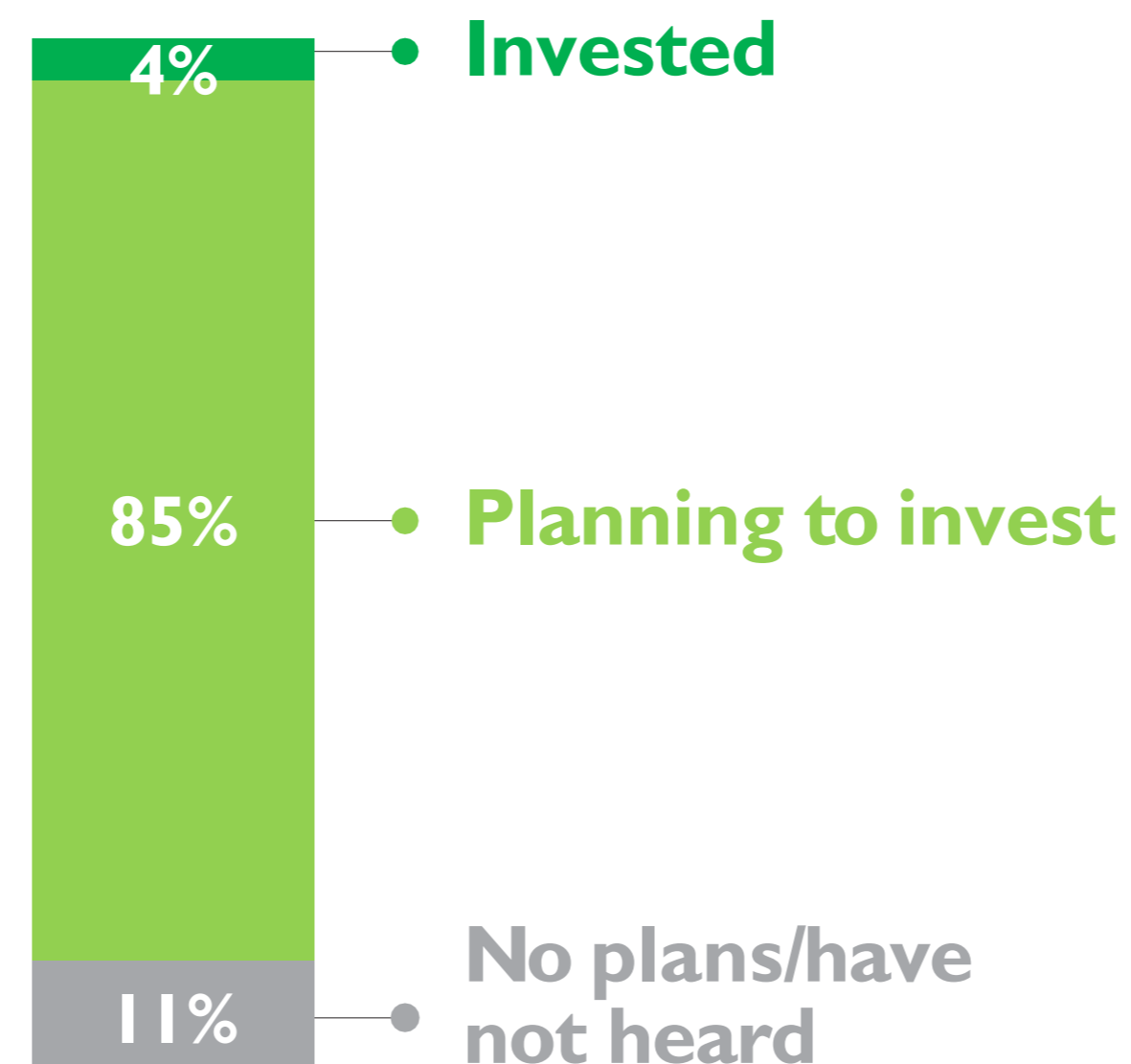
- 1 Making a business case for AI
- 2 Lack of training for use of self-service AI tools (low- or no-code apps)
- 3 Employees are concerned that AI will threaten their jobs

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 End-to-end network security
- 2 Building high computing capacity
- 3 Employee skills development

GenAI types of interest

- 1 Business intelligence (e.g., predictive maintenance for city infrastructure & assets)
- 2 Productivity (e.g., demand response systems on AI to reduce man-hours)
- 3 Conversational AI (e.g., chatbots for citizen services)

Top challenges when adopting GenAI

- 1 Model capability limitations (e.g., lack of data required)
- 2 Security
- 3 High dependence on third party



CIO Playbook 2024

Market insights

Japan Overview (1/2)

Japan is the largest spender on AI in the Asia/Pacific region after China. C-suite executives are planning to invest in automated digital infrastructure management and security to prioritize customer experience and revenue growth. Approximately 41% of these leaders believe AI is a game changer, with a significant impact on Business intelligence and Productivity.

CIOs' top business priorities in 2024

- 1 Accelerating revenue & profit growth
- 2 Higher customer experience & satisfaction
- 3 Driving digital business innovation

Top tech investment priorities in 2024

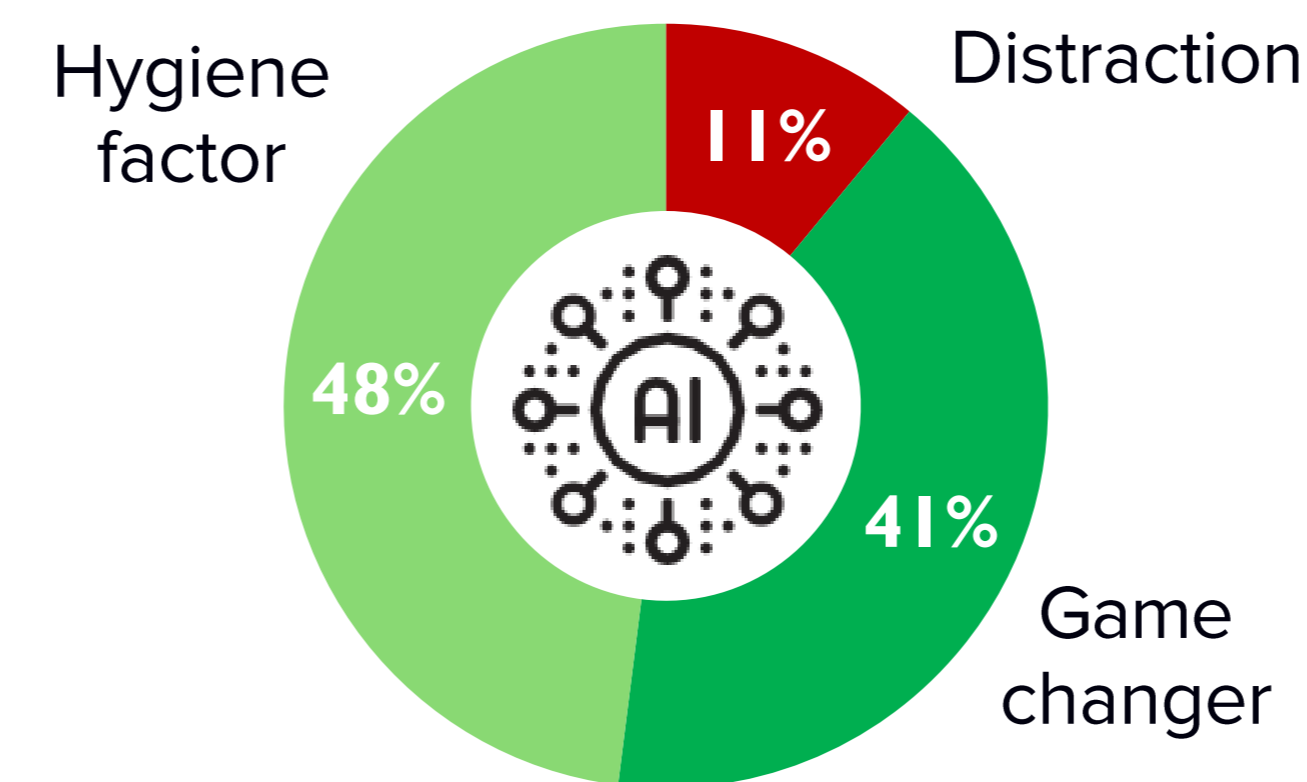
- 1 Automating digital infrastructure management & security
- 2 Modernizing infrastructure for microservices-oriented architecture
- 3 Unified management control plane for all digital infrastructure resources

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Data management & analytics
- 3 Talent acquisition & retention



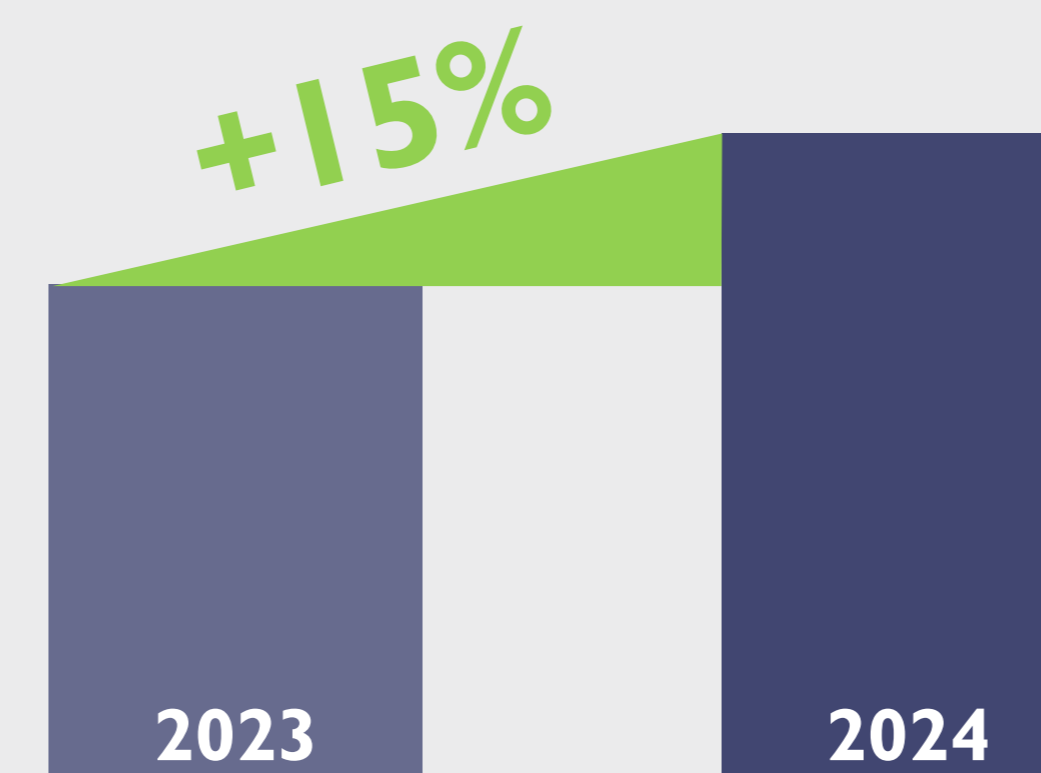
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Automation & efficiency
- 2 Enhanced analytics & insights
- 3 Personalization & customer experience

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 IoT device management
- 3 Retail & customer experience

Japan Overview (2/2)

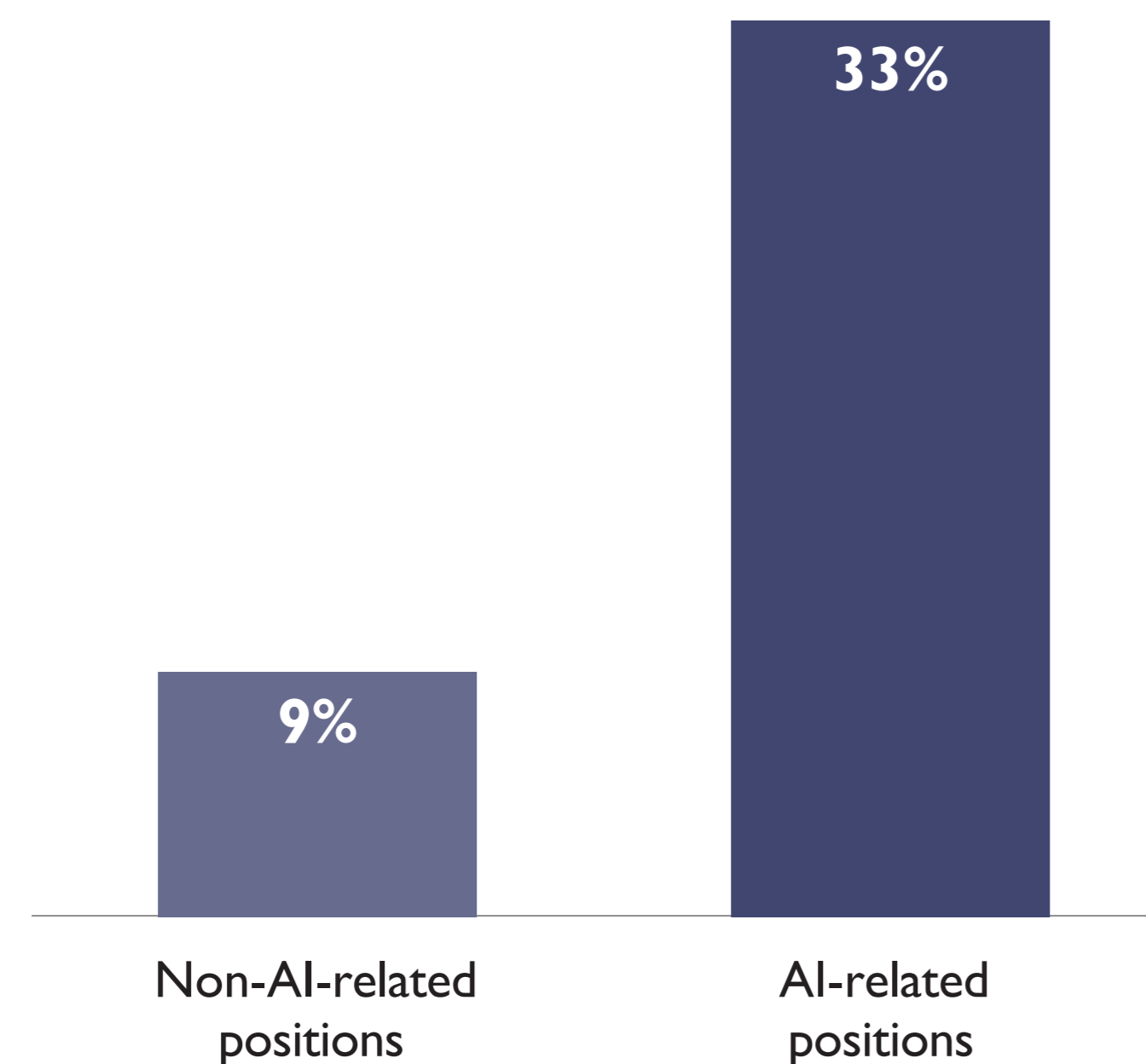
Organizational challenges faced in implementing AI use cases include a lack of IT infrastructure for successful automation deployment. Additionally, there is an anticipation of long-term challenges related to data privacy and data management.

Top challenges when deploying AI

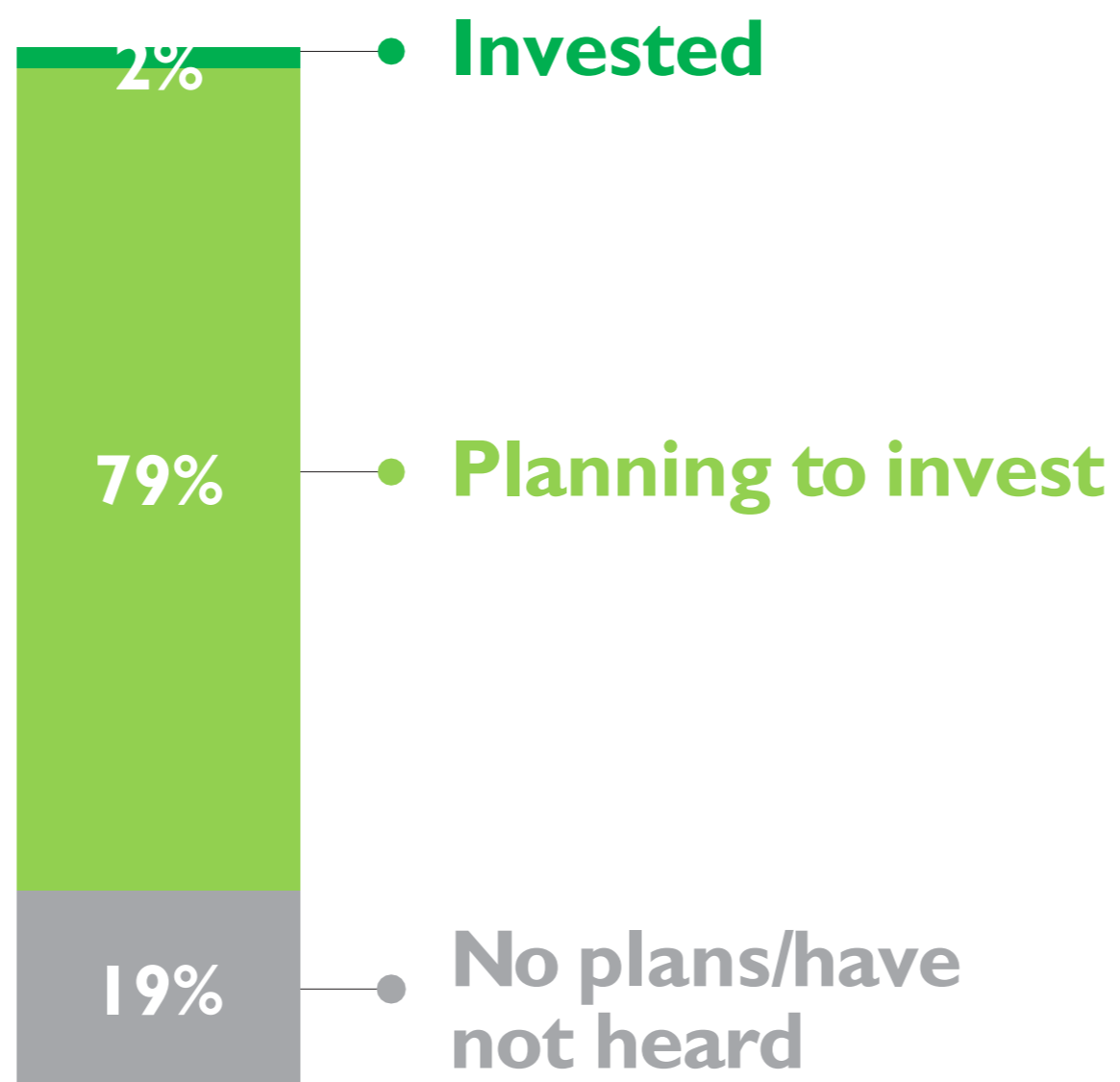
- 1 Making a business case for AI
- 2 Lack of training for use of self-service AI tools (low- or no-code apps)
- 3 Employees are concerned that AI will threaten their jobs

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Building high computing capacity
- 2 End-to-end network security
- 3 Employee skills development

GenAI types of interest

- 1 Business intelligence (e.g., crowd control & consumption prediction in smart cities)
- 2 Productivity (e.g., AI coding to reduce developer hours)
- 3 Enhancing cost efficiency (e.g., reducing manpower on clinical outcomes such as imaging/diagnostics)

Top challenges when adopting GenAI

- 1 Model capability limitations (e.g., lack of data required)
- 2 Security
- 3 Monitoring for potential misuse & AI hallucinations



Korea Overview (1/2)

In 2024, digital business innovation will be the top priority for Korean CIOs, driven by the rise of innovation accelerators such as GenAI, promising improvements in employee Productivity. Additionally, AI is expected to have a significant impact on organizations in Korea. Many CIOs have highlighted that implementation of analytics is a key area, prompting substantial investments in relevant technologies like data management platforms or control planes for all digital infrastructure resources.

CIOs' top business priorities in 2024

- 1 Driving digital business innovation
- 2 Employee productivity improvement
- 3 Reducing business risk & cyber threats

Top tech investment priorities in 2024

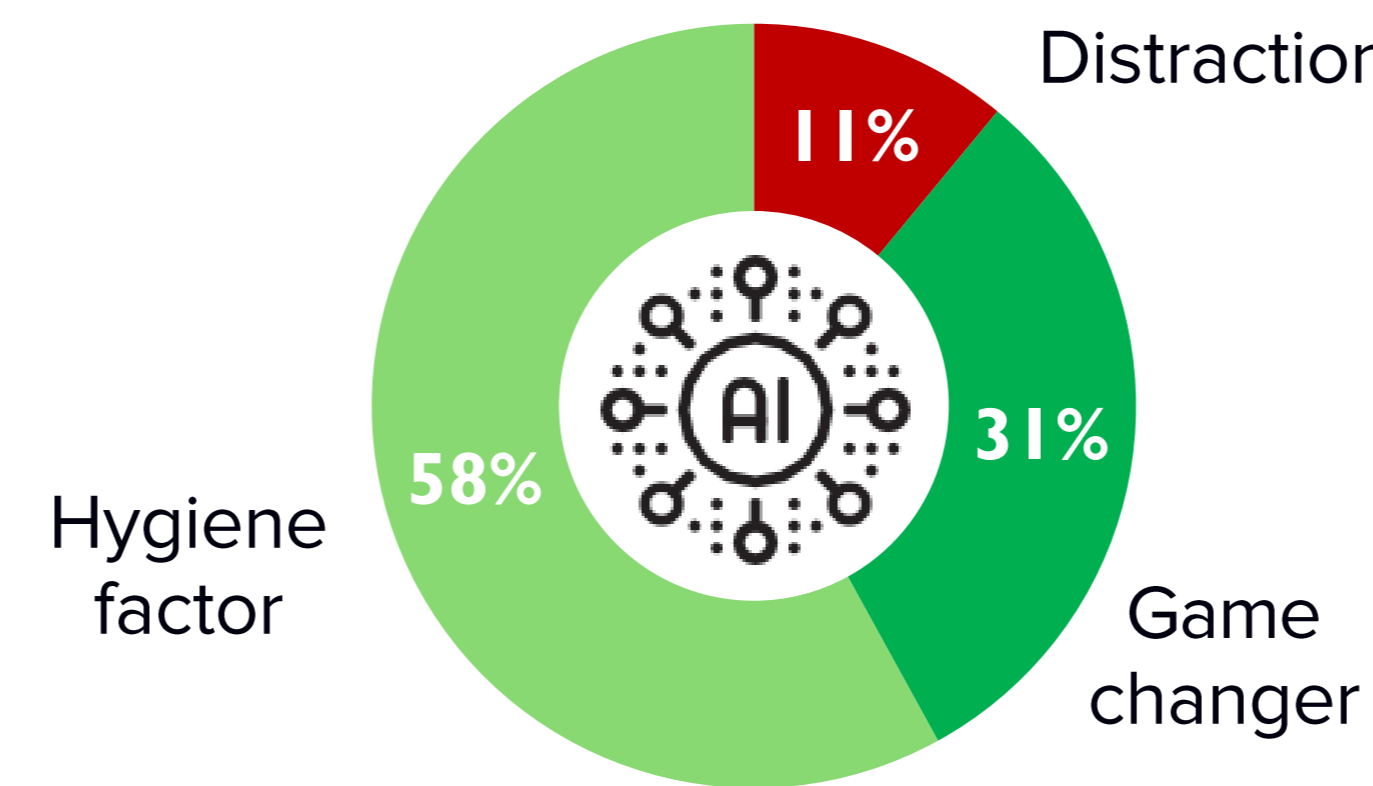
- 1 Common data management platform
- 2 Unified management control plane for all digital infrastructure resources
- 3 Automating digital infrastructure management & security

Challenges CIOs foresee in 2024

- 1 Digital transformation
- 2 Talent acquisition & retention
- 3 Data management & analytics



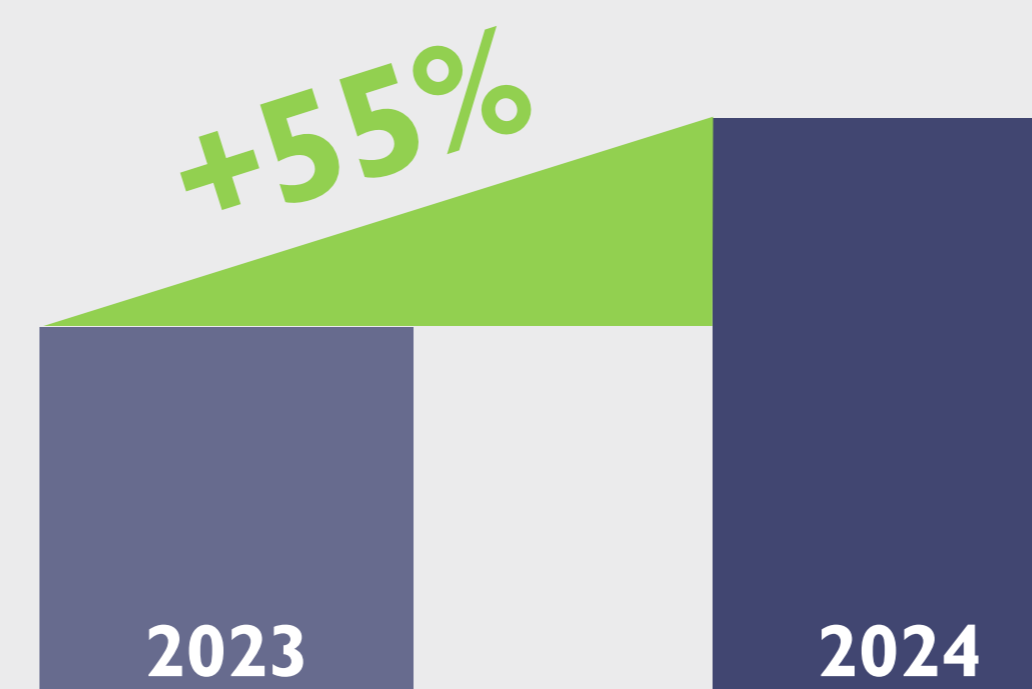
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Intelligent automation & robotics
- 2 Enhanced analytics & insights
- 3 Personalization & customer experience

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 Remote monitoring & telehealth
- 3 Autonomous vehicles

Korea Overview (2/2)

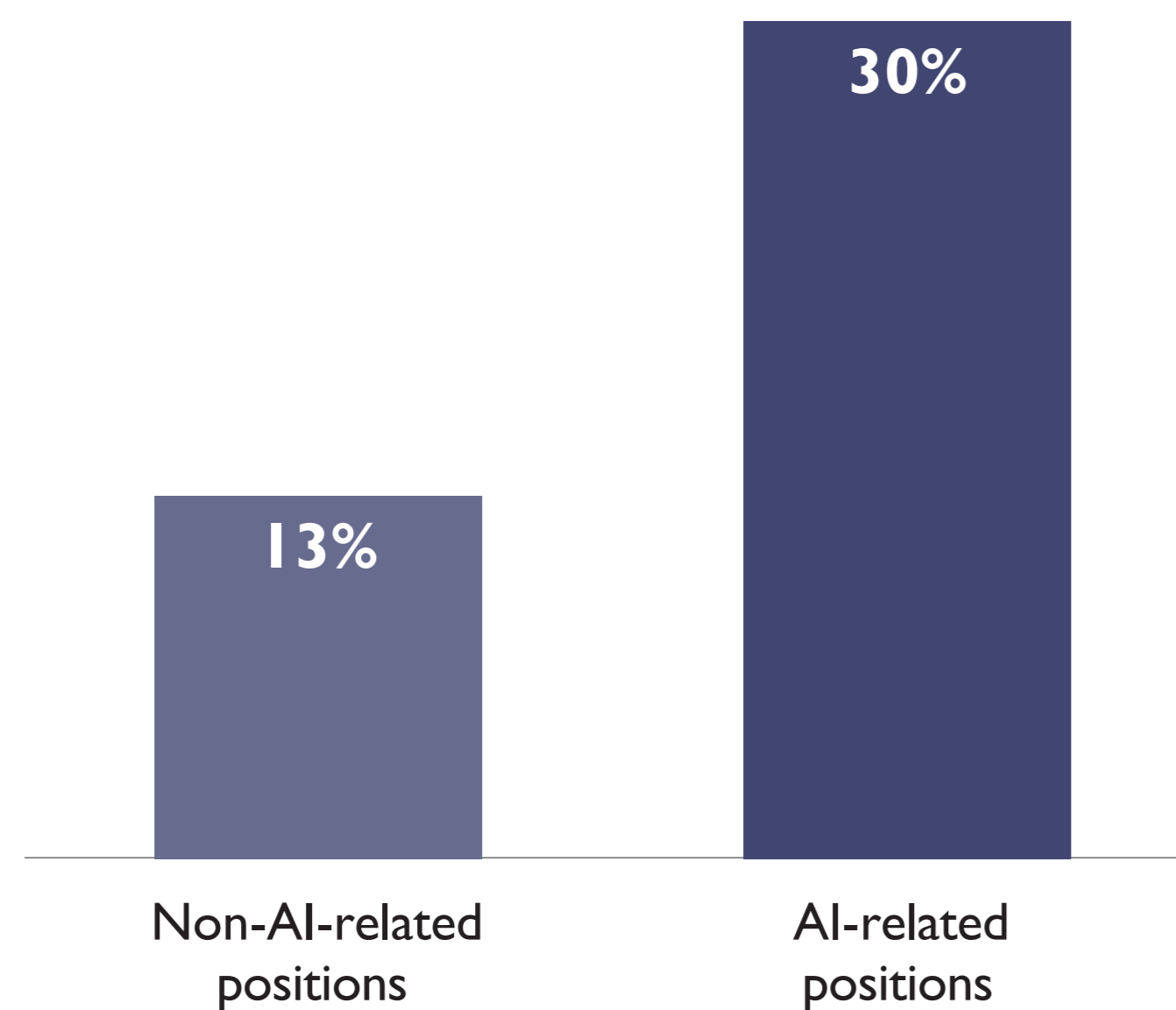
Approximately 95% of CIOs have either made investments or have plans to invest in GenAI.. Consequently, addressing internal concerns related to job security and developing a business case for AI technology is crucial for CIOs as they proceed with AI deployment. Additionally, the prioritization of high computing capacity and Employee skills development emerges as key steps in preparing for GenAI adoption.

Top challenges when deploying AI

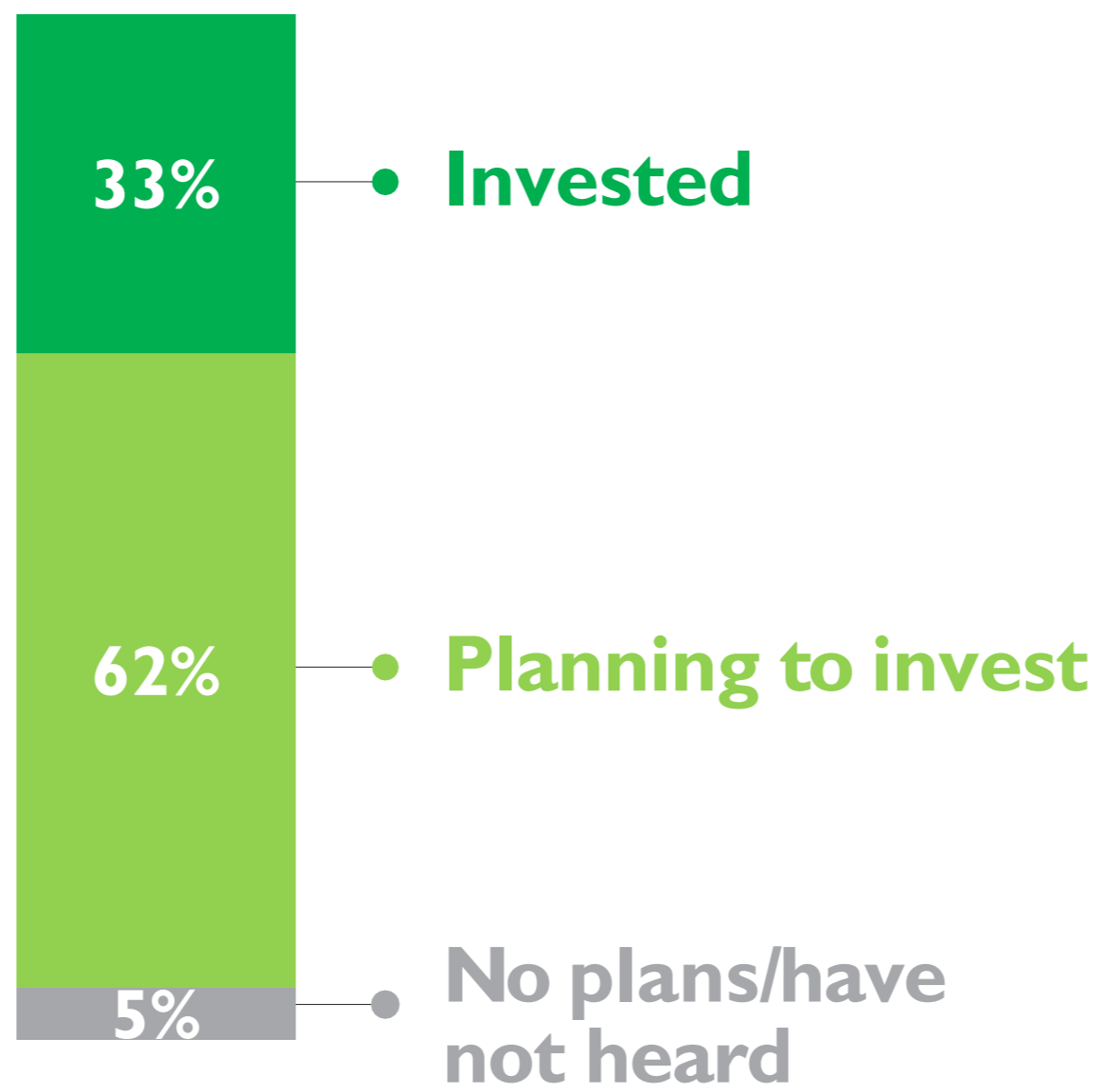
- 1 Employees are concerned that AI will threaten their jobs
- 2 Making a business case for AI
- 3 Lack of training for use of self-service AI tools (low- or no-code apps)

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Building high computing capacity
- 2 Employee skills development
- 3 End-to-end network security

GenAI types of interest

- 1 Business intelligence (e.g., crowd control & consumption prediction in smart cities)
- 2 Productivity (e.g., AI coding to reduce developer hours)
- 3 Conversational AI (e.g., chatbots for citizen services)

Top challenges when adopting GenAI

- 1 Model capability limitations (e.g., lack of data required)
- 2 Reliable data platform
- 3 Poor data governance/literacy



India Overview (1/2)

The primary use cases for emerging technologies such as GenAI include risk and fraud detection in BFSI. In India, the manufacturing sector leverages AI-enabled predictive maintenance systems, aiding enterprises in autonomous real-time monitoring of equipment and anomalies. Thus, high-performance compute platforms and automation of digital infrastructure are expected to be areas with the highest spend in 2024.

CIOs' top business priorities in 2024

- 1 Leveraging emerging technologies (e.g., GenAI)
- 2 Accelerating revenue & profit growth
- 3 Higher customer experience & satisfaction

Top tech investment priorities in 2024

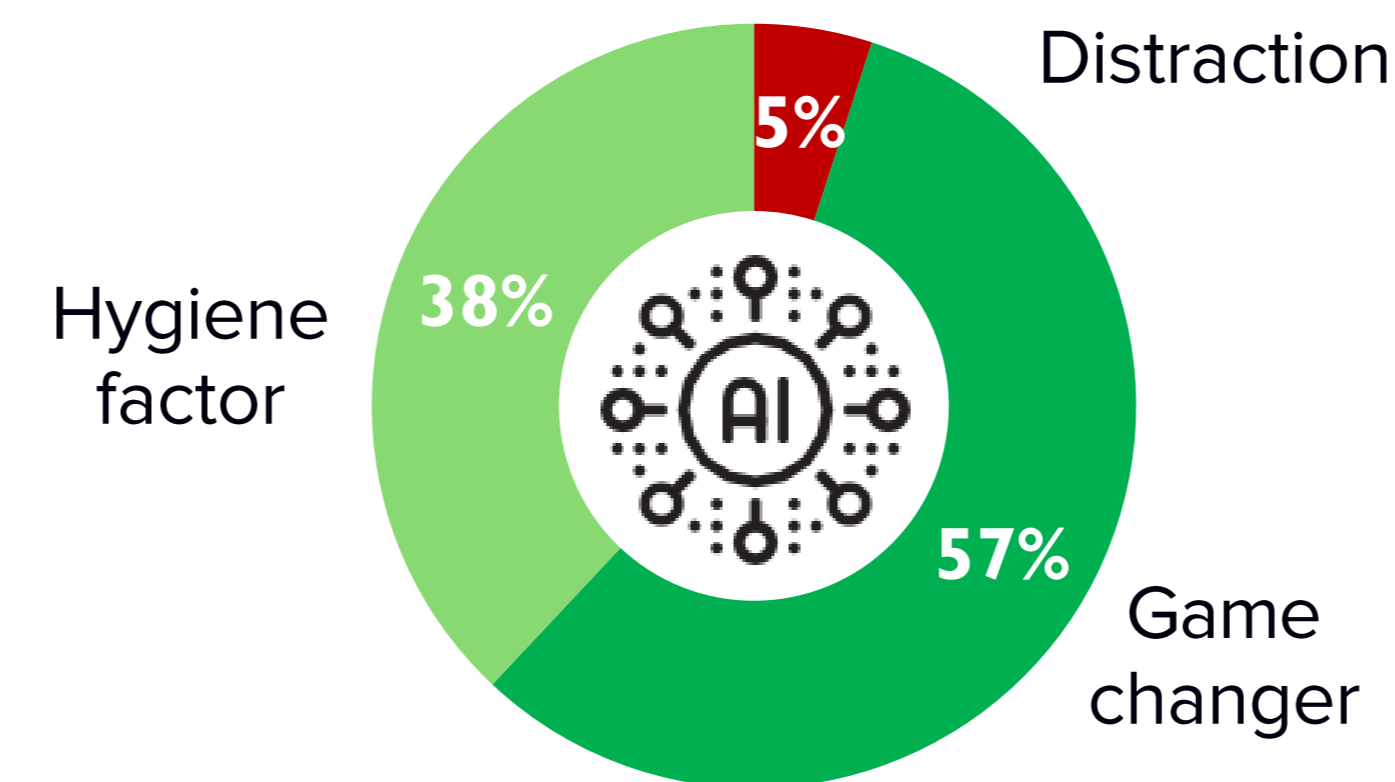
- 1 High-performance compute platforms for AI/ML workloads.
- 2 Generative AI
- 3 Automating digital infrastructure management & security

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Digital transformation
- 3 Data management & analytics



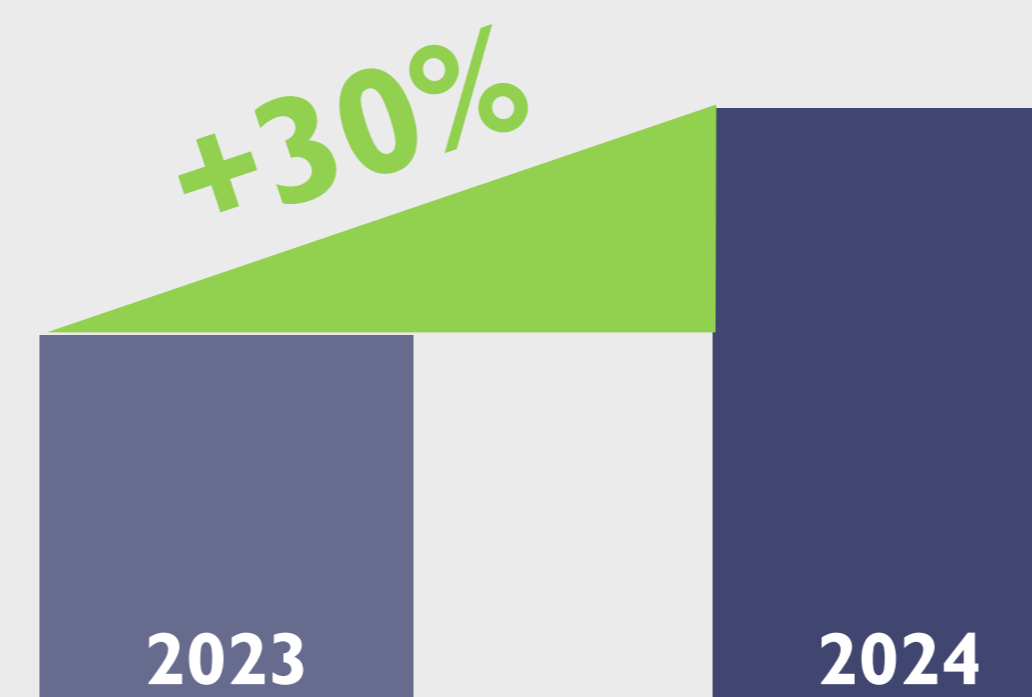
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Cybersecurity & threat detection
- 2 Intelligent automation & robotics
- 3 Automation & efficiency

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 Video surveillance & security
- 3 Industrial automation & manufacturing

India Overview (2/2)

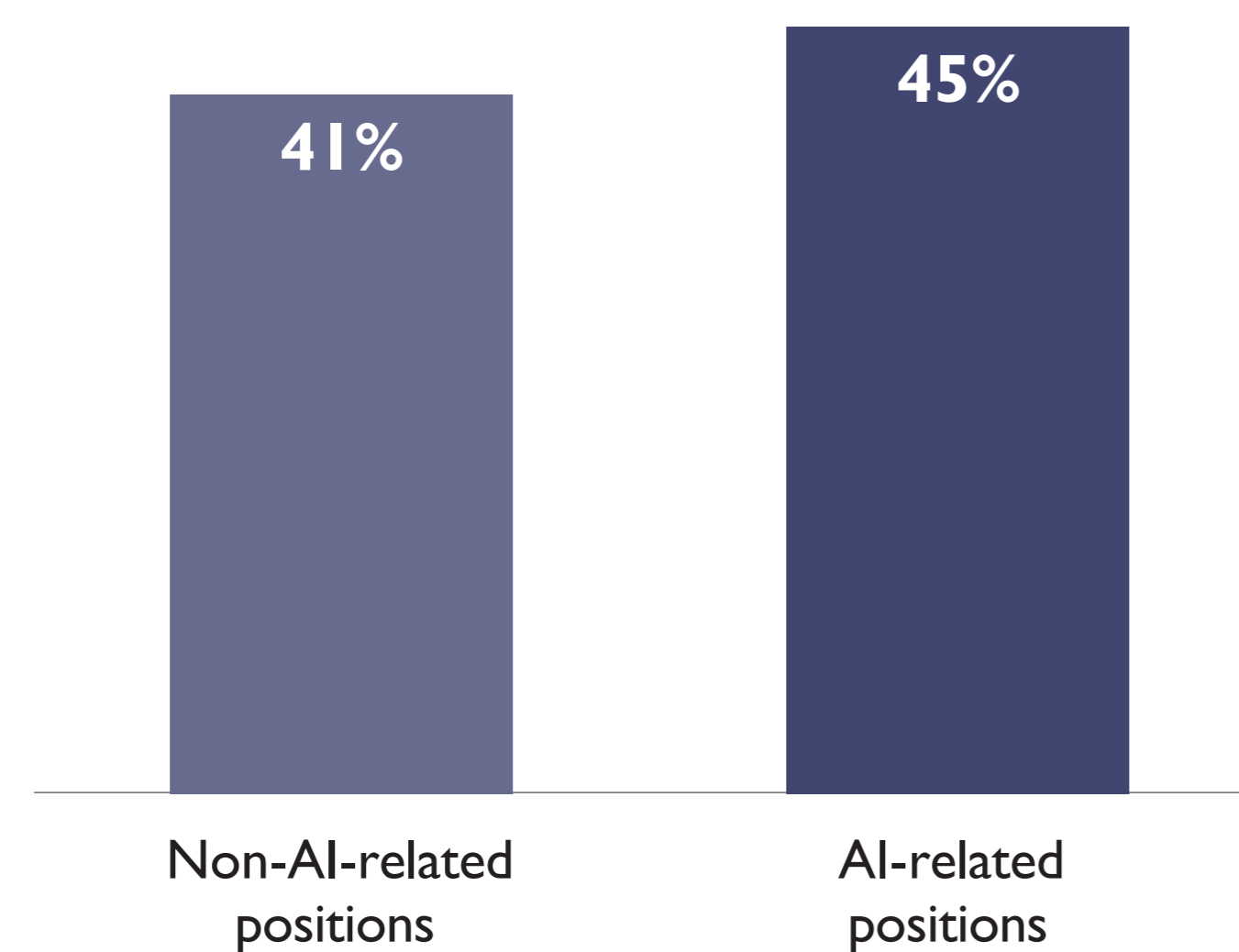
Despite significant interest and investments directed toward AI initiatives, building AI capabilities at scale remains a challenge for 90% of enterprises in India. They struggle to operationalize a majority of their machine learning models. Several challenges exist in developing AI capabilities at scale. Businesses are often less focused on outcomes and more on the latest technology trends and buzzwords, behaving more like organizations seeking problems to solve with technology. The lack of internal capability and reliance on external service providers is a key issue.

Top challenges when deploying AI

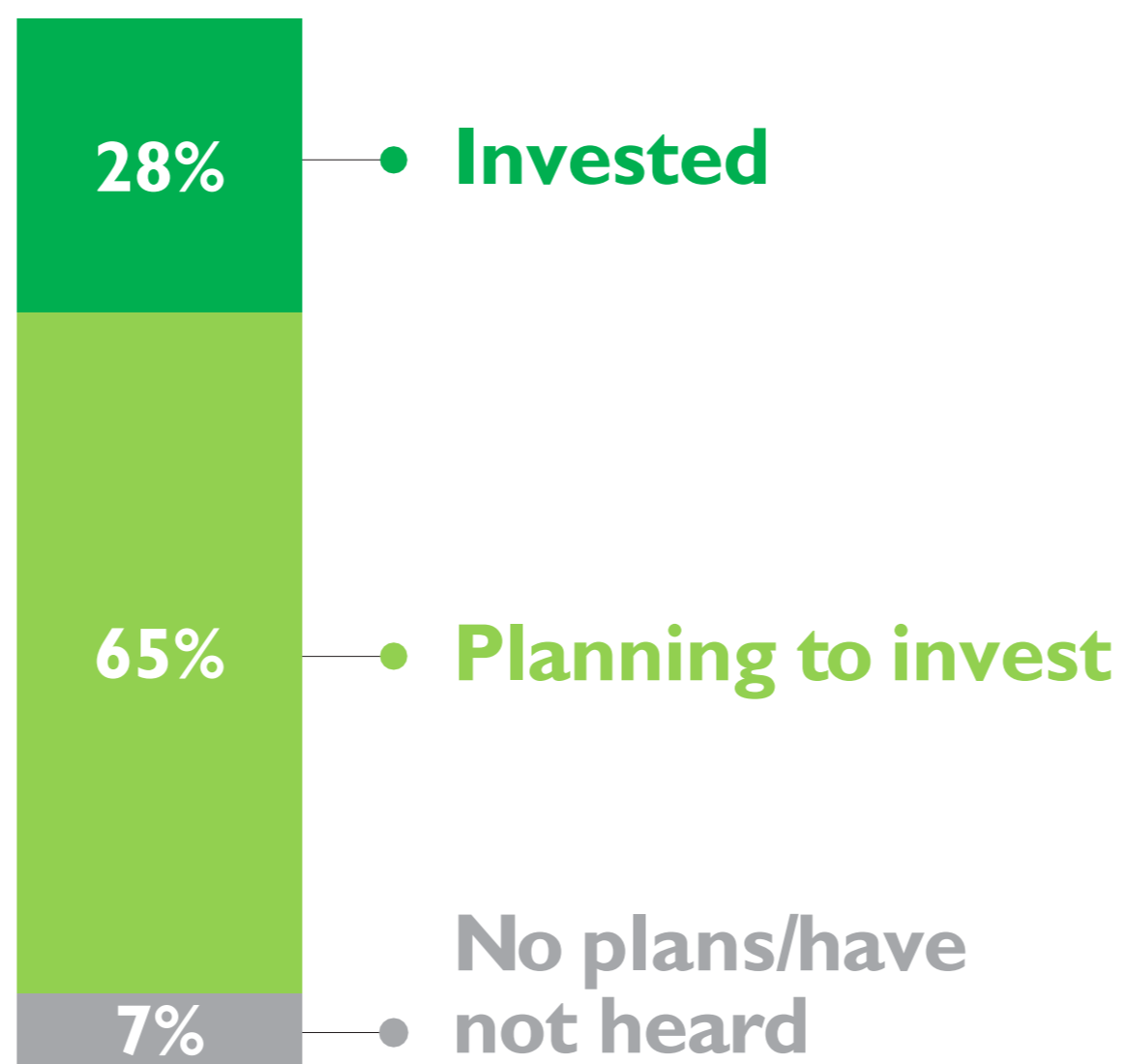
- 1 Lack of required IT support / resources / skills for successful automation deployment
- 2 Employees are concerned that AI will threaten their jobs
- 3 Making a business case for AI

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Employee skills development
- 2 End-to-end network security
- 3 Building high computing capacity

GenAI types of interest

- 1 Business intelligence (e.g., crowd control & consumption prediction in smart cities)
- 2 Conversational AI (e.g., chatbots for citizen services)
- 3 Knowledge management (e.g., product discovery & search personalization)

Top challenges when adopting GenAI

- 1 High dependence on third party
- 2 Security
- 3 Model capability limitations (e.g., lack of data required)



ASEAN+ Overview (1/2)

The AI platform market in ASEAN is growing at a compound annual growth rate (CAGR) of about 40%, with the financial services, manufacturing, and government sectors emerging as the top spenders. In addition to traditional AI use cases like fraud detection and quality inspection, horizontal use cases such as search/knowledge management, cybersecurity, chatbots, and AIOps are experiencing significant growth. While Singapore is a mature market for AI, scaling AI initiatives to deliver return on investment across multiple business functions remains a challenge.

CIOs' top business priorities in 2024

- 1 Leveraging emerging technologies (e.g., GenAI)
- 2 Driving digital business innovation
- 3 Accelerating revenue & profit growth

Top tech investment priorities in 2024

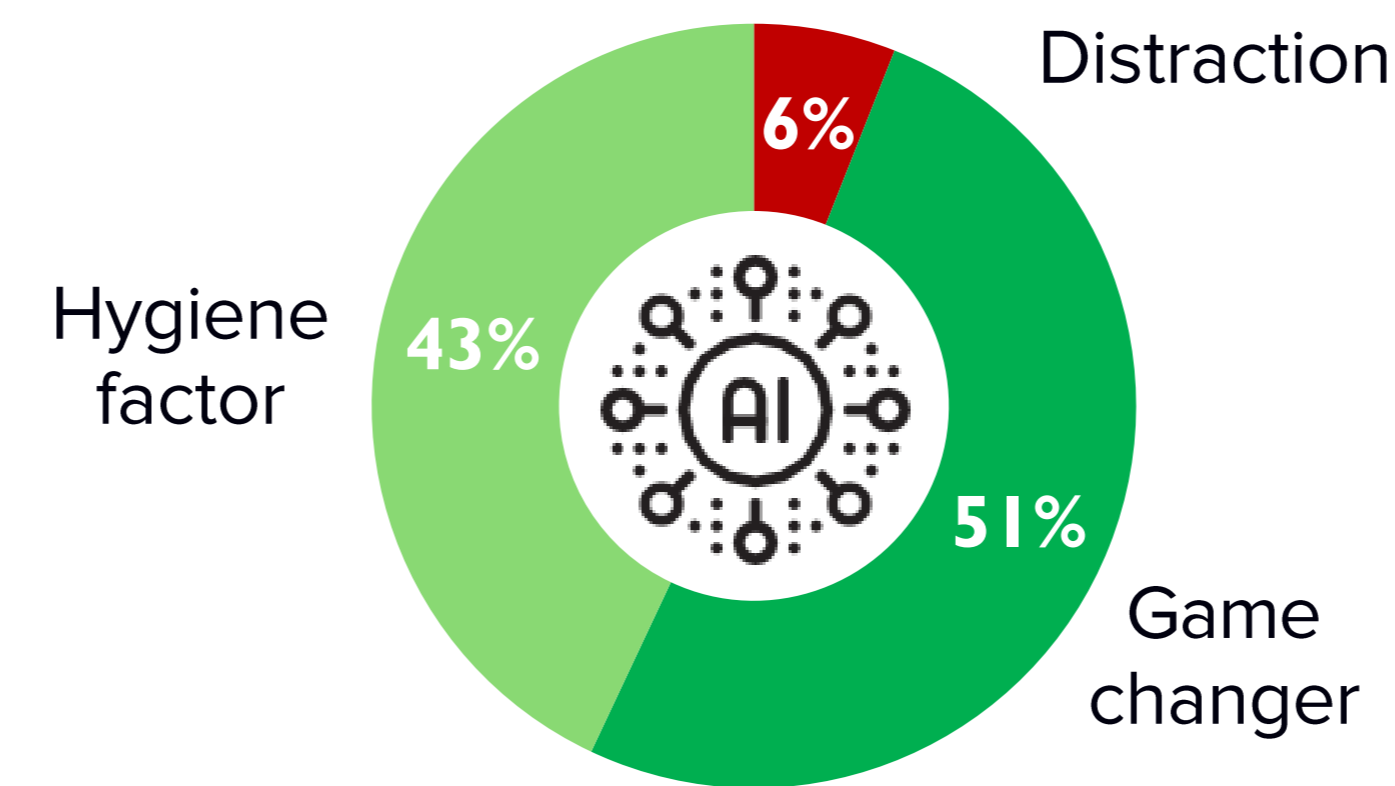
- 1 Automating digital infrastructure management & security
- 2 Better cyber resiliency to address ransomware & malware attacks
- 3 Generative AI

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Digital transformation
- 3 Data management & analytics



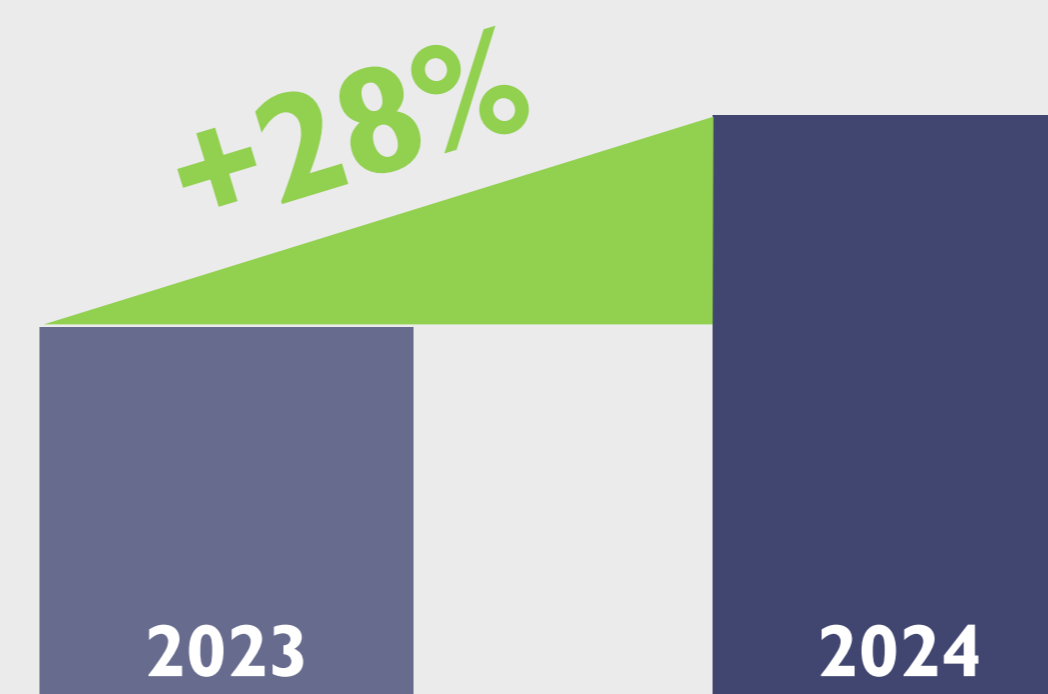
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Cybersecurity & threat detection
- 2 Automation & efficiency
- 3 Enhanced analytics & insights

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Real-time analytics & insights
- 2 IoT device management
- 3 Retail & customer experience

ASEAN+ Overview (2/2)

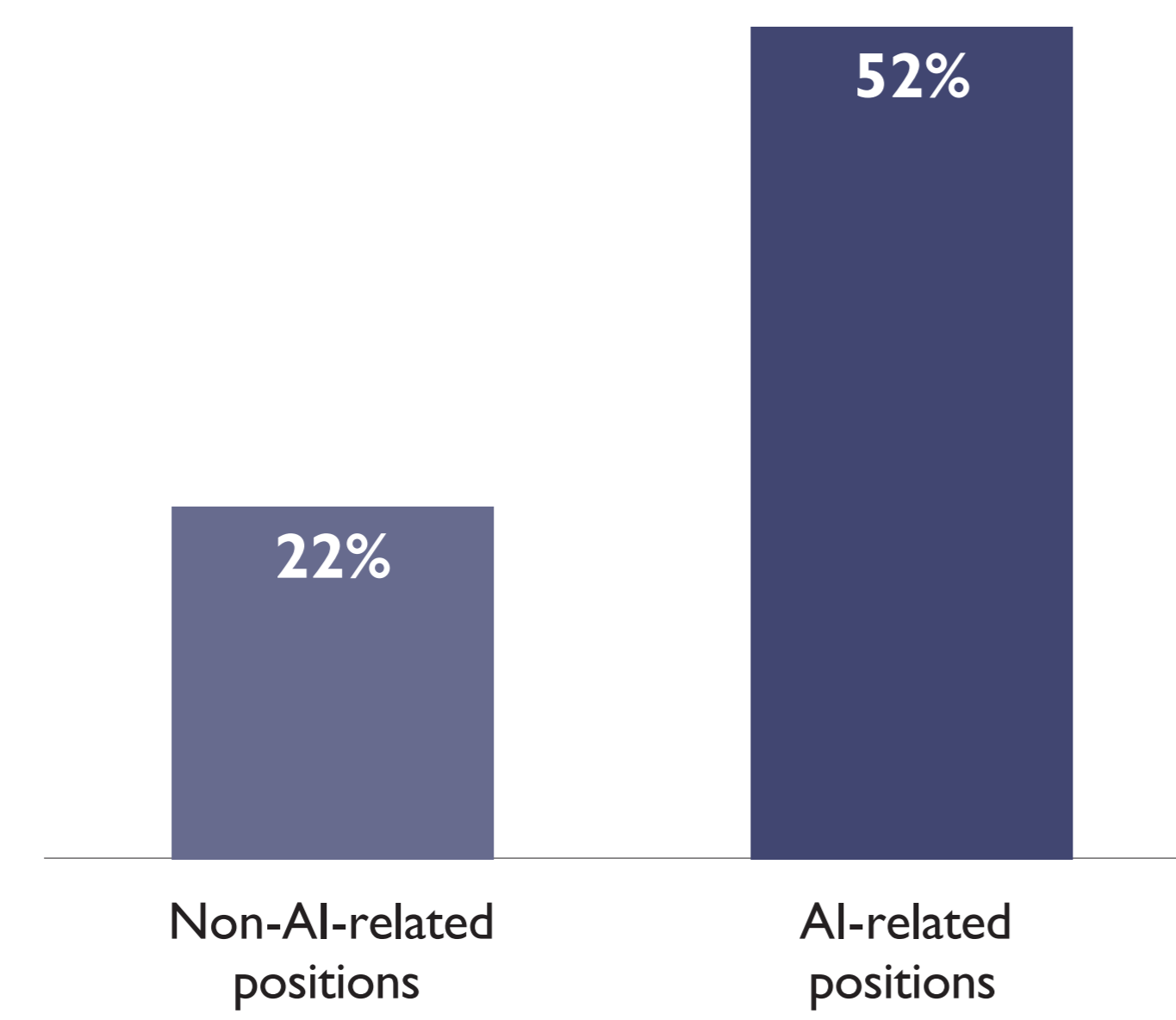
Year-on-year spending on AI is experiencing growth; however, scaling initiatives face challenges such as talent gaps and defining the business value of AI investments. Almost 90% of organizations in ASEAN are either planning to invest or have already invested in GenAI. A significant portion of the spending for GenAI will be directed toward the infrastructure needed to host applications. Security and intellectual property (IP) are key concerns for ASEAN enterprises embracing GenAI.

Top challenges when deploying AI

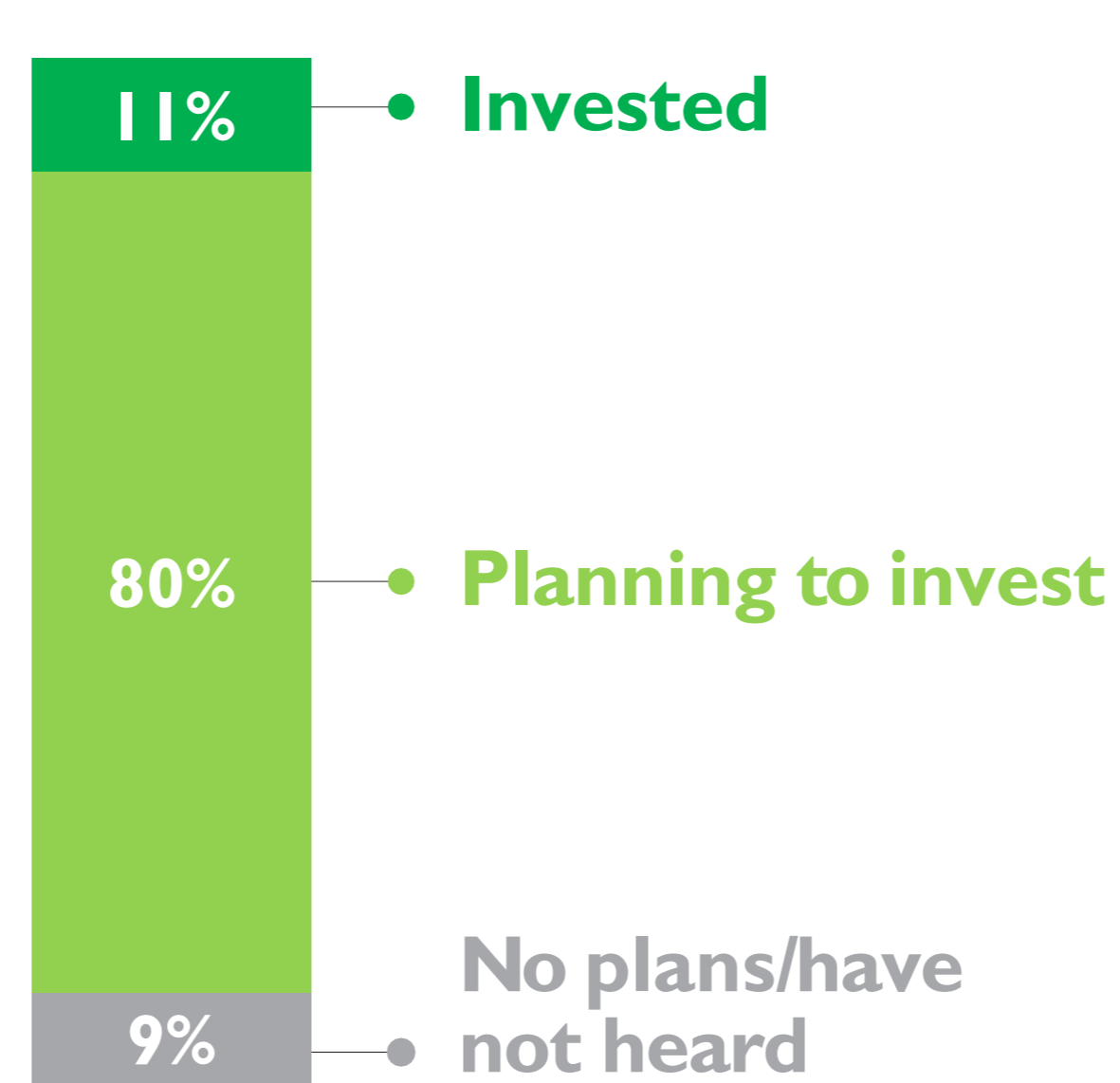
- 1 Lack of required IT support / resources / skills for successful automation deployment
- 2 Employees are concerned that AI will threaten their jobs
- 3 Making a business case for AI

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Networking infrastructure
- 2 Employee skills development
- 3 Building high computing capacity

GenAI types of interest

- 1 Business intelligence (e.g., crowd control & consumption prediction in smart cities)
- 2 Productivity (e.g., AI coding to reduce developer hours)
- 3 Conversational AI (e.g., chatbots for citizen services)

Top challenges when adopting GenAI

- 1 Monitoring for potential misuse & AI hallucinations
- 2 Security
- 3 Model capability limitations (e.g., lack of data required)



Executive summary
CIO imperatives

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Survey insights

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Spotlight discussions

Insights by
vertical & markets

- Japan
- Korea
- India
- ASEAN+
- ANZ

Making AI real
Considerations for CIOs
when implementing AI in
your business

CIO Playbook 2024
Research methodology

Why Lenovo

ANZ Overview (1/2)

AI platforms in the combined markets of Australia and New Zealand are growing at a CAGR of about 46%, with sectors like banking and government emerging as the biggest spenders. The top priorities for CIOs include addressing uncertain economic conditions by being more agile in responding to evolving market needs and delivering a higher customer experience using emerging technologies like GenAI.

CIOs' top business priorities in 2024

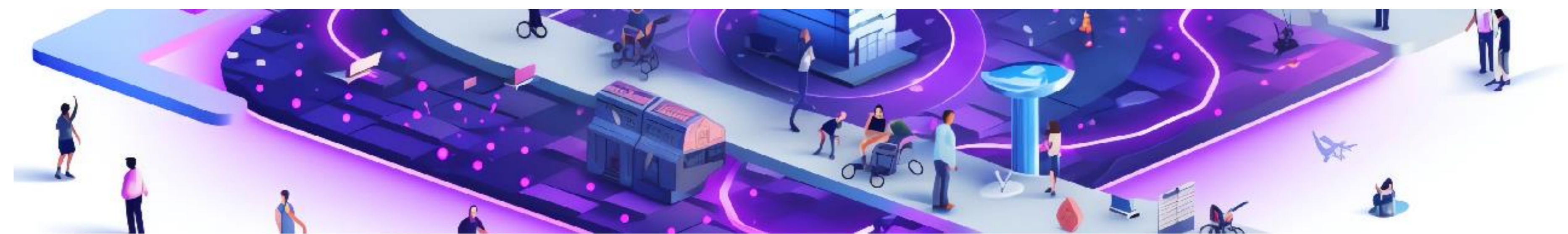
- 1 Increased business agility & responsiveness
- 2 Higher customer experience & satisfaction
- 3 Emerging technologies (e.g., GenAI)

Top tech investment priorities in 2024

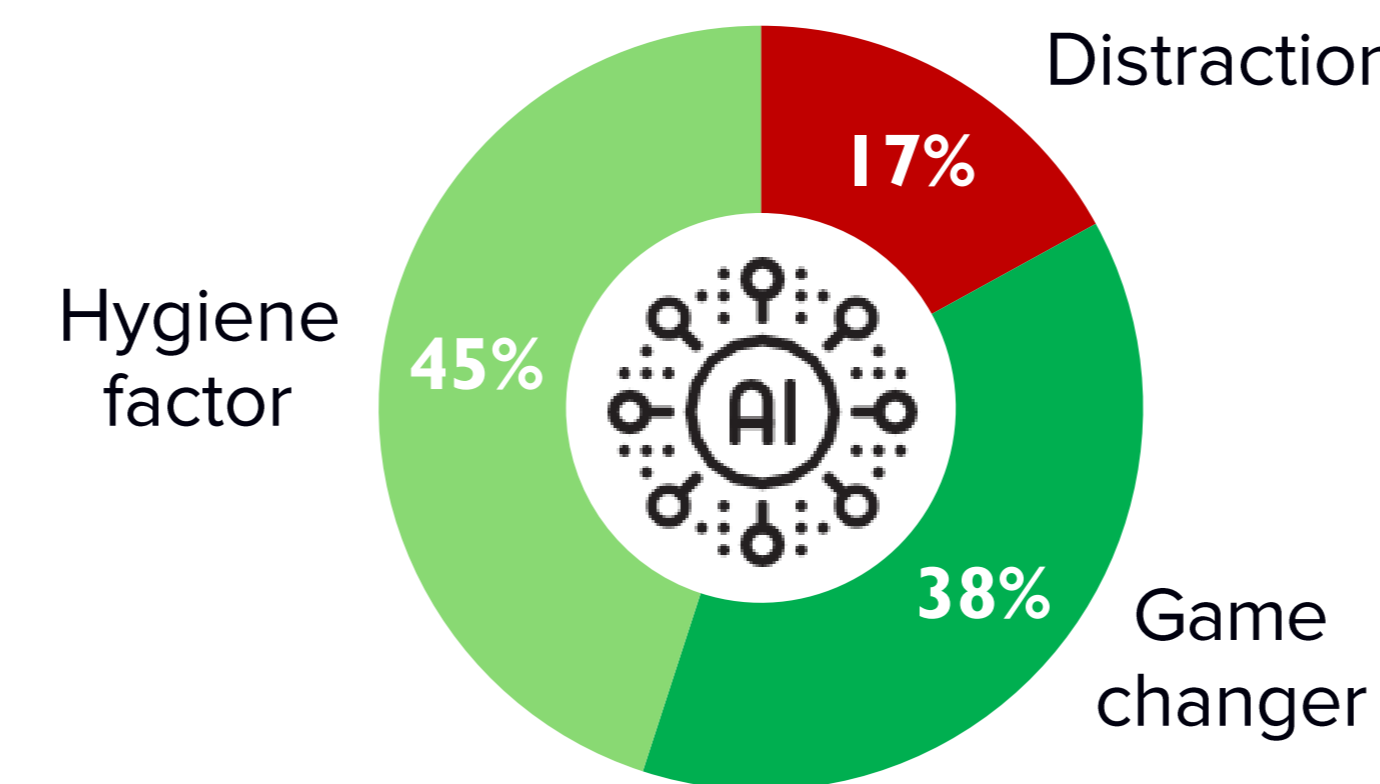
- 1 Automating digital infrastructure management & security
- 2 Better cyber resiliency to address ransomware & malware attacks
- 3 Modernizing legacy business-critical applications

Challenges CIOs foresee in 2024

- 1 Cybersecurity & data privacy
- 2 Digital transformation
- 3 Customer experience



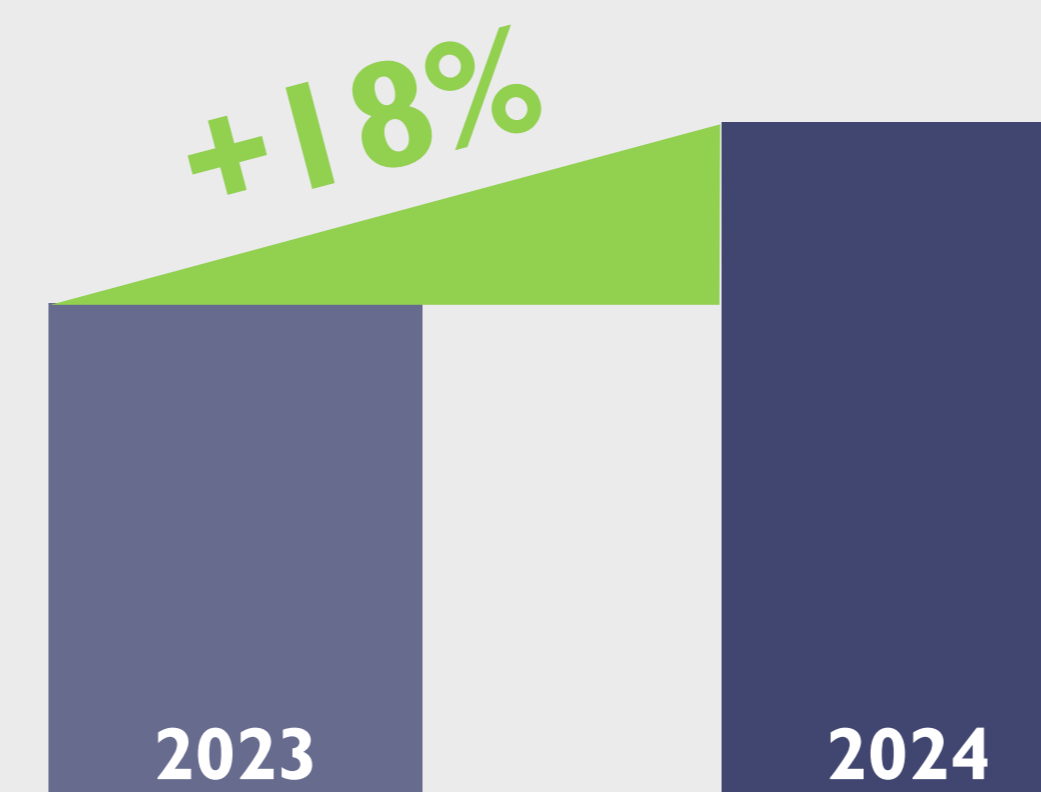
Impact of AI on organizations



Top technologies impacted/influenced by AI

- 1 Cybersecurity & threat detection
- 2 Intelligent automation & robotics
- 3 Personalization & customer experience

Edge computing spending increase



Edge use cases most impacted by AI

- 1 Retail & customer experience
- 2 Real-time analytics & insights
- 3 Video surveillance & security

ANZ Overview (2/2)

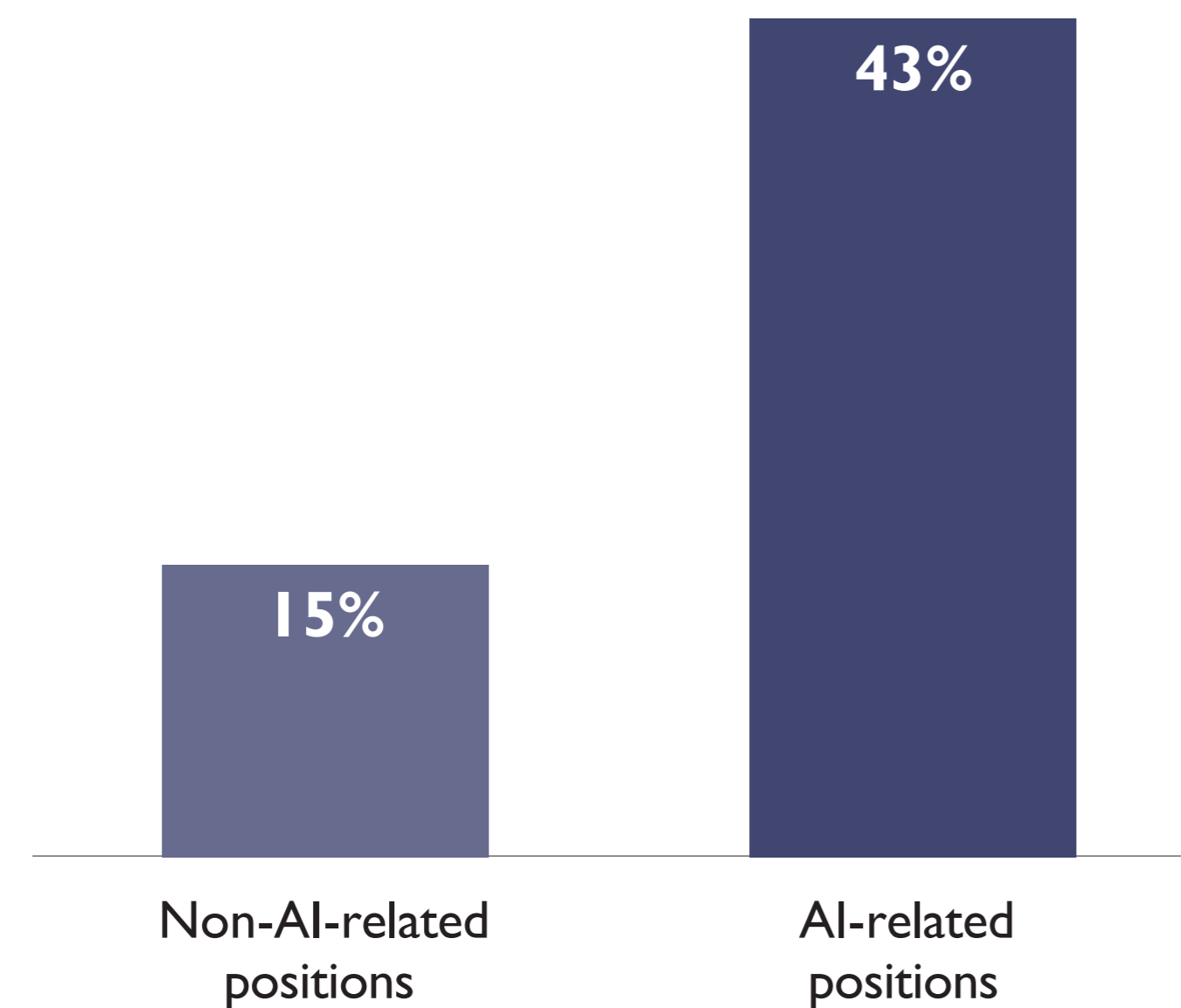
GenAI investments in Australia and New Zealand have piqued interest, with nearly 80% of organizations have made plans to implement it in 2023. Talent scarcity and a lack of clearly defined business outcomes remain key deterrents to AI adoption.

Top challenges when deploying AI

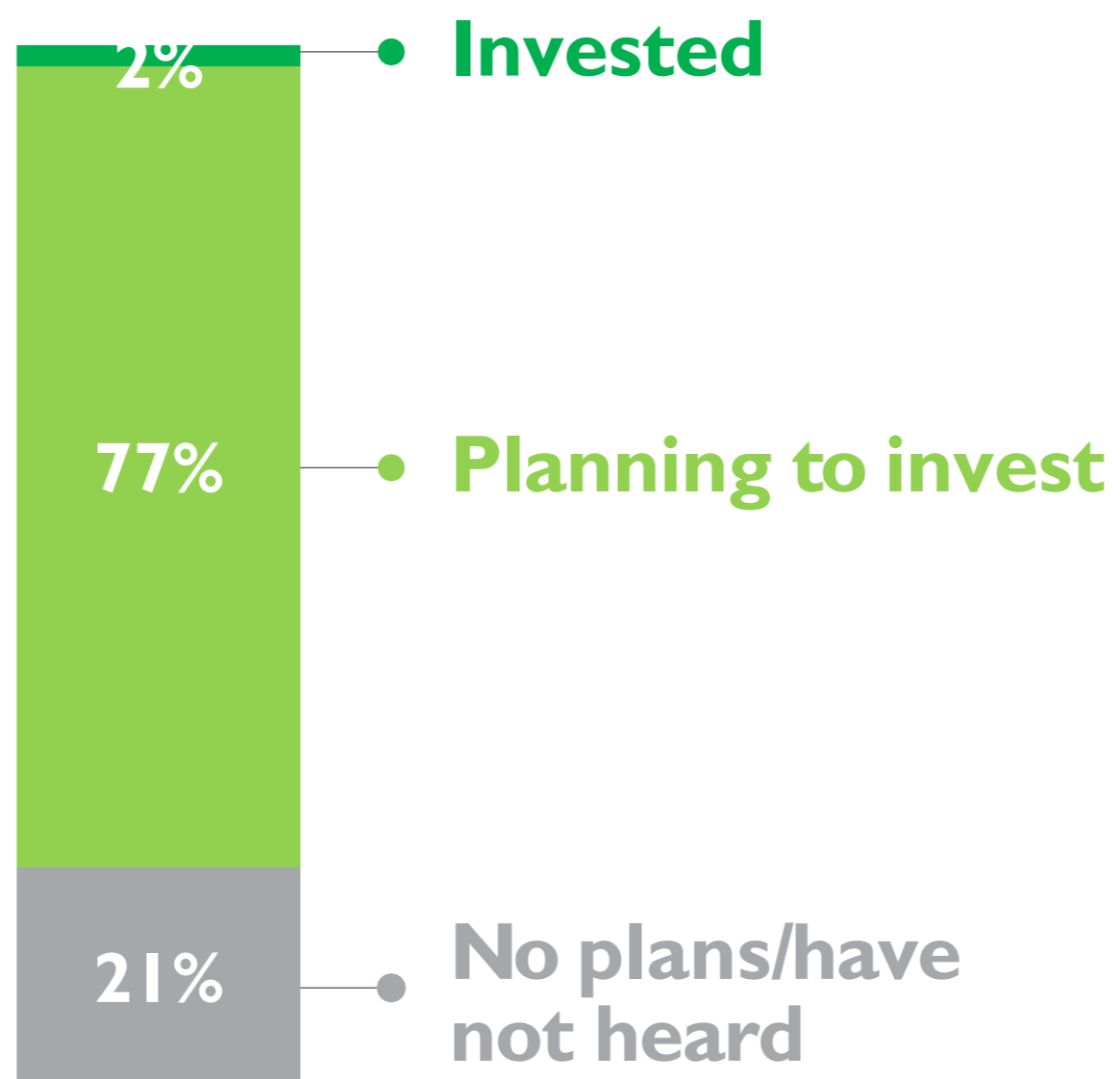
- 1 Employees are concerned that AI will threaten their jobs
- 2 Lack of training for use of self-service AI tools (low- or no-code apps)
- 3 Making a business case for AI

Recruitment difficulty

Respondents selected extremely or moderately difficulty



GenAI investment



Preparation for GenAI

- 1 Employee skills development
- 2 Building high computing capacity
- 3 End-to-end network security

GenAI types of interest

- 1 Business intelligence (e.g., crowd control & consumption prediction in smart cities)
- 2 Productivity (e.g., AI coding to reduce developer hours)
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Top challenges when adopting GenAI

- 1 Monitoring for potential misuse & AI hallucinations
- 2 Model capability limitations (e.g., lack of data required)
- 3 Reliable data platform



CIO Playbook 2024

Making AI real

Considerations for CIOs when
implementing AI in your business

AI versus GenAI — Cut Through the Confusion




Survey results showed that by 2024, approximately 29% of AI investments will go toward GenAI, a 3% increase from 2023 AI spending. That said, there is still much confusion among management about AI in general and GenAI in particular.

The table below explains the **differences** in **technologies**, their **business impacts**, and their potential **economic implications**:

“We found that there was a lot of misunderstanding or confusion about AI... We need to educate the public about AI.”

Laurence Liew
Director, AI Innovation, AI Singapore,
Singapore

Excerpts from Spotlight Discussions

	Characteristics of PREDICTIVE & INTERPRETIVE AI	Characteristics of GENERATIVE AI
 TECHNOLOGIES	<ul style="list-style-type: none"> ▪ Outputs predictions/classifications, learning from large data sets about past actions' consequences ▪ Models have hundreds – thousands of parameters ▪ Requires thousands – millions of data points 	<ul style="list-style-type: none"> ▪ Outputs large complex content exhibiting characteristics similar to training data (e.g., text, audio, video, images, and code). ▪ Models have billions – trillions of parameters Requires billions – trillions of data points
 BUSINESS IMPACTS	<ul style="list-style-type: none"> ▪ Highly accurate outputs Low transparency (white/grey box) ▪ Examples: Credit scoring, fault assessment ▪ Challenges: Data quality, availability, timeliness, model explainability, downsides, bias and fairness 	<ul style="list-style-type: none"> ▪ Broad and sophisticated outputs. Very low transparency (Black box) ▪ Examples: Knowledge management, marketing, code generation and product design ▪ Challenges: Lack of data, explainability, impacts on process outcomes, lack of trust, IP, skills and employment
 ECONOMICS IMPACTS	<ul style="list-style-type: none"> ▪ Makes predictions easy and cost-effective ▪ Decreases value of human substitutes for prediction (e.g., sight and experience) ▪ Increases value of complements for prediction (e.g., judgment) 	<ul style="list-style-type: none"> ▪ Makes content generation, easy and cost-effective ▪ Decreases value of human substitutes for content generation (e.g., language, imagination) ▪ Increases value of complements for content generation (e.g., trust, explainability, and real creativity)




Adopt Productivity Use Cases First

Survey results showed that Asia/Pacific organizations were most interested in use cases focused on: customer, quality and innovation. There are three distinct categories of use cases. IDC suggests the following approaches for organizations:

In the immediate term, most organizations would be able to adopt **productivity use cases** to reduce costs and enhance the focus of expensive knowledge workers, particularly within IT and the front office. These often involve low-cost, low-risk off-the-shelf solutions for areas such as Business intelligence, software development, and marketing.

Over the medium term, organizations could develop **functional use cases** to augment essential but non-central functions such as HR, marketing, legal, and design. While these create more value, they require a greater upfront investment in IT platforms, data, and business process redesign.

Several larger enterprises and consortia are already investing in building **industry-specific use cases** using proprietary data to gain a competitive edge, but this entails high risks, complexity, and substantial budgets.

	Business Impact	Adoption Frivers	Consequences	Use Case Examples
 <p>Productivity use cases</p> <ul style="list-style-type: none"> ▪ Increase task Productivity ▪ Drives operational efficiencies 	<ul style="list-style-type: none"> ▪ Limited skills ▪ Limited budget ▪ Lower risk appetite ▪ Limited amount of data 	<ul style="list-style-type: none"> ▪ Cost savings & increased Productivity ▪ Quick time to value ▪ Low control of model governance, security, privacy & data 	<ul style="list-style-type: none"> ▪ Summarizing documents ▪ Generating code marketing content 	
 <p>Functional use cases</p> <ul style="list-style-type: none"> ▪ Increase functional effectiveness ▪ Contextualized experiences 	<ul style="list-style-type: none"> ▪ Institutional data Skills and budgets are available ▪ Longer time to value ▪ Some risk appetite 	<ul style="list-style-type: none"> ▪ Drives operational efficiencies & greater business focus ▪ Moderate control over model governance, security & privacy 	<ul style="list-style-type: none"> ▪ Engineering knowledge management Legal document management ▪ Generative product design and prototyping 	
 <p>Industry-specific use cases</p> <ul style="list-style-type: none"> ▪ Enable new digital business models, products and services ▪ Industry-specific competitive moats 	<ul style="list-style-type: none"> ▪ Quality and quantity institutional data ▪ Ample skills and budget ▪ Longer time to value 	<ul style="list-style-type: none"> ▪ Potential competitive differentiation ▪ Complete control over model governance 	<ul style="list-style-type: none"> ▪ Generative drug discovery in life science ▪ Generative material design for manufacturing 	

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Adopt Productivity Use Cases First

Implementing AI use cases: Build, Buy or Fine-Tune?

CIO Playbook 2024
Research methodology

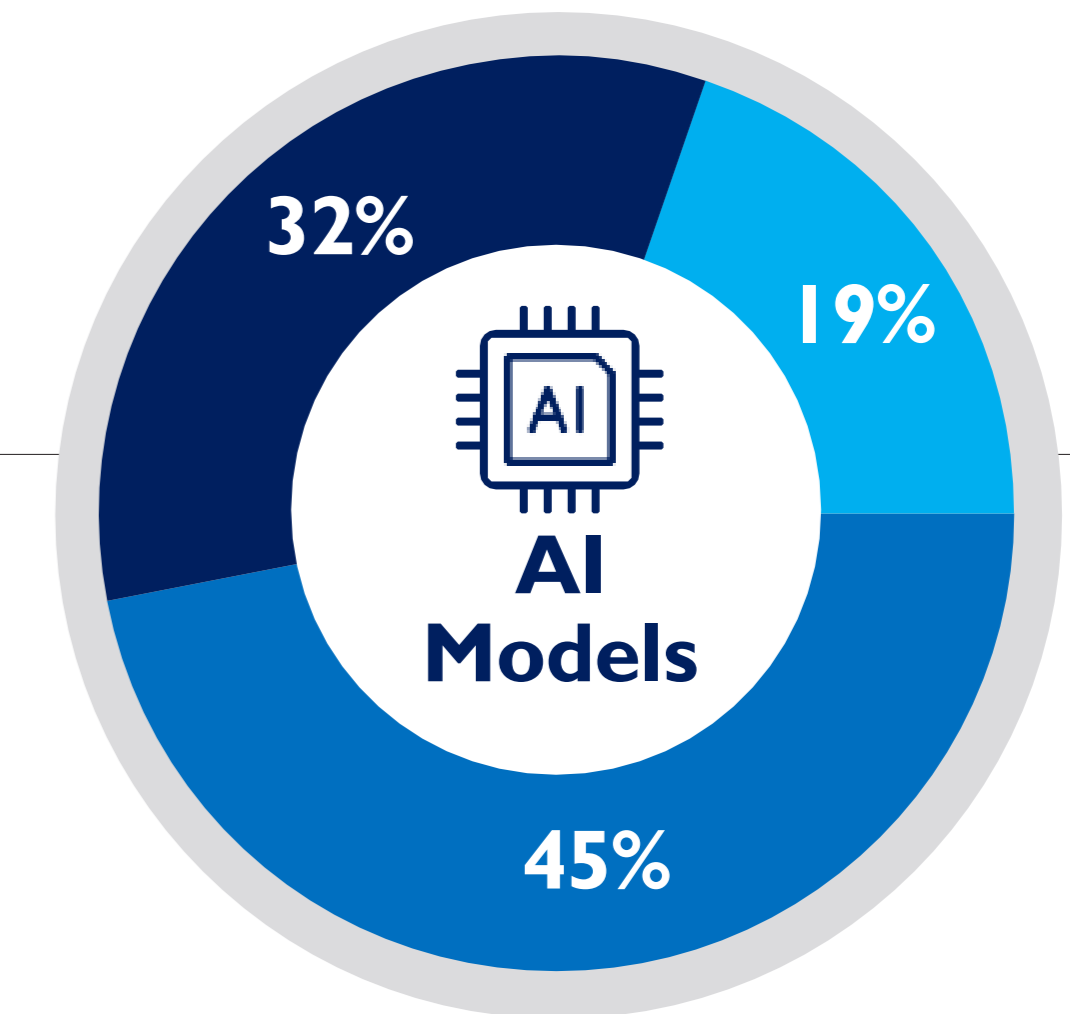
Why Lenovo

Implementing AI use cases: Build, Buy or Fine-Tune?

There are **various approaches** organizations can take to **implement the previously mentioned AI use cases**. Organizations can start by from **buying** prebuilt models or applications with embedded models. This is the simplest way to adopt and requires minimal customization. This approach will lead to Productivity gains across tasks or functions.

Fine-tuning a model can help deliver efficiencies with some competitive advantage, but it is costly and requires regular refreshing of models.

Build your own model (BYOM) offers complete control right from model architecture, parameters, and layers, which offers a competitive advantage at huge costs. Complex custom models are usually built with vendors or industry partners.



AI Depends on the Larger IT Stack



AI implementations can be complex, requiring **capabilities across multiple layers of the tech stack**: IT infrastructure, data, AI platforms and foundational models and AI applications. Various AI implementation approaches discussed will impact different aspects of the below stack. The *Build* approach lies on one end of the spectrum with implications on all layers of the stack, starting from infrastructure, data to model layers, requiring resources and talent to implement. The *buy* approach is fairly lightweight and typically impacts the application layer of the stack.

	Buy Models	Fine-Tune Models	BYOM
AI Applications	GenAI standalone and enterprise apps	GenAI standalone and enterprise apps	Application embedding and productionizing
AI Platforms & Foundation Models	No impact	Open/closed source models Model tuning	Model training and performance tuning
Data	No impact	Vector database management and synthetic data labelling	Training data preparation
IT Infrastructure	No impact	Public cloud infrastructure Private hosting	Dedicated infrastructure (Cloud or on-prem)

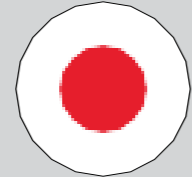


Legend: Sourced (grey), In-house (red)







CIO Playbook 2024

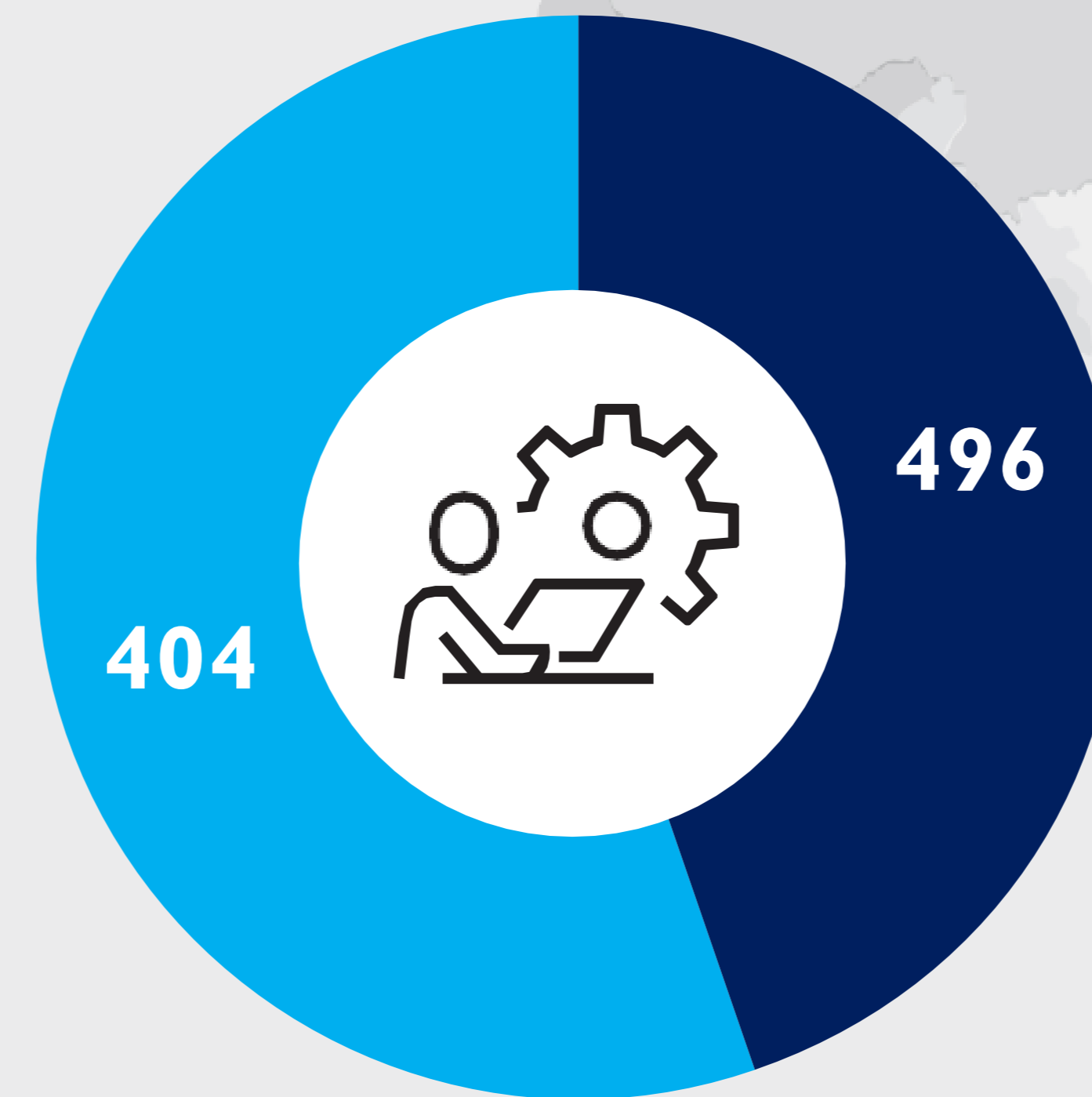
Research methodology

CIO Playbook 2024 Research Methodology

The playbook was developed based on **900 respondents**, with the following sampling breakdown:

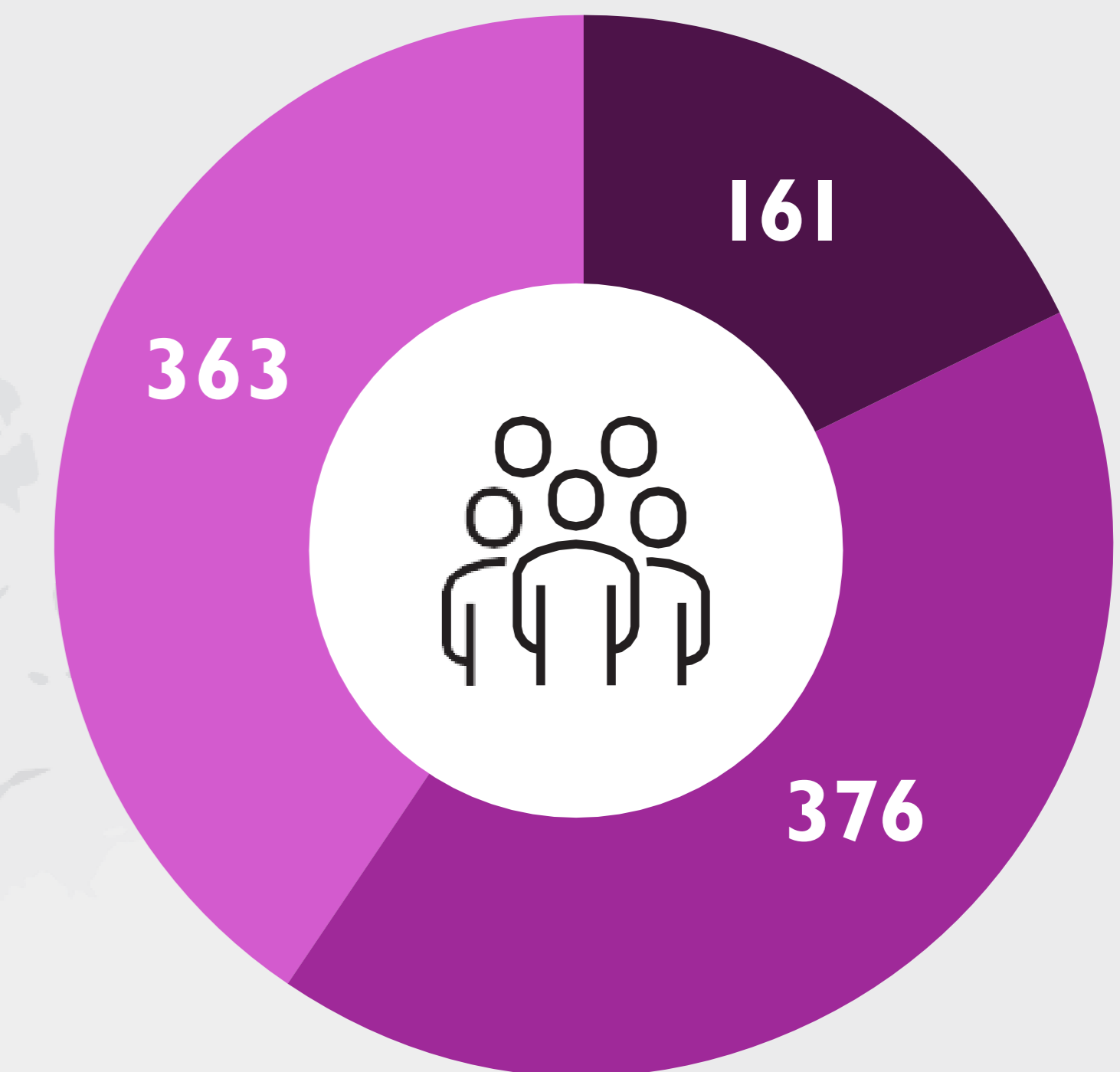
MARKETS COVERED		SAMPLE SIZE
	Japan	150
	Korea	100
	India	150
	ASEAN+	370
	ANZ	130

INDUSTRIES COVERED		SAMPLE SIZE
	BFSI	240
	Manufacturing	112
	Retail	139
	Telco	55
	Healthcare	59
	Government	53



Sampling by
Organization Role

- C-Suite
- C-1



Sampling by
Employee Size

- 500 to 999 employees
- 1,000 to 4,999 employees
- 5,000 or more employees

CIO Playbook 2024

Message from sponsor



Lenovo AI for All

Bringing AI to your Data, when and where you need it.

At Lenovo, we recognize the challenges that come with adopting AI as a business imperative, and we also acknowledge the immense potential AI can bring to your business and people. Our robust infrastructure solutions, coupled with our deep ecosystem of independent software vendors (ISVs) ensures the seamless and scalable AI solutions that are suitable for business of all shapes and sizes.

**AI:
From Pocket
to Cloud**

 **\$2.2B**
AI Investment
Commitment

 **#3**
Global AI Infrastructure
Provider IDC Global AI
Survey*

Lenovo AI Infrastructure

8

Platform
Categories

80+

AI-Ready
Platforms

High Performance Storage, Compute DC and Edge portfolio that scales with your demand

Lenovo AI Discover Center of Excellence

4

Global
COEs

180+

Countries
Served

Find Faster Time to Value by Leveraging Lenovo's AI Center of Excellence

Lenovo AI Innovators Partner Ecosystem

50+

AI Solution
Partners

165+

Enterprise AI
Solutions

Leverage Certified Solution Partners to Confidently Address Your Requirements

Commitment to Honest AI

We believe technology should solve some of humanity's toughest challenges, that's why Lenovo is committed to ensuring AI is used in the most ethical and beneficial way. We have committed to support initiatives such as the "Women & AI Pledge" and launched Lenovo's Responsible AI Committee to ensure Responsible AI is part of our Product Diversity Office.



Explore the Possibilities of AI and Lenovo

Smart Cities



Improve and Regulate Customer Experiences with Lenovo AI

Together, Lenovo and WaitTime™ have developed an AI solution utilizing real-time data to help you regulate crowd traffic. WaitTime's real-time AI software also uses state-of-the-art imaging techniques to monitor and engage with crowds.

Smart Manufacturing



Make Zero Incidents A Priority in Your Organization with Lenovo AI

Incorporate Lenovo and Graymatics™ into your organization's best practices for safety to help manage risk and practice continuous improvement of processes. Graymatics offers an AI-based solution that detects workplace hazards such as accidents, defective machinery, and fire.

Smart Retail



Lenovo AI Shapes the Self-checkout of Tomorrow

Happy customers and loss prevention is a receipt for success for retailers! The Everseen Visual AI™ platform can enable a retail solution for your organization. Learn how Lenovo and supermarket retailer Kroger® leveraged the Everseen Visual AI platform to create a better customer experience while reducing loss.

Improve and Regulate Customer Experiences with Lenovo AI



Message from Sponsor

Lenovo AI Innovators

Partner Ecosystem

Adopt & Fast-Track Your AI Journey

Lenovo's AI Innovators Program encompasses a network of top-tier software partners collaborating with Lenovo to furnish customers with customized, proven, and readily deployable AI solutions across their entire operations, encompassing computer vision, audio recognition, predictive analytics, security, and virtual assistants tailored to every industry's unique needs.



Partners access Lenovo AI-ready infrastructure

Working with our AI Innovator partners, we fine-tune our AI-ready, best-in-class servers to help ensure rapid ROI and ongoing success for our mutual customers.



Partners leverage Lenovo AI expertise and ecosystem

Our ecosystem includes AI centers of excellence, serving 180 countries and more than 20,000 business partners, for customized proofs of concept.



Collaboration brings customers rapid deployment

By providing, performance-optimized AI-ready solutions across various industries, we ensure customers can deploy AI faster, and more confidently.

165+

Turnkey AI Solutions

50+

AI Solutions Partners

30K+

Channel Partners



Learn More

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Lenovo AI For All

Driving Intelligent Transformation from Pocket to Cloud



Digital Workspace

Lenovo provides end-to-end digital workplace solutions from the device to the data center

Lenovo offers a wide range of building and workforce solutions for the new era of hybrid work

Solutions available through traditional purchase or as-a-Service



Hybrid Cloud

Fully integrated ThinkAgile solutions enable edge-to-cloud agility, performance, and resilience for complex workloads

Cost-efficient and infinitely simple single pane of glass management

Security by design - keep your data on-prem or in the cloud

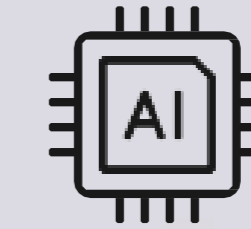


TruScale

Subscription-based access to IT resources to provide cost-efficient, faster deployment, improved security, and better management

Solutions for data management, Hybrid Cloud, HPC, and VDI

Services include deployment, implementation, IT management



AI & Edge

Building AI Solutions all over the world with 165+ AI solutions with 50+ AI innovators across every vertical market

Leading Edge Portfolio, from the far edge to the near edge, bringing AI to where our customers need it

Empowering individuals, businesses, and governments with a full stack of pocket-to-cloud technology, enabling AI for all



Sustainability

Neptune™ Liquid Cooling reduces power and CO2 emissions

Heat mitigation tactics on every level of the server Packaging containing recycled foam and plastic

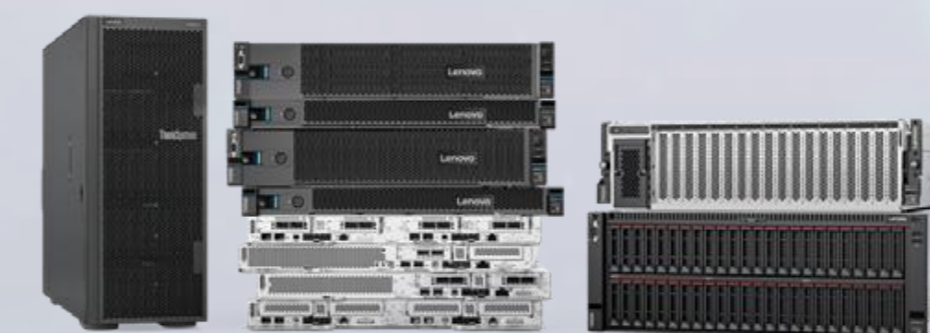
Factory-integrated racks reduce packaging waste

Infrastructure Solutions

Software Defined



Tower, Rack, & Dense Servers



Storage



Lenovo ThinkAgile

Lenovo ThinkSystem

Lenovo ThinkEdge

Lenovo Services

Discover Design Implement Optimize Security
Customer Support Retire Sustainability



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83 Clemenceau Avenue, #17-01 UE Square, West Wing, Singapore 239920
T 65.6226.0330



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