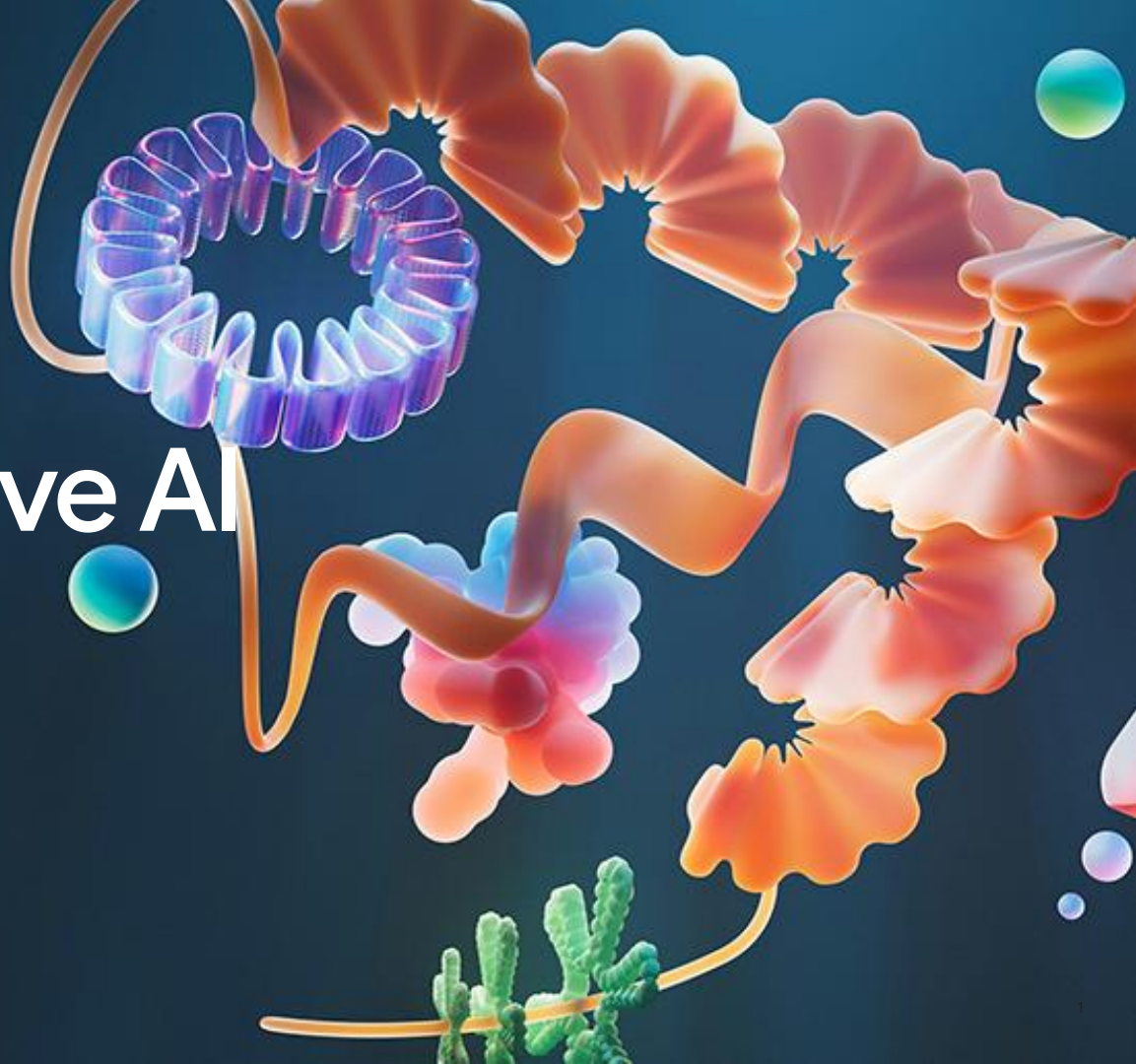
Google Cloud

From generative AI to agentic AI

Accelerating practical autonomy in industry operation



Research insights by

IDC

November 2025

Table of contents

Executive summary	03
Overview	04
The path to AI impact for manufacturing	10
The path to AI impact for financial services	16
The path to AI impact for telecommunications	22
The path to AI impact for retail	28
The path to AI Impact for public sector	34
The path to AI impact for media and gaming	40

Executive summary

Enterprises are shifting from generative AI (gen AI) pilots to agentic AI, seeking to **amplify operational gains through autonomy and multi-tool orchestration.** Over 40% of firms are now planning agentic pilots, building on gen AI foundations to de-risk their next steps and unlock a two to three times operational ROI. Initial AI wins are funding this transition, moving from proofs of concept (PoCs) to scaling core workloads. The primary drivers for AI adoption—**innovation, customer delight**, and **operational efficiency**—are naturally evolving toward autonomous agents **that anticipate needs and act decisively**.

Industry adoption of AI is uneven, with different sectors facing unique challenges, and prioritizing investments differently.

01

Industry dispersion

Manufacturing and telecommunications are leading in the use of predictive and gen AI combinations, while the financial services and public sectors lag due to data governance challenges.

02

Primary obstacle

Poor data access and quality is the most significant barrier across all sectors, impacting up to 51% of organizations in some industries. There is also a need for enterprise-wide integration platforms that connect multiple systems and data sources for smoother large-scale rollouts.

03

Strategic investments

Consequently, investment is strategically focused on foundational needs. A significant portion of AI budgets is allocated to data engineering, AI infrastructure, and security, reflecting a mature understanding that robust "plumbing" is critical for achieving true autonomy.

The future envisioned in this eBook is one of **human-AI collaboration**, where employees shift from execution to orchestration. Agentic systems will handle routine operations like diagnosing supply chain issues, optimizing network traffic, and personalizing customer offers, **freeing human talent for strategic initiatives**. To achieve this, organizations must **upgrade data pipelines, build advanced simulation environments, and redefine decision-making rights**. This will ensure the secure and effective deployment of the autonomous systems set to redefine industry operations.

A day in the life of tomorrow's COO: A vision of the future enterprise

Starting the day with agentic AI

At 09:00, you open the console, and "Solvyx," your multi-agent AI control center, has already swept overnight data. It flags a looming delay in new-service activations, presents workload-balancing options, and, after your quick approval, executes the fix, avoiding hours of triage. Minutes later, Solvyx detects a stalled payment processor, auto-reroutes the issue, and drafts stakeholder updates, turning crisis response into a calibrated routine.

During an operations optimization huddle, staff co-create with Solvyx: the AI crunches the data to expose hidden process bottlenecks, freeing experts to craft higher-value resolutions. It then surfaces pre-analyzed proposals, a predictive customer-engagement cadence or a cloud-resource optimization. Each is tagged with forecast savings and risk metrics for your sign-off.

Your role shifts from firefighting to orchestration. Continuous monitoring, diagnosis, and first-response execution liberate human attention for ethics, strategy, and cross-team alignment, allowing faster, better-informed decisions that keep the enterprise ahead.

Imagine jobs in the future centered on coaching these digital co-workers who curate data, set guardrails, and turn AI insights into decisive action.

- Human-AI co-design shifts staff from data wrangling to steering agents that uncover bottlenecks and auto-draft new workflows.
- Autonomous AI guardians self-heal supply chains, payments, and customer channels, raising only edge cases with resolution options.
- Real-time orchestration blends market, compliance, and environmental, social, and governance (ESG) signals to suggest investments with live ROI and risk dashboards.

Enterprise AI momentum: Current drivers and the agentic edge ahead

Organizations adopt AI to innovate, delight customers, and streamline operations; those same drivers evolve naturally into autonomous agents that anticipate needs and act without hand-offs.

Now: Objectives for initiating AI projects



Next: What's possible

Agents scan market trends, suggest new product ideas, run quick product or service simulations, and prepare a prototype brief overnight.

AI agents interact with customers and deliver personalized engagements across multiple languages, modes, and channels.

Support intelligent decisions and proactive problem solving, automate workflows, improve collaboration by breaking down silos, aid complex research and content creation, and automate repetitive tasks.

Agents instantly adjust suppliers, inventory, and prices when demand or risks change, keeping operations smooth.

Sales agents fine-tune pricing, spot cross-sell chances, and renegotiate supplier rates to boost margins.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = 950

Early AI wins fuel the shift to autonomous operations

Momentum shifts from PoCs to scaling core workloads, boosted by clear financial upside.

Industry	Priorities	Spending	Adoption	Challenges	ROI	Autonomous opportunity
Financial services	Fraud detection, AI-augmented workforce, efficiency	20%+ of IT budgets, stable investment growth	53% systematically adopted AI	Regulatory compliance, data quality, risk management	3.1x	Autonomous risk-ops agents that pre-clear 95% of transactions and auto-file compliance evidence.
Telecommunications	Revenue management, customer care, 5G monetization	More than 40% of IT budgets, heavy AI investment	High adoption in customer service & security	Integration with legacy IT, infrastructure readiness	3.2x	Self-optimizing network agents that reroute traffic and patch faults without human NOC tickets.
Manufacturing	Energy/resource efficiency, production optimization	Rising from 11–20% to 21–30% of IT budgets	54% systematically adopted AI, leading in predictive AI	Lack of skilled talent, workflow alignment	3.1x	Closed-loop production agents that adjust line speeds and order spares in real time for zero-downtime runs.
Retail	Supply chain automation, price optimization	41% planning to spend 21–30% of IT budgets	Focus on customer experience, supply chain, marketing,	Data quality and integration issues	2.8x	Store-to-DC agents that auto-replenish shelves, adjust pricing hourly, and trigger hyper-personalized offers.
Public sector	Economic policy automation, data sovereignty, and digital infrastructure security	Highest proportion allocating 31–40%+ of IT budgets	39% systematically adopted AI, lower than private sector	Compliance, governance, AI transparency	3.3x	Policy-execution agents that simulate economic changes, draft subsidy adjustments, and disburse funds on triggers.
Media, entertainment and gaming	AI-driven content creation, workflow automation	Heavy investment in custom AI models	Highest AI deployment rate for gen AI and agentic AI	Model accuracy, inference transparency, computational cost	2.7x	Content-pipeline agents that generate, A/B test, and publish personalized assets while monitoring IP compliance.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Total 950; Financial Services = 150, Telco = 50, Media, Entertainment & Gaming = 100, Manufacturing = 250, Retail = 250, Public Sector = 150

Financing the runway: From generative AI pilots to autonomous operations

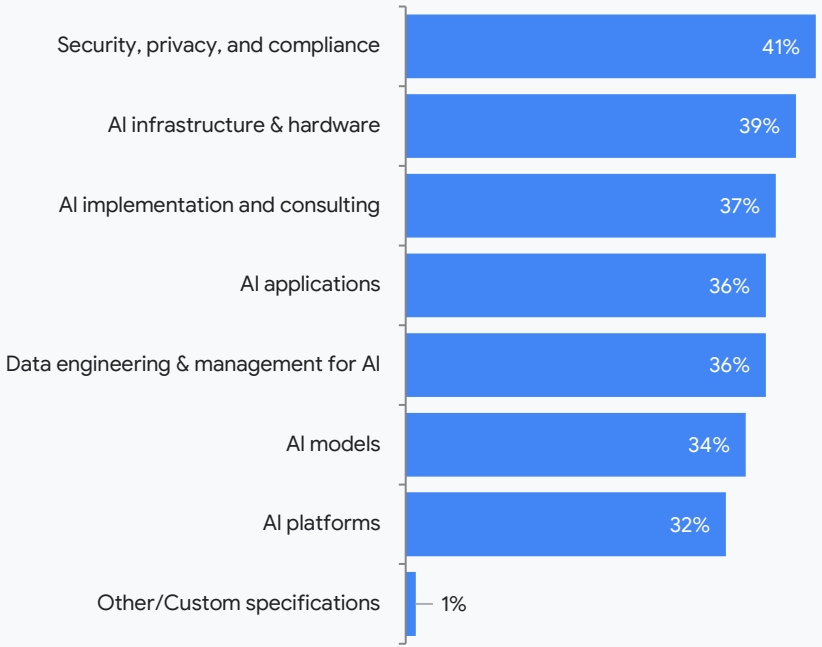
The same firms driving innovation with gen AI are backing it with hard dollars: most are already deploying, another wave begins this year, and spending now targets the core enablers of full autonomy.

Journey to AI autonomy: A maturity roadmap

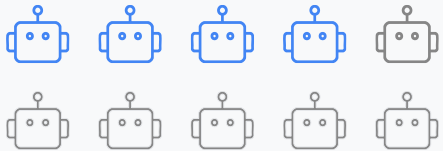
59%
Implemented/Early stages/Piloting

41%
Planning: Next 12 months

Future
Autonomy through agentic AI



4 in 10

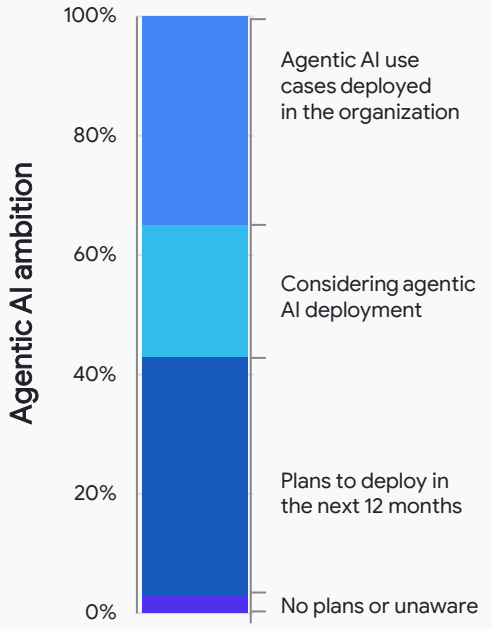


organizations will focus their AI budget this year on the three pipes needed for next-step autonomy: **clean data, scalable compute, and tight security.**

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = 950

Agentic AI: Ambition is high, readiness uneven

Most firms plan or already deploy agentic AI, but data, skills, and legacy hurdles will slow the path to AI impact.



AI execution hurdles • Data quality tops every list (up to 51 %) • Each sector faces a unique blocker (skills, legacy, compliance).	Media + gaming	Financial services	Telecoms	Manufactur -ing	Retail	Public sector
People: Training and skill development	34%	36%	34%	38%	34%	29%
Governance: Policies and ethical frameworks	39%	25%	32%	22%	28%	36%
Infrastructure: Technology and systems	31%	44%	30%	43%	32%	33%
Strategy: Aligning AI with business goals	44%	49%	46%	46%	40%	49%
Data: More data access, better data quality and management	51%	44%	46%	48%	49%	54%
Applications: Specific use cases and implementations	39%	33%	42%	32%	44%	41%
Platforms: Tools and technologies for AI development and deployment	40%	36%	40%	45%	45%	43%

Key takeaway Clean data, integrated platforms, and upskilled teams are the runway for agentic AI.

Fewer challenges — More challenges

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = 950

The C-suite playbook: From generative wins to self-directed workflows

	Move from pilots to systemic adoption	Fund the plumbing, not just the models	Tackle data quality first	Link AI projects to growth metrics, not just efficiency	Build skills via low-code, in-flow guidance	Define an "agentic readiness" governance layer
Why?	59% of enterprises are already implementing or planning AI projects while another 41% are planning in the next 12 months.	New AI spend concentrates on data engineering, infrastructure, and security—the core enablers of autonomy.	"Poor data access/quality" tops every barrier list—up to 54% in some sectors.	Top motivators include revenue/profit growth (29%) and digital innovation (27%), signaling a shift from cost to upside.	Skills gaps block 38% of projects, yet low-code "agent builders" already exist.	Autonomous agents demand continuous policy testing and audit trails.
Actions and outcomes	Formalize an "exit-pilot" playbook: define three business KPIs required before a use-case can be called production-ready and budgeted for expansion.	Prioritize CapEx that cleans data, standardizes APIs and automates policy checks; postpone new model work until these foundations score ≥90% SLA, resulting in less downtime caused by data or policy breakage; smoother hand-offs between the line of business and IT.	Deploy self-healing data pipelines and institute a "data product owner" role responsible for each critical dataset's freshness, lineage and policy compliance. This builds trust in the data, driving adoption and use.	Attach every AI initiative to at least one topline KPI (e.g., new-product revenue, conversion lift) and review quarterly against that metric.	Adopt platforms with embedded AI assistants; mandate a "citizen-developer" target—for example, 30% of process owners able to launch or tweak an agent by year-end. This will create ownership and build strong internal capability.	Create guardrail APIs that every agent must call for compliance checks before executing any transactional step to build trust and security in AI applications and future autonomy.

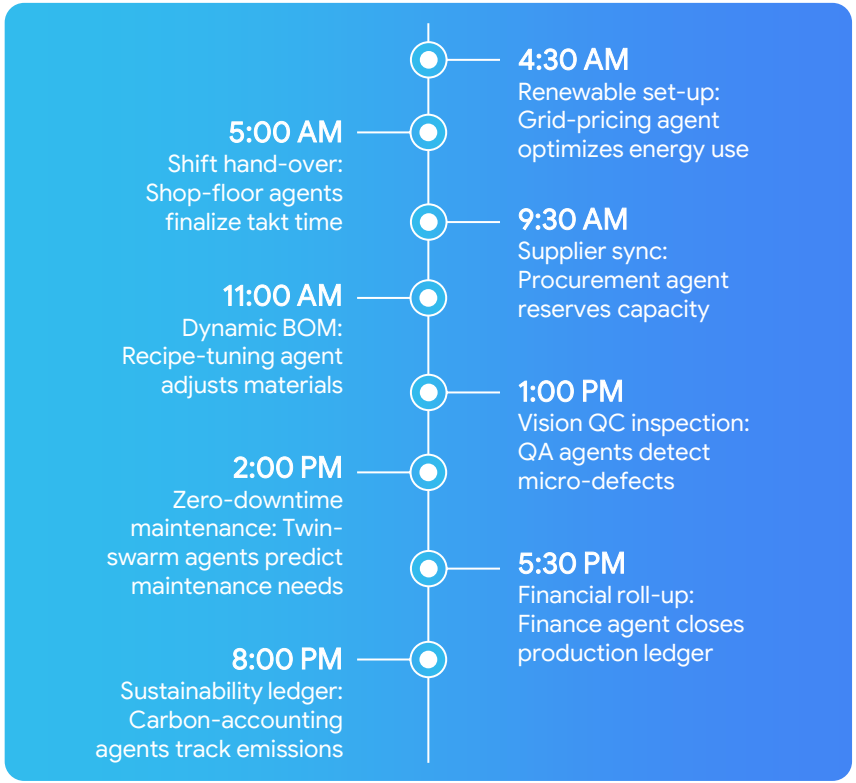


The path to AI impact for

manufacturing

Manufacturers of the future vision

In a future factory, autonomous agents manage the day from start-up to close.



Before operators arrive, a grid bot powers equipment on low-cost electricity and shop-floor agents sync MES, SCADA, and ERP queues, issuing work orders for final check by the shop floor supervisor. A procurement agent then books supplier capacity via API, while a BOM agent tweaks recipes to capture commodity-price dips and keep documents current. Vision-QC bots flag defects, retrain, and redeploy in minutes; while agents pre-empt failures by flagging parts to be ordered. Maintenance agents work in twin swarms to predict and prevent downtime before it occurs, using real-time telemetry from machines and historical failure data. By the end of the shift, a finance agent has closed the daily ledger and delivered a live cash-flow forecast, and carbon-accounting bots post emissions to the sustainability ledger. With routine decisions handled, humans are now free to optimize.

Compound impact:

+ OEE* + Product quality + Supply assurance

- % Energy use - Cash cycle

*OEE = Overall Equipment Effectiveness

AI funding accelerates as factories digitalize

Greater spending and higher maturity show AI is now a growth lever, not a side project.

As the manufacturing sector is under pressure to digitize complex operations, boost productivity, and innovate across product life cycles, leadership now treat gen AI not just as a tool, but a strategic enabler of long-term competitiveness. Already, 54% of manufacturers say they are systematically adopting AI.

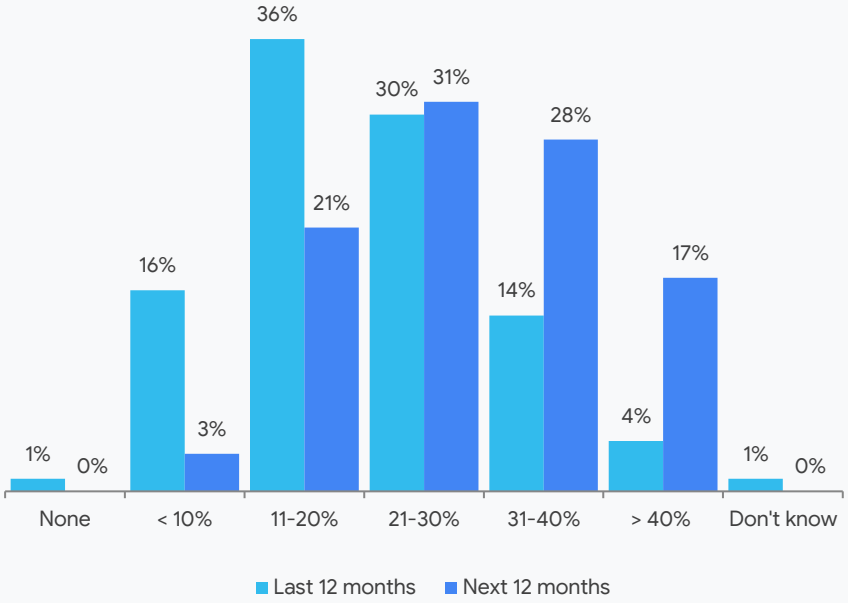
Key motivators for AI projects



Key takeaway

Rising AI share of IT spend locks gen AI into core planning, design, and production cycles.

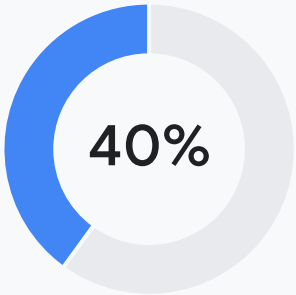
Organizational AI spending increasing as a percentage of IT budget



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Manufacturing 250

The R&D generative AI ladder: From embedded tools to proprietary models

Early wins in requirements, design, and QC spur investment in customized models and IP ownership.

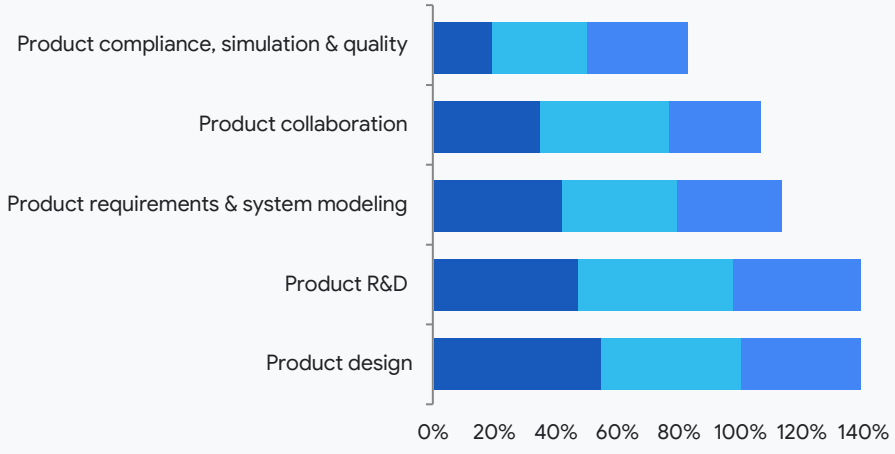


of manufacturers plan gen AI use case implementation for R&D/engineering in the next 12 months.

Key takeaway

Integrate customized and proprietary models into closed-loop agent frameworks that continuously optimize design decisions, engineering parameters, and shop-floor execution in real time.

Gen AI technology was used to launch each of the following use cases for R&D/engineering



Shift toward proprietary

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Manufacturing 99

Invest for impact: Budget lines that unlock autonomous value

Budgets now zero in on data, infrastructure, and security to impact throughput, uptime, and yield.

Investment focus (12-month budget)	Current barrier	Agentic response and operational gain
44% Data engineering and management	48% Data quality/availability	**Action:** Self-healing data pipelines and agents that auto-curate, label, and reconcile sources. **Outcome:** Reliable, real-time data lets planners adjust lines faster, lifting overall equipment effectiveness (OEE).
41% Infrastructure and hardware	43% Systems complexity	**Action:** Agents orchestrate APIs to bridge legacy MES/ERP with cloud services. **Outcome:** Simpler integrations cut changeover time and speed new-cell deployment, boosting throughput and time-to-market.
40% Security, privacy and compliance	22% Policy and governance gaps	**Action:** Autonomous policy agents test controls, flag drift, and auto-file audit evidence. **Outcome:** Always-on compliance prevents unplanned shutdowns and fines, protecting production continuity and brand trust.
40% AI applications/tooling	38% Skills gap/change management	**Action:** Low-code “agent builders” let process owners spin up task bots; embedded AI agents guide users in-flow. **Outcome:** Line teams solve bottlenecks without IT wait-time, raising first-pass yield and trimming operating cost.

Use case trajectory

These advancing generative AI deployments build the data spine for agentic AI and make the leap toward self-directed, closed-loop factories.

Use case	Implemented	Planned (12 months)	Autonomy opportunity (agentic AI extension)
Energy and resource efficiency	47%	54%	Self-optimizing energy, load-shifting, carbon tracking, cost bidding.
Formula/BOM management	45%	50%	Dynamic recipes, real-time spec swap, auto-compliance, supplier sync.
Production process optimization	51%	47%	AI-driven scheduling, anomaly-based rerouting, resource autobalance, throughput tuning.
Life cycle and sustainable manufacturing	33%	46%	Circular-design agents, part-reuse advice, eco-routing, waste-minimization.
Predictive maintenance	44%	46%	Zero-downtime, condition-based ordering, cobot dispatch, asset-life extension.
Connected factory operations	43%	42%	Autonomous replenishment, remote-support bots, closed-loop feedback, edge coordination.
Smart quality management	52%	41%	Self-learning QA, inline defect fix, adaptive thresholds, traceability tagging.
Safety and compliance monitoring	24%	33%	24/7 monitoring, auto hazard alerts, compliance reports, PPE enforcement.

Why it matters:

- **Compounding coverage:** 75% of use cases already exceed 40% adoption or intent, giving every factory at least one mature data stream for agents to act on.
- **Line-of-business ROI:** Each step from prediction → closed-loop → autonomy targets a core KPI—yield, OEE, energy cost, or compliance risk.
- **Low incremental lift:** Existing gen AI models feed the first generation of task agents; investment shifts from model building to orchestration and guardrails.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Manufacturing 250

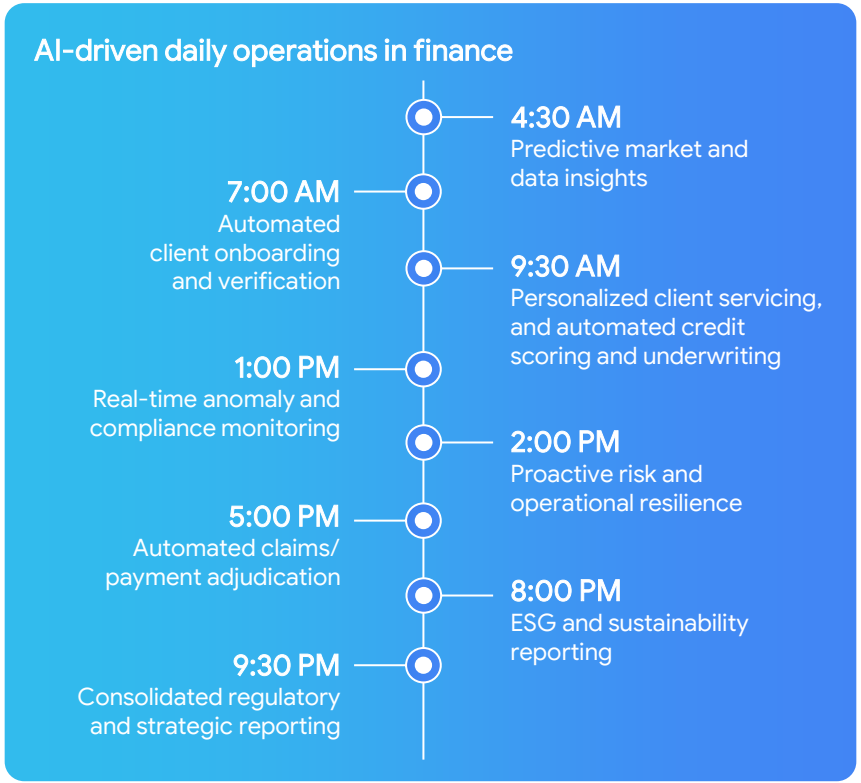


The path to AI impact for

financial Services

Future financial services vision

In future financial institutions, autonomous AI agents manage daily operations from client onboarding to regulatory filing and claims adjudication.



A secure data fabric powers these agents, synchronizing CRM, core banking, and policy systems to deliver personalized recommendations and automate credit scoring and underwriting.

Retail banking becomes seamlessly embedded in everyday life. AI personal finance assistants offer real-time budgeting advice, detect anomalies in spending, and proactively suggest loan or savings products tailored to major life events, such as a new job, marriage, or home purchase.

AI bots proactively flag suspicious activities (e.g., fraud, claims), learning and adapting in minutes. They also pre-empt failures and identify emerging risk exposures across credit, market, and underwriting domains. By day's end, automated regulatory reporting provides real-time risk insights. This ensures routine tasks are handled precisely, freeing human experts for strategic initiatives and deeper client relationships.

Compound impact:

+ Client lifetime value - Risk exposure

+ Operational efficiency - Fraud exposure

+ Regulatory readiness + Decisioning accuracy

*OEE = Overall equipment effectiveness

FSI AI budgets reflect shift from testing to trusting

Rising AI spend reflects a push to embed intelligence into operations and customer-facing processes.

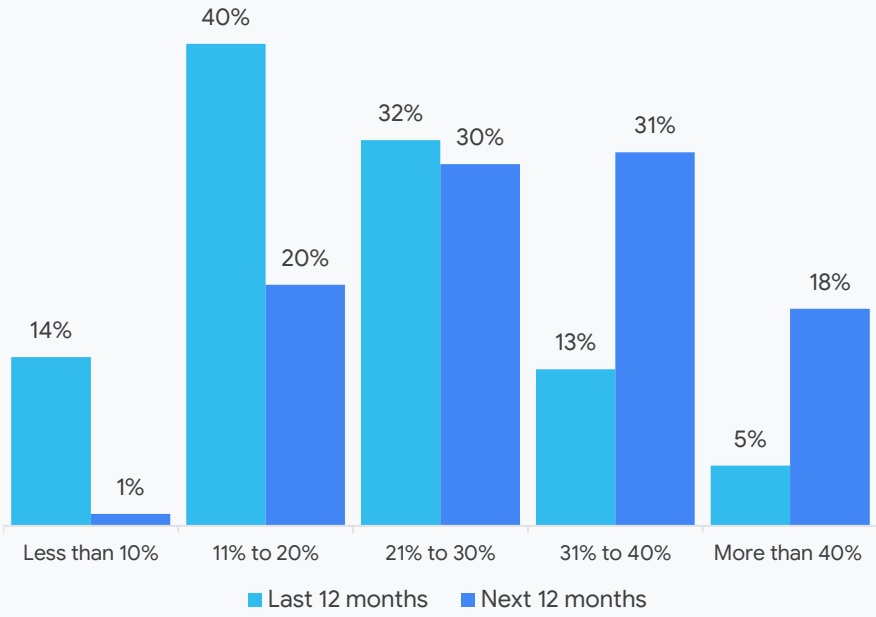
In financial services, AI is shifting from isolated pilots to embedded operations. With many firms now allocating over 20% of IT budgets to AI, the focus is on scaling intelligence across workflows. Success increasingly depends on alignment between IT, business, and compliance teams to integrate AI responsibly and sustainably.

Key motivators for AI projects



Key takeaway Operationalize AI where agility and service delivery matter most.

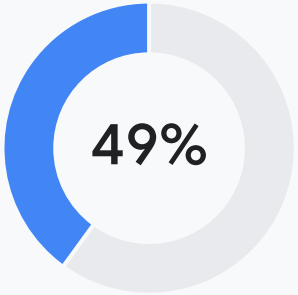
Organizational AI spending increasing as a percentage of IT budget



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Financial Services 150

IT operations evolves as generative AI powers the next layer of autonomous banking

Gen AI is gaining traction where service reliability, cost transparency, and user friction intersect.

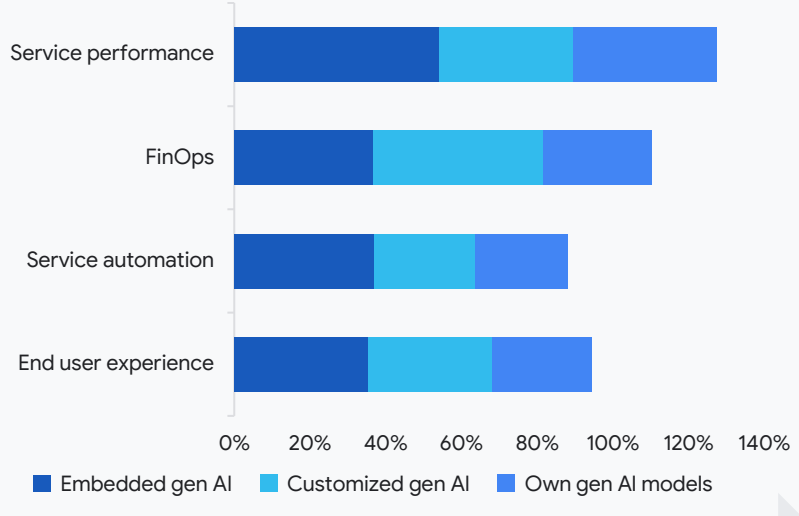


of financial services plan gen AI use case implementation for IT operations in the next 12 months.

Key takeaway

Integrate gen AI into agentic operations loops that self-diagnose incidents, forecast capacity needs, and dynamically optimize performance, user experience, and service costs in real time.

What types of gen AI technology were used to launch each of the following use cases for IT operations?



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Financial Services 64

From guardrails to growth: Secure, compliant, and scalable agent-led transformation

FSI is using agents to close data gaps, modernize compliance, and scale personalized products.

Investment focus (12-month budget)	Current barrier	Agentic response and operational gain
41% Security, privacy, and compliance	25% Policy and governance gaps	**Action:** Use gen AI agents to flag anomalies across KYC/AML pipelines and auto-generate SAR drafts*. **Outcome:** Speeds up fraud identification and compliance workflows, reducing risk exposure and strengthening regulator confidence.
39% Data engineering and management for AI	44% Data quality and availability	**Action:** Introduce self-healing data pipelines that resolve missing or inconsistent customer data across silos. **Outcome:** Increases precision of credit scoring and personalization models, boosting customer retention and offer conversion.
39% AI infrastructure and hardware	44% Infrastructure and systems	**Action:** Deploy real-time infrastructure health agents to detect and pre-empt compute bottlenecks in fraud or trading systems. **Outcome** Minimizes outages and ensures uptime for high-frequency, customer-critical financial services.
36% AI applications	33% Specific use cases and implementations	**Action:** Use low-code agent builders to let credit officers create tailored gen AI workflows for specialized products (e.g., ESG-linked financing). **Outcome:** Reduces time to market for differentiated offerings while lowering development overhead.

*KYC/AML – Know Your Customer/Anti-Money Laundering, SAR - Suspicious Activity Reports

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Financial Services 150

Use case trajectory

FSI's AI edge is shifting from insight to intervention, reducing time-to-action in fraud, compliance, and CX.

Use case	Implemented	Planned (12 months)	Autonomy opportunity (agentic AI extension)
Fraud detection and risk management	48%	52%	Self-improving fraud detection, autonomous claims review, cross-institutional threat sharing agents, live scenario testing.
AI-augmented workforce tools	43%	51%	Autonomous decision-support advanced AI assistants, agent-led case triage, continuous workforce upskilling, AI-driven task orchestration.
Operational efficiency and automation	44%	49%	Billing and reconciliation bots, self-tuning workflow agents, auto-escalation/remediation, adaptive exception handling.
Risk intelligence and scenario modeling	41%	48%	Real-time scenario agents, predictive risk mitigation, market intelligence bots, dynamic portfolio adjustment.
Customizable products and services	28%	43%	Proactive virtual agents, dynamic policy offers, AI-driven cross-channel engagement, autonomous retention/cross-sell agents.
Customer personalization and engagement	55%	43%	Autonomous product configuration, instant risk assessment agents, on-demand pricing, dynamic underwriting bots.
Regulatory compliance and reporting	38%	36%	Automated compliance tracking, continuous audit agents, adaptive policy adjustment, real-time regulatory response bots.
Advanced analytics and insights	22%	25%	Self-service insights, agent-led dashboarding, continuous model improvement, adaptive data pipelines.

Why it matters:

- **Reduced risk exposure:** Autonomous agents enable immediate actions, like account freezes or credit adjustments in volatile conditions, minimizing delays and preventing losses through real-time, automated risk controls.
- **Line-of-business ROI:** Dynamic pricing and product assembly improve conversion rates, delivering measurable ROI through higher offer acceptance and more efficient revenue capture.
- **Scalable intelligence:** Autonomy systems turn expert decisions into repeatable actions across the business.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Financial Services 150



The path to AI impact for

telecommunications

The telco of tomorrow vision

Future telecommunications: An AI-driven timeline



In a future telco, AI-driven autonomous networks proactively optimize performance, predicting traffic surges and self-healing to ensure seamless, high-speed connectivity. AI bots detect service degradations and dispatch technicians before customers notice. Customers appreciating excellent quality of service seek upgrades, supported by AI-powered virtual assistants that offer hyper-personalized options, and AI-assisted agents access full customer profiles for swift support. Billing is frictionless, with AI automatically updating accounts and correcting errors pre-invoice.

AI also fine-tunes content delivery via real-time CDN adjustments and forecasts revenue based on subscriber behavior and market shifts. Dynamic pricing models, driven by real-time network conditions, allow telcos to optimize plan offerings and manage load intelligently. Energy optimization agents reduce operational costs by dynamically adjusting power loads across the network. This integrated AI ecosystem handles routine tasks, freeing human talent to innovate new services, build stronger customer relationships, and drive strategic growth, delivering unparalleled customer experience.

Compound impact:

+ ARPU* + CLV* + Network uptime

+ % Energy efficiency - Customer churn

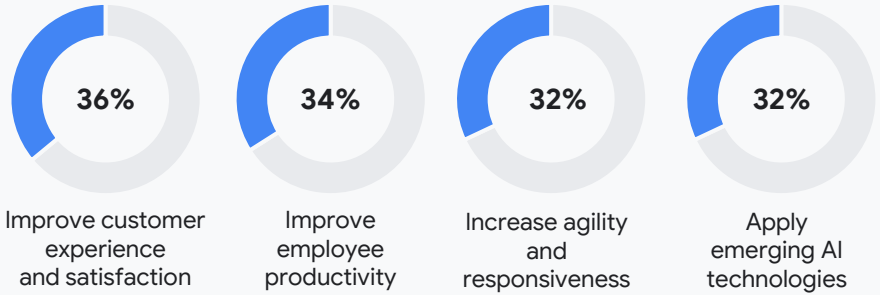
*ARPU = Average revenue per user, CLV = Customer lifetime value

AI maturity in telco rises with focus on service and speed

Operational AI gains traction as telcos rebalance IT budgets for performance and personalization.

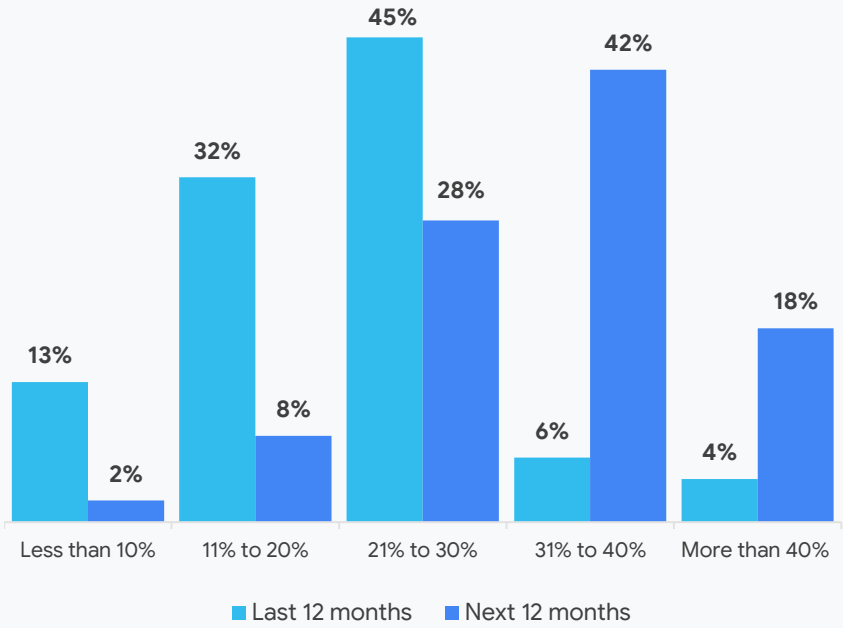
AI adoption in telecom is shifting from reactive service automation to proactive personalization. As spending surpasses the 30% threshold, telcos are embedding AI across customer, network, and employee touchpoints. This lays the groundwork for future hyper-personalization, where real-time context and intent will define competitive advantage in both consumer and enterprise segments.

Key motivators for AI projects



Key takeaway Build intelligent service layers that adapt to customer context and intent.

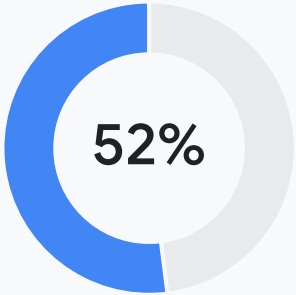
Organizational AI spending increasing as a percentage of IT budget



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google, n = Telco 50

Gen AI in telco IT operations unlocks the always-on network

Gen AI supports uptime, remediation, and usage-based financial accountability at scale.

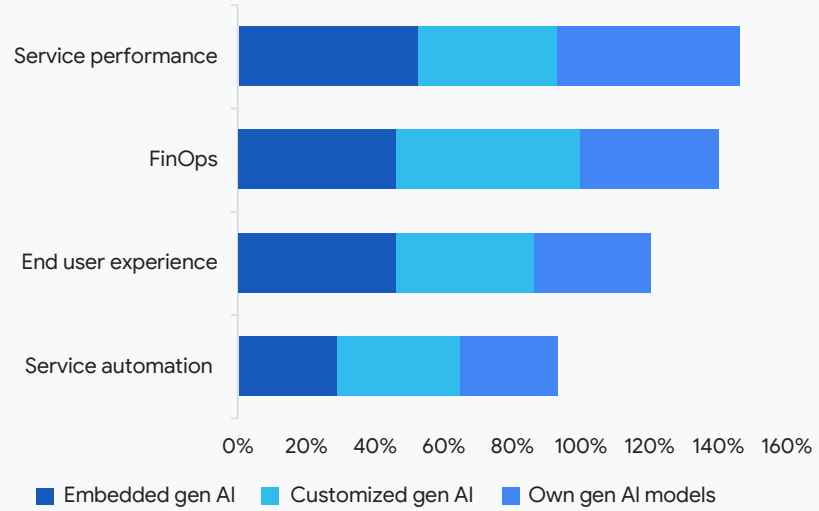


of telcos plan gen AI use case implementation for IT operations in the next 12 months.

Key takeaway

As network complexity and performance expectations rise, telcos embed gen AI into IT Ops to ensure stability, speed, and spend accountability. Key use cases are evolving toward proprietary models, enabling closed-loop remediation and continuous infrastructure tuning without manual handoffs.

What types of gen AI technology were used to launch each of the following use cases for IT operations?



Shift toward proprietary

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud n = Telco 28

Tuning the telco engine: Turning agentic investments into service-level ROI

Embedding intelligence across infrastructure, data, and CX to scale differentiated, compliant telco services.

Investment focus (12-month budget)	Current barrier	Agentic response and operational gain
40% AI models	40% Platforms and tech for AI development	**Action:** Implement model validation agents that scan for drift, bias, and regulatory misalignment in AI-powered billing and personalization algorithms. **Outcome:** Safeguards customer trust and compliance while scaling hyper-personalized offerings.
36% AI infrastructure and hardware	30% Infrastructure and systems	**Action:** Use edge-deployed agentic AI to autonomously tune cell tower load, signal strength, and spectrum allocation in response to real-time data and application demand. **Outcome:** Improves streaming quality, reduces app buffering, and ensures low-latency performance for high-value services like gaming, video conferencing, and enterprise connectivity without central orchestration.
36% Data engineering and management for AI	46% Data quality and availability	**Action:** Implement trust-layer agents that trace AI data lineage, verify dataset integrity, and redact sensitive information in line with data sovereignty mandates. **Outcome:** Enhances compliance posture and accelerates AI deployment in regulated markets.
36% AI applications	42% Specific use cases and implementations	**Action:** Embed fraud detection agents within AI-powered digital services (e.g., OTT bundling, edge compute plans, usage-based enterprise services) to flag misuse, abuse, or anomalous access in real time. **Outcome:** Protects margins by detecting promo exploitation, unauthorized reselling, or resource gaming, especially in high-growth, digitally bundled offerings.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google, n = Telco 50

Use case trajectory

Telcos are shifting to AI autonomy to scale response, retention, and reliability with reduced latency and overhead.

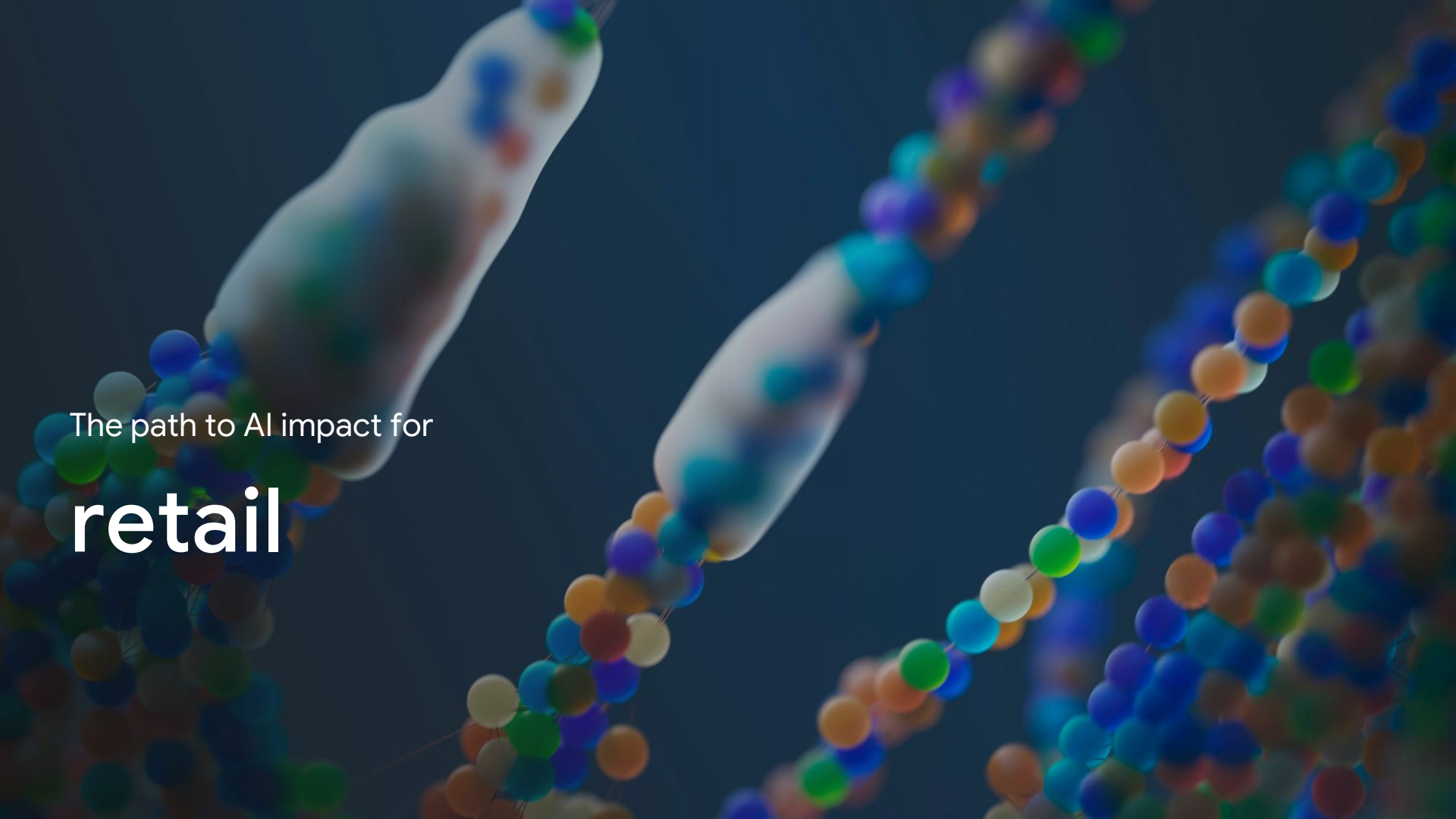
Use case	Implemented	Planned (12 months)	Autonomy opportunity (agentic AI extension)
Data management	37%	52%	Telemetry tagging agents, 5G data lineage tracking, AI-driven schema reconciliation, compliance-grade pipeline repair.
Revenue management and pricing strategy	57%	52%	Dynamic usage-based pricing, promo lifecycle optimizers, bundled upsell testers, billing leakage detection.
Customer care, experience and personalization	60%	48%	Emotion-aware routing, tiered issue resolution, journey repair agents, loyalty offer generation.
Network automation, optimization and operations	40%	40%	Self-healing infrastructure, traffic-based load balancing, predictive maintenance orchestration, SLA response agents.
Streamlined product configuration and recommendations	46%	40%	Plan configurators for data/edge, backend validation bots, contract tailoring for telco enterprise, curated bundle assemblers.
Content and media delivery optimization	37%	38%	Edge-aware CDN routing, adaptive bitrate tuning, context-based ad insertion agents, predictive caching for on-demand content.
Billing care	34%	36%	Usage-tier dispute resolution, overage detection agents, real-time bill proration bots, escalation suppressors for data plans.
Network monetization and 5G enablement	43%	36%	5G slice orchestration, SLA-aware shaping, NaaS packaging agents, dynamic spectrum allocation.
Sustainability and energy efficiency	14%	26%	Load-aware RAN scaling, green site routing agents, thermal-aware cooling bots, real-time ESG reporting for telco ops.

Why it matters:

- **Increase subscriber stickiness:** Agents automatically detect early churn signals and trigger timely retention actions (e.g., retention offers, service upgrades) improving retention.
- **Line-of-business ROI:** Autonomous triggers for usage-based plans, overage handling, or micro-promotions optimize revenue capture per customer event.
- **Scalable service quality:** Autonomous network and care agents allow telcos to maintain performance and resolution SLAs across growing user bases, without proportional headcount increases.

*SLA = Service level agreement, CDN = Content delivery network, RAN = Radio access network

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Telcos 150


The path to AI impact for
retail

Reimagining retail vision



In a future retail environment, AI-driven autonomous systems anticipate customer needs, optimize store operations, and deliver unparalleled shopping experiences. Before stores even open, AI analyzes local demographics, historical purchasing patterns, real-time weather, and even social media chatter to curate optimal product assortments and engaging visual merchandising. Throughout the day, AI-powered inventory systems prevent stockouts and minimize waste by dynamically adjusting stock levels, placing automated reorders, and even recommending optimal placement on shelves in both the store and the warehouse.

In-store, AI-powered digital assistants offer personalized recommendations and immediate assistance, while online, they guide customers through a seamless, intuitive shopping journey. Predictive analytics identify emerging trends, allowing retailers to proactively adjust their product offerings and marketing campaigns. From automated, frictionless checkout to optimized delivery routes, every aspect of the retail experience is enhanced by intelligence. At the end of the day, AI analyzes customer feedback and sales data, providing real-time insights for continuous improvement and innovation, freeing human talent to focus on strategic growth and building stronger customer relationships.

Compound impact:

+ Customer satisfaction + Sales conversion

- Operational costs + Trusted commerce

+ Demand agility

Retailers scale AI to navigate demand and disruption

AI is key to balancing margin protection with experience expectations during demand volatility.

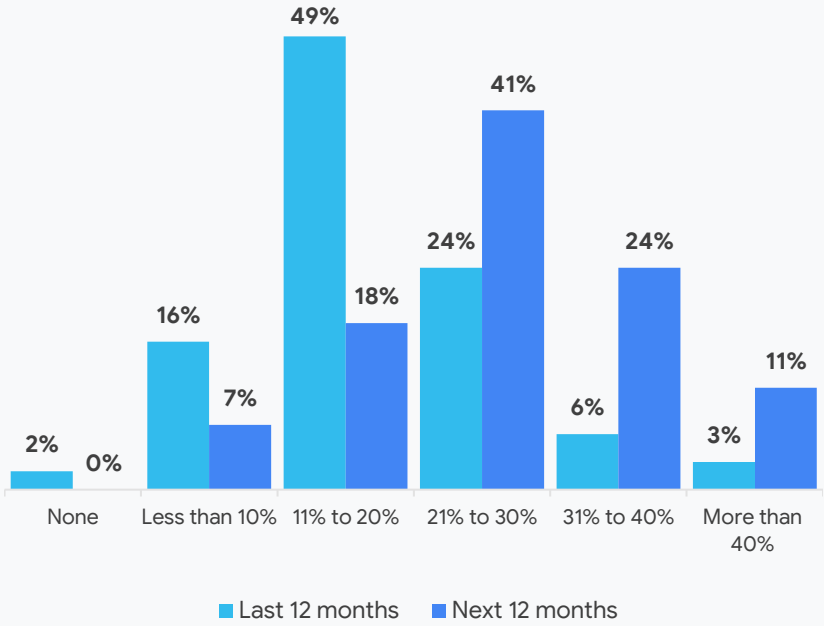
With demand signals increasingly fragmented, retailers are deploying AI to navigate trade-offs between cost and experience. AI enables real-time adjustments to promotions, staffing, and fulfillment strategies, helping protect margins while meeting evolving customer expectations. This shift demands closer integration between planning, store operations, and digital execution teams.

Key motivators for AI projects



Key takeaway Embed AI where margin meets experience across pricing, staffing, and fulfillment.

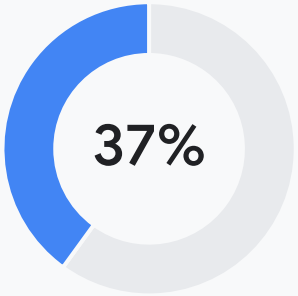
Organizational AI spending increasing as a percentage of IT budget



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google, n = Retail 250

Retailers turn to generative AI to personalize, scale, and streamline customer experience

Retailers are prioritizing gen AI in self-service and community channels to shape sentiment and stickiness.

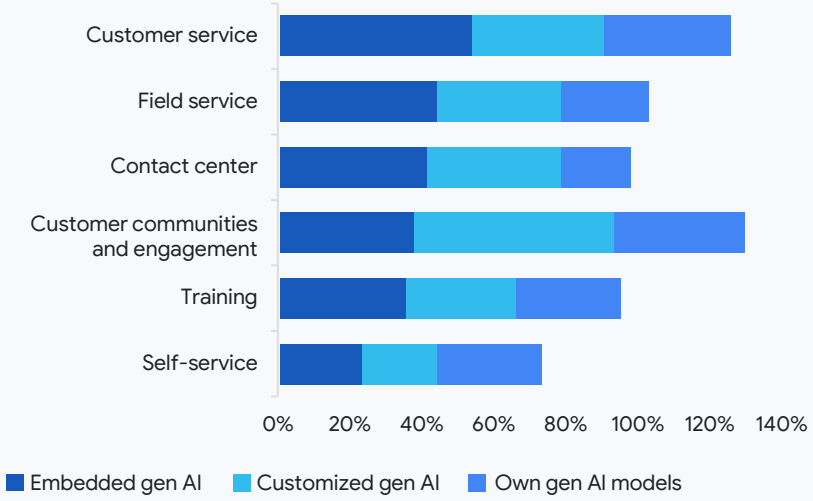


of retailers plan gen AI use case implementation for customer service in the next 12 months.

Key takeaway

Use gen AI to enable faster answers, smarter routing, and brand-aligned personalization. Prioritize proprietary models in communities and self-service to ensure scalable, brand-safe engagement and lay the groundwork for agent-led resolution and retention.

What types of gen AI technology were used to launch each of the following use cases for customer service?



Shift toward proprietary

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Retail 76

Retail's next edge: Scaling AI investment returns through agentic execution

Agents embedded across data, decisions, and execution are unlocking scalable, trusted AI in retail.

Investment focus (12-month budget)	Current barrier	Agentic response and operational gain
40% Security, privacy, and compliance	28 Policy and governance gaps	**Action:** Use consent agents to manage real-time customer preferences across in-store and digital channels, automatically updating data permissions. **Outcome:** Enhances privacy compliance and customer trust while enabling more accurate targeting.
36% AI implementation and consulting	34% People, training and skills	**Action:** Deploy AI assistants that simulate business scenarios (e.g., promo performance, labor allocation) to train managers on AI-enabled decision-making. **Outcome:** Accelerates change management and increases ROI on consulting engagements through experiential learning.
36% AI applications	44% Specific use cases and implementations	**Action:** Use agentic promotion managers that test, optimize, and auto-tune offer logic across in-store and online journeys based on behavioral signals. **Outcome:** Maximizes promo ROI while reducing manual effort in campaign setup, enabling teams to experiment with more AI-driven promotions and scale AI use across seasonal, regional, and product-specific campaigns.
36% Data engineering and management for AI	49% Data quality and availability	**Action:** Use autonomous data stewards to detect inconsistencies in product, location, or customer datasets and trigger remediation or enrichment workflows. **Outcome:** Improves accuracy of AI-driven inventory, pricing, and personalization models.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Retail 250

Use case trajectory

Retail autonomy is scaling personalized offers, in-store agility, and operational precision without adding complexity.

Use case	Implemented	Planned (12 months)	Autonomy opportunity (agentic AI extension)
Pricing and merchandising strategy	43%	47%	Autonomous markdown agents, demand-aware pricing bots, promo test optimizers, real-time price elasticity adjusters.
Omnichannel customer interaction and engagement	36%	46%	Channel orchestration agents, sentiment-driven support bots, context-aware offer triggers, journey stitching engines.
Retail space optimization	52%	46%	Planogram compliance agents, dynamic shelf allocators, footfall heatmap trackers, queue flow optimizers, in-store campaign activators.
Fulfillment and supply chain automation	44%	43%	Real-time reorder agents, last-mile routing bots, adaptive pick-pack workflows, returns flow optimizer, dock-to-shelf orchestration bots.
Content and media management	34%	35%	Localized content curators, product tagging bots, campaign variation testers, brand voice alignment agents.
Risk and security management	44%	35%	Loss prevention bots, fraud detection agents, incident triage responders, compliance validation agents.
Product discovery and innovation	23%	34%	Search-to-shelf optimizers, autonomous A/B testers, trend mining agents, prototype demand forecasters.
Associate and workforce enablement	44%	24%	Task allocation bots, labor coverage planners, contextual training triggers, shift optimization agents.
Customer loyalty and retention strategies	17%	22%	Churn signal detectors, loyalty offer engines, milestone reward bots, lifecycle engagement agents, satisfaction signal monitors.

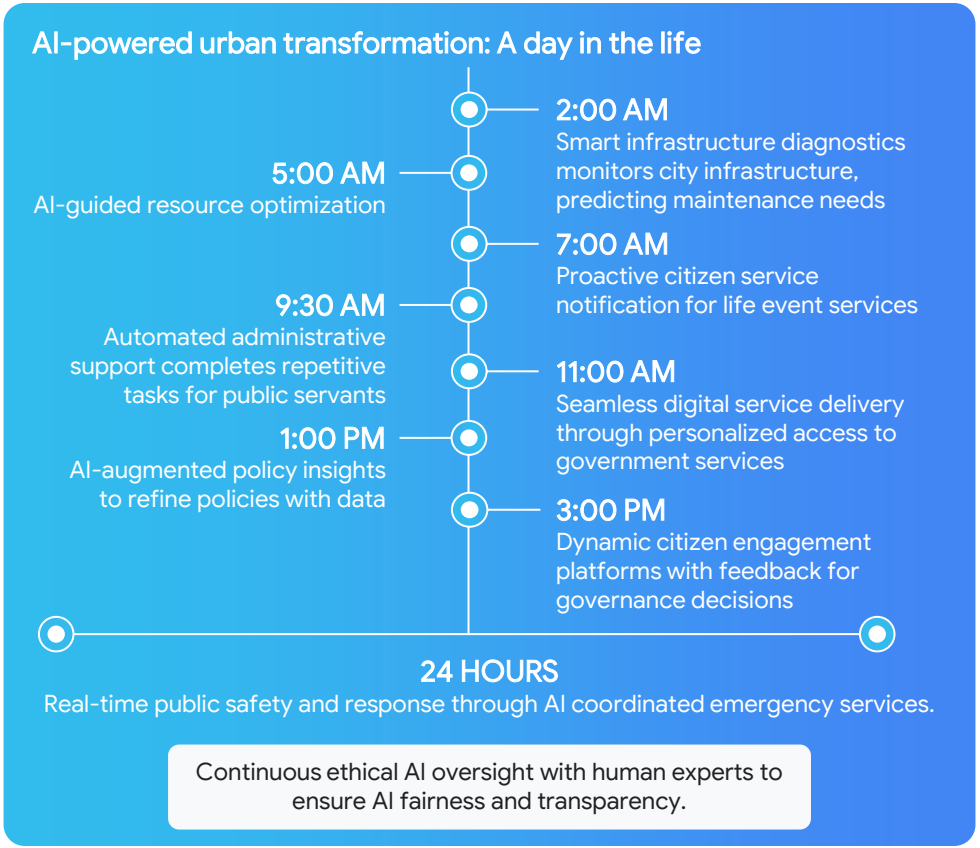
Why it matters:

- **Conversion-focused design:** Store layout and product visibility can now adapt daily through agentic analysis of footfall, queue friction, and shelf engagement, turning traffic into transactions.
- **Line-of-business ROI:** Autonomy reduces margin leakage by optimizing markdowns, returns, and bundling decisions, improving sell-through rates without over-discounting.
- **Demand signal agility:** Autonomous pricing, replenishment, and merchandising agents respond to real-time demand shifts, maximizing inventory value.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Retail 250


The path to AI impact for
public sector

The future public sector vision



The public sector of tomorrow is proactive, predictive, and people-centric. Instead of navigating bureaucracy, citizens are supported by intelligent digital assistants that anticipate life needs, including automatic birth registrations to tailored health alerts, delivered seamlessly with full consent and privacy safeguards. Policy making becomes adaptive and evidence-based, powered by real-time insights from anonymized data across public health, urban planning, and climate systems.

Smart city infrastructure and AI-driven operations ensure public services are resilient and efficient, with predictive maintenance, optimized transport, and rapid emergency response. Behind the scenes, civil servants experience major efficiency and productivity gains, as AI automates repetitive tasks, streamlines workflows, and reduces administrative burdens.

Public engagement is redefined through AI-enabled platforms that make participation intuitive and inclusive, ensuring citizen voices shape outcomes. Meanwhile, the workforce evolves into a cadre of strategic thinkers and ethical stewards, with automation taking over repetitive tasks. This is not a future of distant promises, it's a transformation already underway, where government becomes not just a service provider, but a trusted, responsive partner in every citizen's life journey.

Compound impact:

+ Citizen satisfaction + Policy effectiveness

+ Accessibility - Operational costs

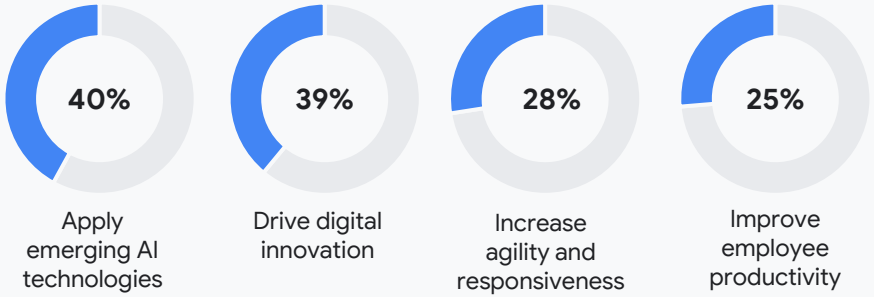
- Bureaucracy ± Digital equity

Governments scale AI to boost access and resilience

AI supports workflow modernization, risk management, and expanded public service delivery capacity.

As service expectations rise, public institutions are scaling AI to modernize complex, judgment-heavy processes. AI is enabling faster decision-making across benefits, licensing, and regulatory functions, while helping manage operational risk. Success depends on aligning AI systems with policy mandates and workforce capabilities to sustain equitable, resilient delivery models.

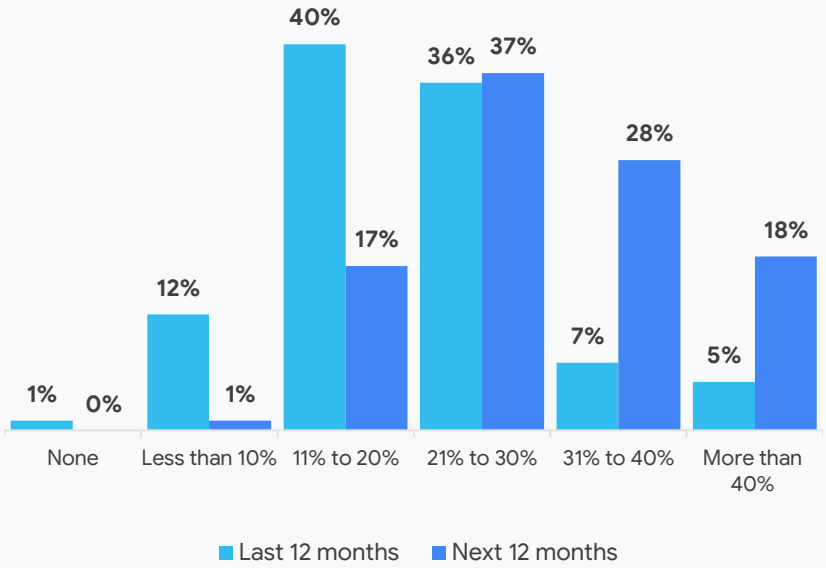
Key motivators for AI projects



Key takeaway

Align AI to areas that demand equitable delivery and support resilience.

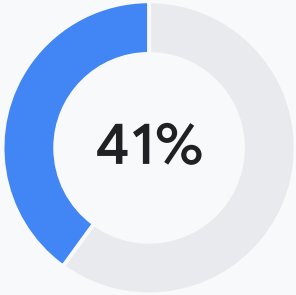
Organizational AI spending increasing as a percentage of IT budget



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Public Sector 150

Public sector embeds generative AI to strengthen digital infrastructure and service equity

Agencies prioritize gen AI in IT ops to support resilience, faster responses, and inclusive citizen services.

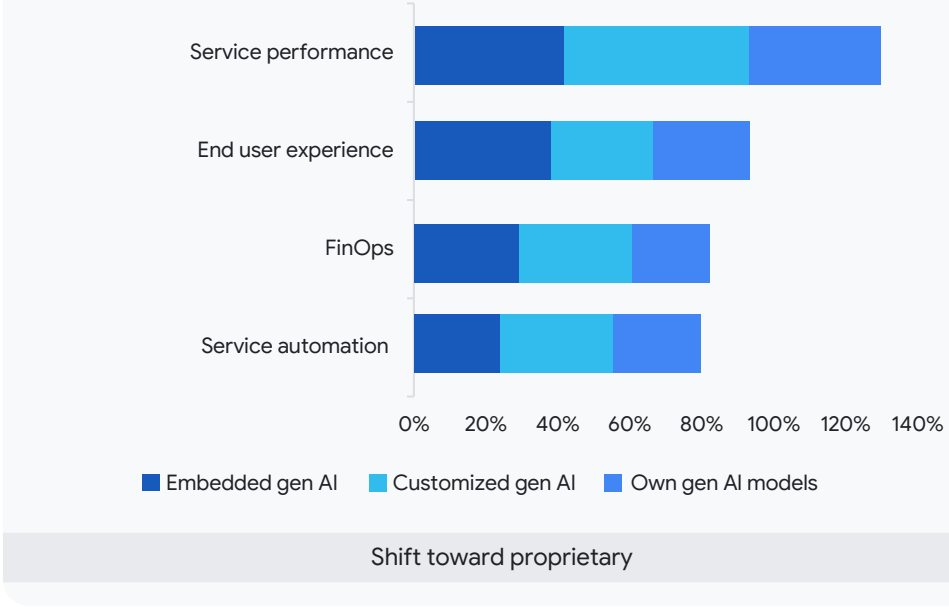


of the public sector plan gen AI use case implementation for IT operations in the next 12 months.

Key takeaway

Automate infrastructure management with gen AI to ensure uptime, streamline workflows, and scale citizen services responsibly. Prioritize proprietary models to build secure, closed-loop systems that support equitable, adaptive delivery.

What types of gen AI technology were used to launch each of the following use cases for IT operations?



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Public Sector 48

From pilots to policy: Making AI work for citizens through agentic execution

Governments embed agents across policy, platforms, and services to deliver trusted, citizen-first outcomes.

Investment focus (12-month budget)	Current barrier	Agentic response and operational gain
41% AI implementation and consulting	29% People, training and skills	**Action:** Deploy role-specific AI workflow assistants that guide civil servants through their daily workflows, adapting recommendations and actions based on user context, task history, and evolving policies. **Outcome:** Reduces onboarding time and builds AI fluency at the point of need, improving long-term adoption and confidence in public-facing AI tools.
38% Security, privacy, and compliance	36% Policy and governance gaps	**Action:** Use autonomous oversight agents to monitor AI decisions for fairness, explainability, and alignment with public interest mandates. **Outcome:** Increases transparency and ensures responsible AI deployment in citizen-facing systems.
35% Data engineering and management for AI	54% Data quality and availability	**Action:** Use context-aware enrichment agents to fill data gaps with anonymized environmental, economic, or behavioral data from trusted sources. **Outcome:** Improves the relevance and equity of AI-driven public service interventions.
35% AI models	49% Strategy alignment with goals	**Action:** Deploy ethical AI validation agents to detect bias or unintended impact in models used for eligibility, prioritization, or resource distribution. **Outcome:** Ensures equity in service access and maintains public confidence.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Public Sector 150

Use case trajectory

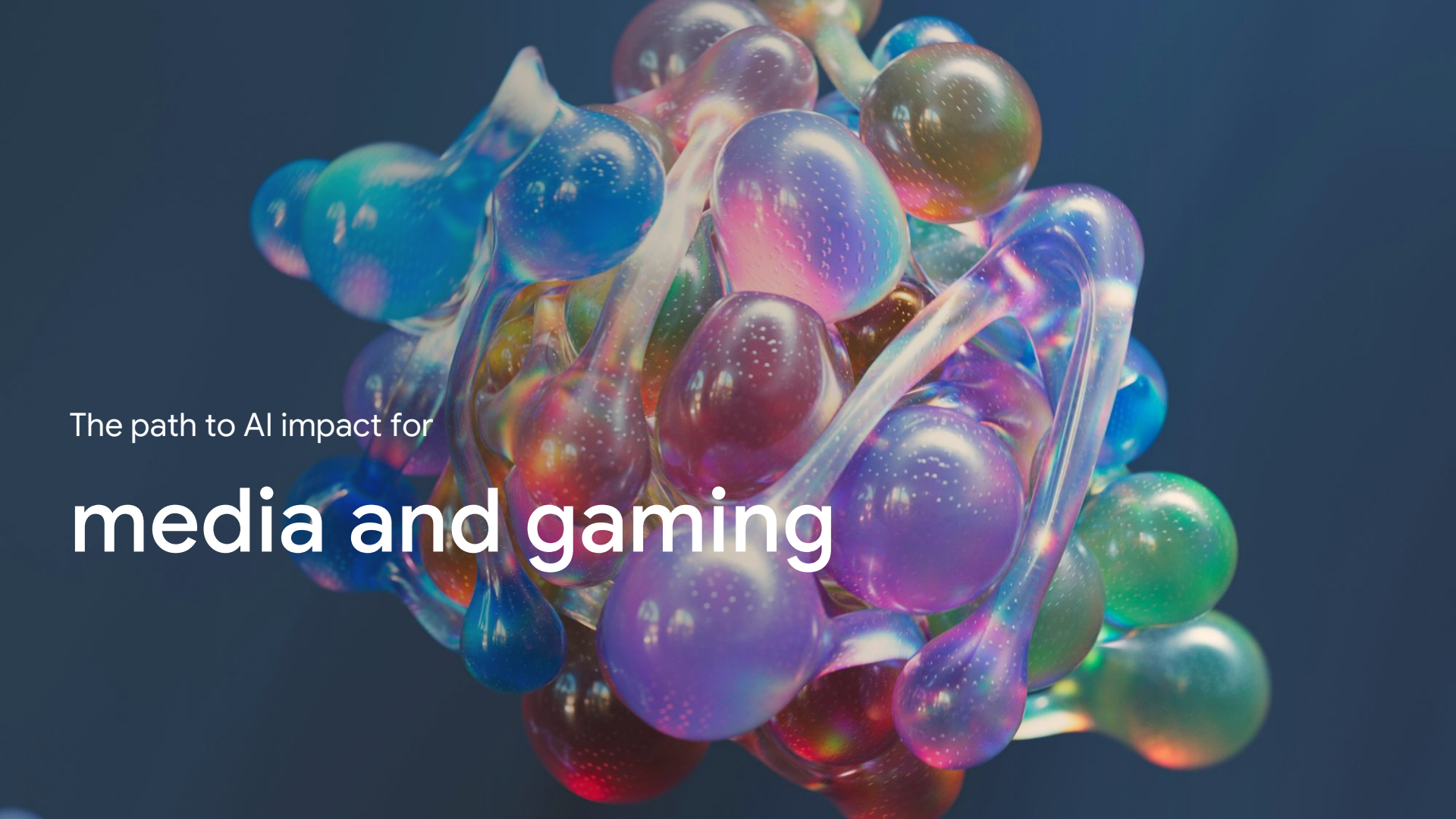
Autonomous systems help governments scale service delivery, policy responsiveness, and civil servant productivity.

Use case	Implemented	Planned (12 months)	Autonomy opportunity (agentic AI extension)
Economic policy and financial governance	46%	54%	Program budget scenario agents, budget variance trackers, grant disbursement bots, tax anomaly flaggers, funding eligibility bots, performance-to-spend agents.
Intelligent visa processing	27%	48%	Eligibility screening bots, biometric pre-check assistants, adaptive document checklists, risk tiering agents, document authenticity agents.
Public safety and security	41%	47%	Threat pattern recognition agents, patrol route optimizers, triage support agents, Real-time incident prioritization agents.
Global trade and economic security	40%	47%	Trade compliance checkers, cross-border risk monitors, autonomous import/export auditors, tariff scenario testers.
Human rights and anti-trafficking	31%	35%	Case tracking and pattern recognition, multilingual incident intake agents, victim risk signal detection, inter-agency data reconciliation.
Health and social protection	42%	34%	Care coordination trackers, chronic case escalation automation, risk-tier assignment, eligibility change monitors, participation gap trackers.
Digital governance and transparency	29%	31%	Policy change tracking, public feedback detection, digital service issue automation, misinformation monitoring.
Public services and benefits administration	42%	28%	Claim escalation agents, multi-channel intake integrators, eligibility pre-check agents, workflow continuity agents.
Evidence and data management	13%	23%	Document traceability agents, cross-agency record linking, data classification and access harmonization.

Why it matters:

- **Faster public service access:** Autonomous intake and triage agents reduce wait times and streamline eligibility checks, improving citizen satisfaction and time-to-benefit.
- **Line-of-business ROI:** Autonomy boosts productivity by automating repetitive coordination, eligibility, and compliance tasks, allowing civil servants to focus on outcomes, not admin.
- **Policy agility at scale:** Agents track policy versions, budget variances, and program impact in near real-time, enabling faster, evidence-backed adjustments to meet evolving needs.

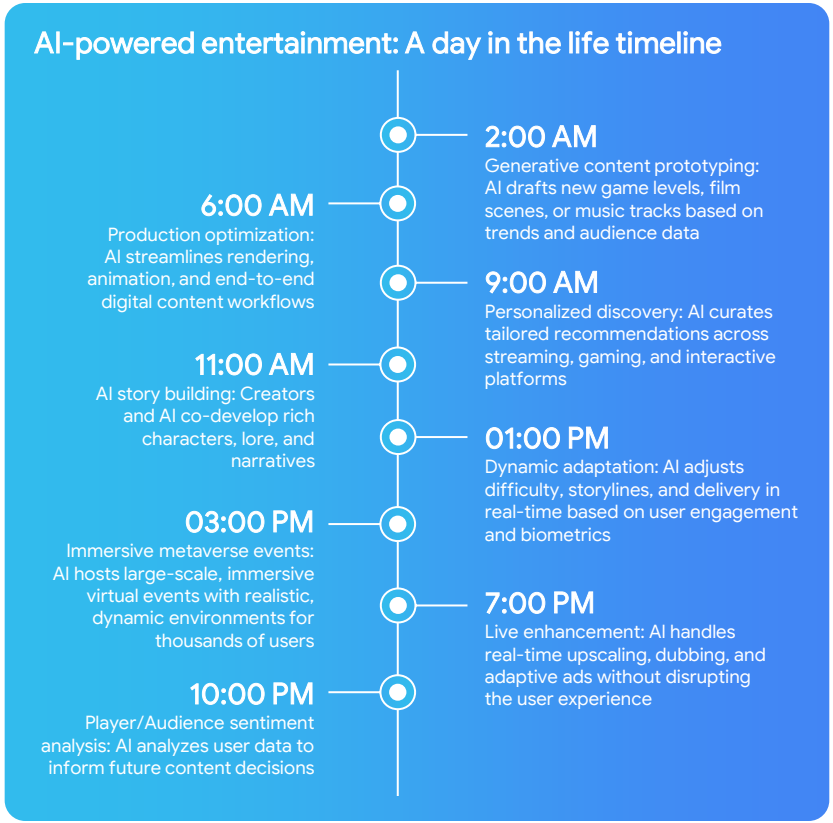
Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Public Sector 250



The path to AI impact for

media and gaming

The immersive entertainment vision



In the entertainment landscape of tomorrow, the lines between gaming and media blur, creating deeply immersive, intelligent, and hyper-personalized experiences powered by AI. No longer just a tool, AI becomes a co-creator, generating expansive game worlds, composing adaptive soundtracks, and scripting interactive films where human actors are augmented by AI for dynamic, branching storytelling. Content creation accelerates, democratizing access and enabling a constant stream of high-quality, diverse stories.

For consumers, experiences become fluid and responsive. AI curates and shapes content in real time, tailoring narratives, gameplay, and interactions based on preferences, choices, or even biometric cues. Passive viewing and active participation merge across persistent digital environments.

Behind the scenes, AI optimizes monetization, from personalized subscriptions to seamless in-world advertising. Real-time analytics drive rapid iteration, while AI safeguards communities by flagging abuse and maintaining fair play. The result is an ecosystem where creativity scales, engagement deepens, and entertainment evolves into something lived, not just consumed.

Compound impact:

+ User engagement + Creative output + Revenue streams

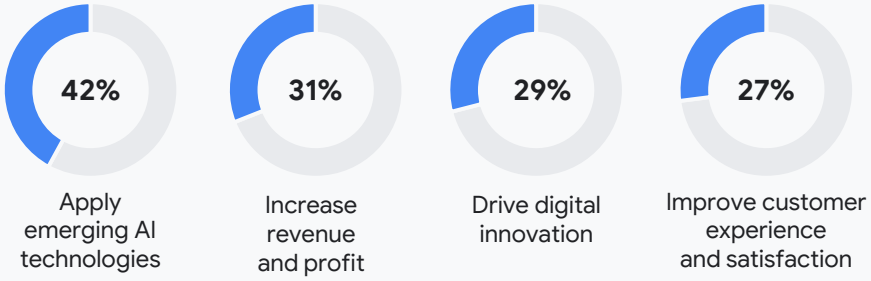
- Production time - Content saturation - Discovery friction

Media and gaming accelerate AI amid monetization and experience pressure

AI enables faster feedback loops between audience behavior, content delivery, and monetization models.

AI is becoming essential to managing the trade-offs between engagement and revenue in digital content ecosystems. By analyzing audience behavior in real time, firms can dynamically adjust ad exposure, gameplay balance, and content sequencing, shifting from static monetization models to responsive, feedback-driven strategies.

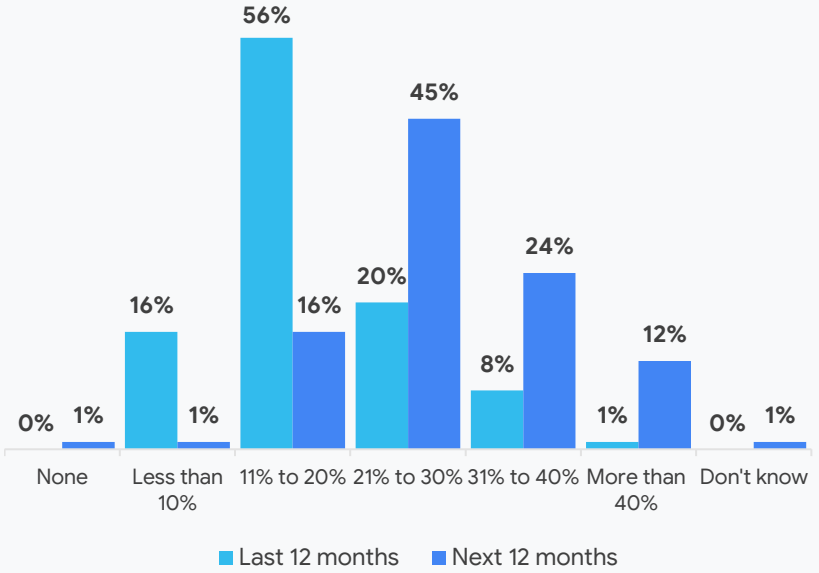
Key motivators for AI projects



Key takeaway

Let real-time feedback shape content, gameplay, and in-experience value delivery.

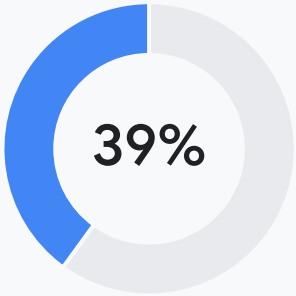
Organizational AI spending increasing as a percentage of IT budget



Source: IDC's *Asia Pacific Generative AI Adoption Study 2025*, commissioned by Google Cloud, n = Media & Gaming 100

Media and gaming push gen AI deeper into R&D to fuel adaptive, immersive experiences

Agencies are reshaping co-creation, iteration, and delivery through proprietary gen AI workflows.

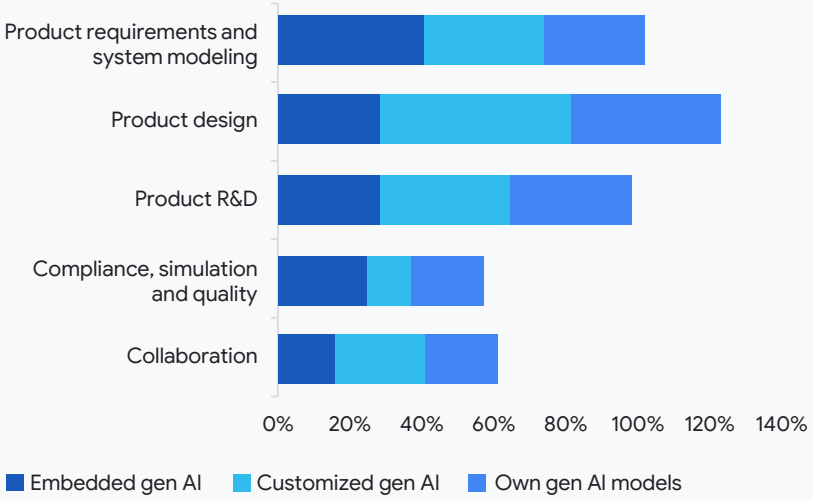


of media and gaming plan gen AI use case implementation for R&D/engineering in the next 12 months.

Key takeaway

Integrate gen AI into product design and co-creation to shorten dev cycles and align with user signals. Adopt proprietary models to secure IP, automate quality tuning, and support agentic systems that adjust narratives, assets, and difficulty on demand.

GenAI is reshaping how studios and developers approach storylines, workflows, and creative experimentation.



Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Media & Gaming 32

Activating immersive AI: Sustainable engagement and revenue with agentic systems

Scale AI across creative, operational, and monetization layers without sacrificing user experience or control.

Investment focus (12-month budget)	Current barrier	Agentic response and operational gain
39% AI platforms	33% Infrastructure, technology and systems	**Action:** Use infrastructure-aware deployment agents to optimize model placement (e.g., edge vs. cloud vs. device) based on latency needs, content type, and audience/player density. **Outcome:** Improves responsiveness of interactive features and reduces cost-to-serve in high-demand environments.
38% AI implementation and consulting	29% People, training and skills	**Action:** Implement agentic feedback loops that track how teams use AI across media and game pipelines, flag adoption drop-offs, and adapt support based on workflow friction or underused features. **Outcome:** Increases productivity and reduces creative bottlenecks without sidelining human vision.
38% AI applications	41% Specific use cases and implementations	**Action:** Launch agentic workflow assistants that support creative talent (writers, designers, producers) with context-aware suggestions, asset surfacing, and production planning. **Outcome:** Increases productivity and reduces creative bottlenecks without sidelining human vision.
37% Security, privacy, and compliance	36% Policy and governance gaps	**Action:** Implement identity-respecting personalization agents that tailor content discovery while protecting user anonymity and complying with regional data laws. **Outcome:** Boosts engagement and satisfaction without compromising data governance.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Media & Gaming 100

Use case trajectory

From asset generation to audience monetization, autonomy is transforming creative pipelines.

Use case	Implemented	Planned (12 month)	Autonomy opportunity (agentic AI extension)
Game asset creation with limited coding skills (G)	27%	60%	Auto-rigging and skinning, texture-quality validation, UI/UX layout balance automation, automatic asset library recommendations.
Content creation and production (M)	48%	53%	Metadata tagging assistants, pre-editing frame-level shot selection automation, style consistency matching automation, scene pacing bots.
Cross-platform strategy and integration (M)	27%	47%	Format auto-conversion bots, cross-platform workflow automation, distribution timing optimizers, syndication strategy agents, localization orchestration bots.
Audience engagement and monetization (M)	46%	47%	Real-time ad performance tuning, contextual ad insertions, interest-based content curation, engagement dropout detection.
Content distribution and personalization (M)	34%	47%	Content release optimizers, behavior-based recommendations, metadata tagging bots, contextual ad placement.
Art and Animation enhancement (G)	33%	47%	Generative motion animation blending, adaptive background composition, asset metadata harvesting, lip-sync and facial animation.
Narrative and in-game element creation (G)	47%	47%	Dynamic narrative generation, procedural world building, quest and mission design, interactive NPC dialogue systems.
Procedural generation for player environments (G)	60%	47%	Dynamic terrain generation, environment optimization, procedural city building, ecosystem simulation, interactive environment design.

Why it matters:

- **Hyper-personalized content delivery:** Autonomous systems adapt narratives, quests, or recommendations in real time—creating gameplay and streaming experiences that evolve with each user's behavior and taste.
- **Line-of-business ROI:** Adaptive advertising, engagement prediction, and dynamic monetization engines let platforms serve higher-value content and offers without compromising user experience.
- **Creative velocity at scale:** By automating repetitive animation, layout, and asset prep tasks, AI frees creators to focus on ideation and polish.

Source: IDC's *Asia Pacific Generative AI Adoption Study 20225*, commissioned by Google Cloud, n = Media (M) 70, n = Gaming (G) 30

IDC research team



Dr. Chris Marshall,
Vice President
Data, Analytics, AI
and Industry Research

Chris leads IDC's Asia Pacific regional industry research teams, which includes coverage of healthcare, government, retail, energy, manufacturing and financial services. Additionally, Chris leads IDC's regional teams in data, analytics, artificial intelligence, future of work, and sustainability.



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Wai Yee is responsible for Asia Pacific manufacturing and supply chain trends and best practices. Her primary research focuses on technology adoption in addressing industry challenges for the entire manufacturing value chain. She has a particular interest in semiconductor and electronics manufacturing.



Stephanie Krishnan,
Associate Vice President
IDC Manufacturing
and Energy Insights

Stephanie Krishnan is responsible for producing, developing, and growing the IDC Manufacturing and Energy Insights programs in Asia Pacific. Within Manufacturing Insights, Stephanie conducts supply chain and Industry 4.0 research that supports clients with global sourcing (profitable proximity and sustainable outcomes), transportation, logistics, warehousing, and more.

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