How much productivity can GenAI unlock in India?

The *AI*dea of India: 2025

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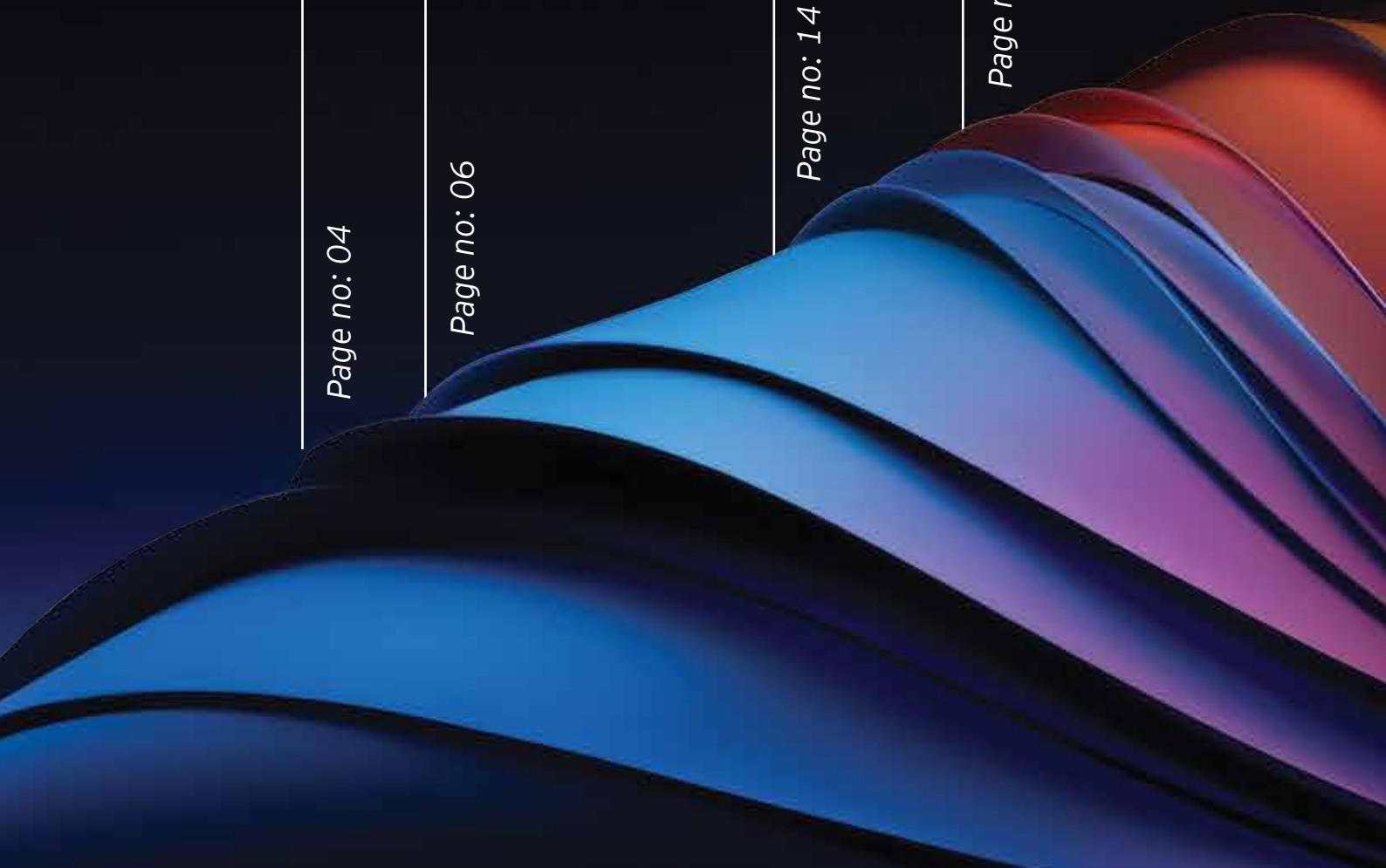
Contents



Foreword

Over the past few years, innovation in Generative AI (GenAI) has progressed at an extraordinary pace, reaffirming its transformative potential across a number of domains. The possibilities are vast and hold the promise of profound changes on the horizon for millions of Indian citizens.

Technical breakthroughs have been jaw dropping. We have quickly moved from auto-complete chatbots to reasoning machines capable of spinning out credible, human like 'Chains of Thought' (CoT) to find solutions to complex problems. Today, multi-modal large language models (LLMs) can enable seamless processing of text, audio, image, and video. Emerging trends like Agentic AI are enabling autonomous entities capable of taking actions. The evolution of new hardware platforms and new AI accelerators has ensured the computational power to support increasingly sophisticated models, having even a trillion parameters and groundbreaking efficiency.

Along the way, the cost of intelligence has fallen, driven by the open-source movement and the trend to use purpose specific small language models (SLMs). This is making AI accessible to smaller businesses and very soon it may become possible to use open-source models for as low as a few thousand rupees a month in India.

Yet, amidst all this innovation, enterprise adoption rates of GenAI remain very low. Our survey shows that 36% of Indian enterprises have allocated budgets and begun investing in GenAI, while another 24% are testing its potential. Technology sector clients are leading the way, with Life Sciences and Financial Services following suit. Despite this, the business value remains limited, with just 15% having GenAI workloads in production and only 8% able to fully measure and allocate AI costs.

This is not surprising – it takes time for innovation to be packaged and made ready for enterprise adoption. Enterprises need clarity on ROI and guarantees around issues like hallucination, data privacy and algorithmic bias as they craft their digital transformation roadmaps. Over the next few years, we expect an explosion of enterprise adoption as these issues are addressed and AI and GenAI models make their way into the enterprise mainstream.

Just as during the earlier era of mobile disruption, fintech and healthtech enterprise adoption will lead to the birth

of AI-first companies with new business models and revamped economics. These firms will compete with digital interfaces powered by chat, voice and regional language models. Algorithms and new datasets will help drive population-scale operations. AI-driven apps will transform knowledge work.

The coming wave of change has significant implications for India. In industries like financial services, healthcare and retail, we expect AI to reshape basic processes including customer acquisition, operations and service. Industries including IT/ITeS and BPO will undergo more dramatic changes. Next-generation industries like biotech, advanced manufacturing and renewables will have the potential to leapfrog to AI-first business models.

Our analysis reveals that, at a macro level, the AI platform shift will impact 38 million employees, potentially driving a 2.61% boost in productivity by 2030 in the organized sector. Enterprises will need to reorient themselves rapidly to deal with this coming impending tides of change.

There will also be significant pressure on India's policy agenda. On one hand, there is the imperative to realize India's potential as the use case and data capital of the world. The focus will need to be on enhancing data accessibility and compute infrastructure, fostering AI research and innovation through initiatives like localized LLMs, and addressing challenges in responsible governance, intellectual property rights, and data protection. On the other hand, we need to address the coming potential job dislocation in the workforce by implementing aggressive skilling programs and apprentice schemes.

This report is an in-depth exploration of GenAI's current state in Indian enterprises, key trends shaping its future, and implications for Indian enterprises and policymakers.

I hope you find this report valuable - happy reading!

Rajiv Memani
Chairman and CEO,
EY India

Executive summary

The entire earth will be converted into a huge brain, as it were, capable of response in every one of its parts." This was Nikola Tesla, in 1904, predicting the impact of the radio on the world.

Every generation believes it stands on the brink of transformation, fueled by the technologies of its time. Today, as we contemplate the AI era, it feels like one of those pivotal moments. On one hand, there is exponential innovation – AI's promise is vast, with the potential to revolutionize industries, redefine work, and unlock unprecedented creativity and productivity. Breakthroughs in GenAI have been astounding, and the possibilities appear limitless.

Yet, there is the critical challenge of making this transformation relevant and accessible to consumers and enterprises. For AI to truly deliver on its promise, cutting-edge innovation needs to be paired with practical applications that solve real-world problems, empower users, and bridge gaps in digital access and infrastructure.

Innovation in GenAI continues at a scorching pace

Innovation in GenAI surged in 2024, marking a transformative year for the technology.

There was rapid progress in Multimodal AI, integrating text, images, audio and video into unified models that significantly enhance real-world usability. This was particularly evident in the incorporation of these models into AI-powered phones and emerging form factors like smart glasses, enabling seamless and intuitive interactions across diverse applications.

The open-source movement gathered steam. Leading open-source large language models (LLMs) such as Meta's Llama 3 and Mistral Large set new benchmarks for performance while addressing critical concerns about data privacy and security. Simultaneously, there was a growing realization that smaller, domain-specific models could often outperform their larger counterparts in targeted tasks.

Year 2024 also saw breakthroughs in reasoning. Models such as OpenAI's GPT-4o3[1], and Google's AlphaProof[2]

1. https://openai.com/index/deliberative-alignment/
2. https://www.ebi.ac.uk/training/online/courses/alphafold/inputs-and-outputs/a-high-level-overview

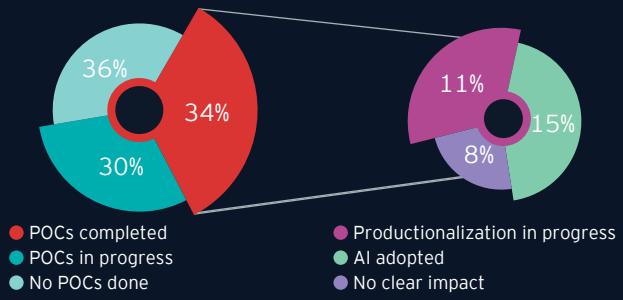
GenAI in India: The current state of play

EY India's C-suite GenAI survey

We conducted an in-depth GenAI survey covering more than 125 C-suite executives across India. They represent diverse sectors, including Financial Services, Retail, Life sciences, Media and Entertainment, Technology, Automotive, Industrials and Energy.

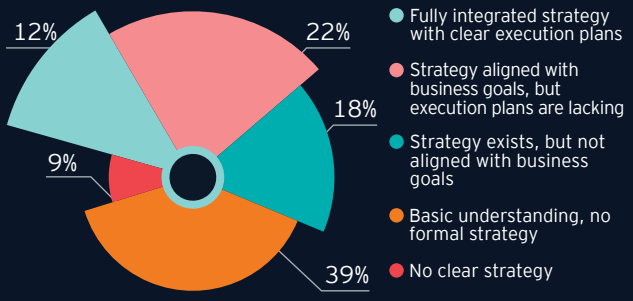
GenAI journey

Integration with existing software means enterprises' exposure to GenAI is high. However, only a few have the technology in production.



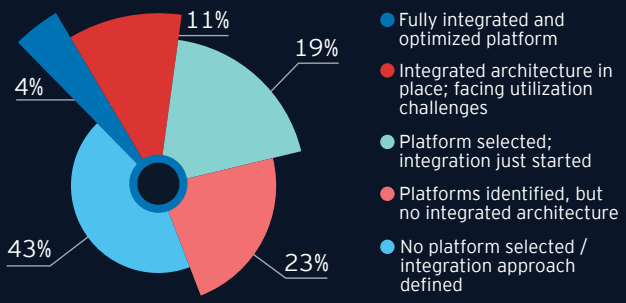
GenAI strategy: Direction and alignment

More than half of the enterprises have a GenAI strategy but only some have a fully integrated strategy with clear execution plans



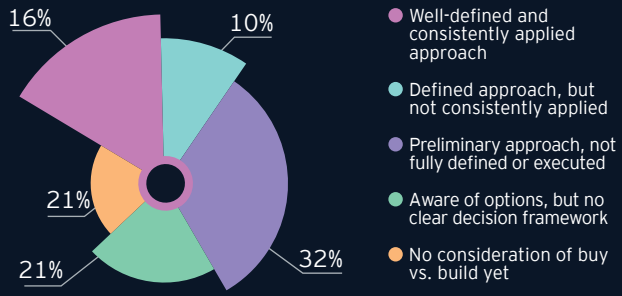
Architecture: GenAI platform and integration approach

Architecture integration is limited and enterprises are looking at ways to increase application



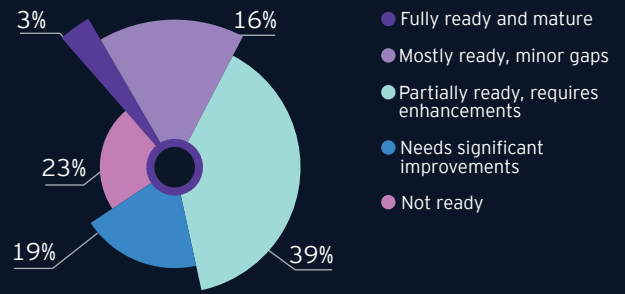
Implementation: Buy versus build approach

Approximately one in four have defined approach but application is uneven



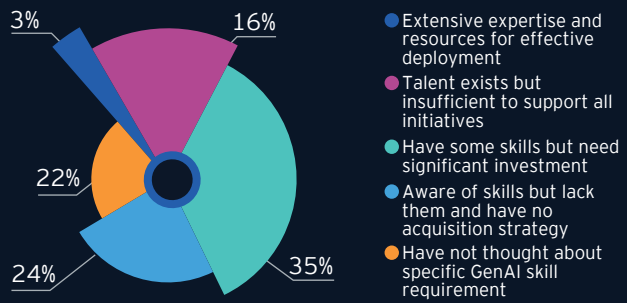
Data: Platform readiness for GenAI adoption

Enterprises in India are at different stages of data readiness, with only a few at a mature level



Talent: Resource availability for GenAI adoption

AI expertise is a key need for most enterprises as they undergo GenAI transformation



achieved remarkable progress in solving complex problems across disciplines like science, mathematics and programming, consistently surpassing previous benchmarks. These advanced capabilities started to get packaged into agentic AI systems which aim to independently plan, reason, and execute tasks by dynamically leveraging tools and resources. Though still in its infancy, this agent-driven paradigm promises to fundamentally reshape our understanding of work and the way we design software systems.

Hardware innovations continued to underpin these advancements in GenAI. NVIDIA maintained its leadership with the Blackwell platform, enabling trillion-parameter models while competitors drove significant breakthroughs in AI accelerators.

Moving from demos and labs to enterprise grade capabilities

Yet, despite these breakthroughs there is also increasing doubt about the pace and magnitude of the impact of GenAI. Goldman Sachs, for instance, has highlighted the imbalance between the massive investments being funneled into AI and the uncertain returns. In a June 2024 report titled "Gen AI: Too Much Spend, Too Little Benefit?", the firm projected that tech giants and other companies are set to invest nearly US$1 trillion in AI-related expenditures over the coming years, spanning data centers, specialized hardware, and infrastructure upgrades. Despite these staggering sums, the tangible benefits remain elusive.

Our survey of Indian enterprises suggests that 36% of enterprises have budgeted and started investing in GenAI while another 24% are experimenting with it. Technology sector clients have been leading the way with Life Sciences and Financial Services following suit. At the same time business value delivered is relatively low with only 15% of Indian enterprises report having GenAI workloads in production, and just 8% being able to fully measure and allocate AI costs.

This is not surprising. Packaging innovation into products and services that enterprises can use is a time-consuming process. Enterprises need clarity on ROI and guarantees around issues like hallucination, data privacy and algorithmic bias as they craft their digital transformation roadmaps. Rapid advancements to date have already made AI

GenAI in India: Shaping tomorrow

India will chart a unique path as this technology evolves. We see five key trends that will significantly influence India's AI evolution.

01 Chat, voice, regional languages augment digital interfaces

02 Agents enable the transformation of knowledge work

03 LLMs are not all you need: Toward compound AI systems

04 The falling cost of AI

05 The evolution of an Indic AI ecosystem

'good enough' for scaling across many use cases. Our survey of Indian enterprises suggests that customer service, operations and sales & marketing functions are already leading the way in adoption. Over the next few years, as these teething issues are addressed, AI and GenAI models make their way into the enterprise mainstream across all functions and departments.

AI augmented interfaces will transform consumer apps

AI-powered chat, voice and regional language tools are already making an impact and this trend will accelerate as digital models diffuse across the Indian consumer, enterprise and government landscape. GenAI native interfaces will also serve as front doors to onboard less digitally savvy users into the digital economy. Solutions like NPCI's Hello! UPI and IRCTC's AskDisha chatbot demonstrate this shift, enhancing inclusivity for underserved populations in semi-urban and rural areas.

Agents will transform knowledge work

The rapid integration of AI Agents into sectors like information technology, finance, customer service and healthcare will reshape traditional ways of working, presenting both opportunities and challenges for Indian professionals. Our analysis (more on this in 'Transforming work with GenAI') indicates potentially large productivity improvements that will begin to manifest themselves and companies will begin to gear up to help employees manage the coming transition to new ways of working.

Enterprises will start to move to an AI-embedded tech stack

Enterprises will learn to treat LLMs as but one part of an evolving AI enabled tech stack. AI adoption will accelerate as enterprises integrate LLM capabilities with classical AI techniques, new modes of automation and the emerging modern data stack.

AI costs will continue to fall

The cost of using AI models has already plummeted, making them increasingly accessible to enterprises. OpenAI's GPT API costs, for example, have dropped nearly 80% in two years, while open-source releases like Meta's Llama are unlocking new capabilities. This cost is expected to fall to around INR120 per hour* or lower as India specific LLMs offerings become viable. (*Assuming that the cost is US$4 per million tokens and the application uses 100 tokens per second continuously, the enterprise would spend US$1.44 per hour.)

A rich Indic AI ecosystem will evolve to cater to unique Indian needs

There has already been a mushrooming of Indic LLMs that leverage open-source models fine-tuned with Indian language datasets. A key initiative in this space is Bhashini, a government-led AI project aimed at creating an open-source Indic language dataset to expand internet and digital service accessibility in Indian languages. Going forward, AI will increasingly become part of the India stack and available as digital public infrastructure to build next generation platforms.

A burgeoning GenAI start-up ecosystem and local AI infrastructure will help drive adoption in Indian enterprises.

Pivoting to AI-first digital transformation

Similar to the transformative impact of the digital revolution, the accelerating shift toward AI-driven platforms is poised to reshape every factor influencing a company's EBITDA. Across Indian enterprises, AI-first approaches are steadily taking root, embedding themselves throughout the value chain to enhance operational efficiency and unlock new avenues of value creation.

At a foundational level, AI automates workflows, detects patterns, and delivers real-time predictions, creating a closed-loop system for continuous learning. This will help companies optimize value chains, enhance revenue streams through improved channels and pricing, and transform delivery with new interfaces.

The agenda for enterprises

Reimagine the business and operating model

Rethink the tech stack

Move to AI-ready data

Getting your people ready for AI

Confronting the changing frontier of risk

A new AI-powered tech stack is emerging, combining foundational models with specialized tools. Enterprises are increasingly adopting SLMs for domain-specific tasks due to their cost efficiency, precision, and ability to run on edge devices. Enterprise software providers such as SAP, Salesforce and Oracle are embedding AI into their platforms, accelerating adoption with ready-to-deploy AI tools. Meanwhile, traditional Robotic Process Automation (RPA) is evolving into intelligent automation by integrating GenAI, enabling systems to adapt dynamically to changes without manual intervention.

A solid data foundation is pivotal to enterprise AI success. Enterprises are implementing robust governance frameworks, addressing challenges related to data quality, diversity and sensitivity. Modern data stacks, including cloud platforms and scalable data lakes, enable real-time ingestion and processing, essential for AI implementation. Companies that nurture proprietary datasets are gaining competitive advantages by achieving superior model performance.

Preparing people for AI is crucial to unlocking its full potential, ensuring both technological adoption and workforce adaptability. Change management bridges the gap between innovation and execution, enabling organizations to thrive in an AI-driven world.

AI-first strategies introduce risks related to bias, cybersecurity and explainability. Organizations are mitigating these by adopting automated compliance systems, real-time anomaly detection, and explainable AI models. Regulatory frameworks like India's Digital Personal Data Protection Act (DPDP Act 2023) further emphasize the importance of responsible AI practices, especially in sensitive sectors like healthcare and finance.

Transforming work with GenAI

In India GenAI has the potential to drive productivity gains, impacting millions of workers and redefining the future of work.

EY conducted a study of over 10,000 tasks in critical industries that contribute to the Indian economy. To assess GenAI's impact on productivity, tasks were analyzed based on exposure (potential

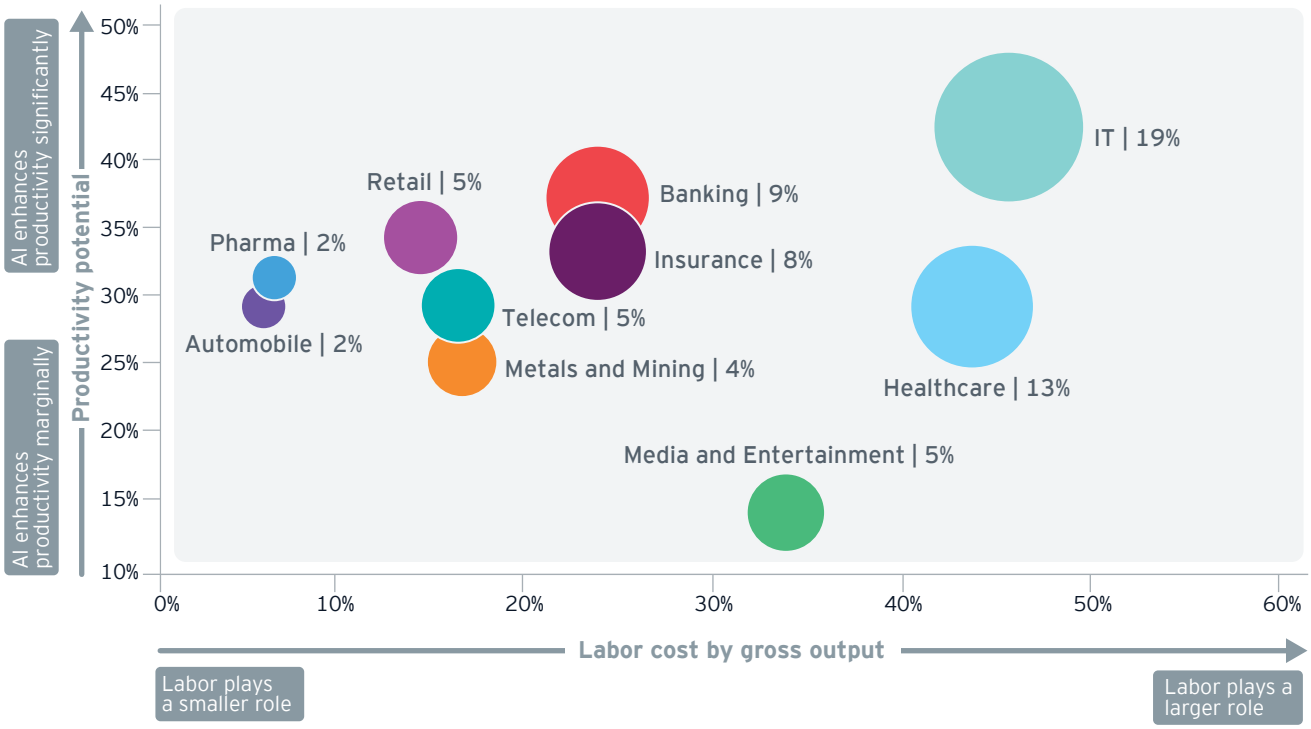
impact of GenAI), complementarity (human oversight needed) and intensity (frequency of tasks analyzed in granular time units). A 'Productivity Uplift' Indicator was created, to quantify this potential impact in terms of Automation (elimination of the task), Augmentation (doing the same task better using GenAI) and Amplification (enhancing the nature of the task and making it richer).

This allowed us to analyze productivity gains at job role, functional and organizational levels. Our analysis reveals that 24% of tasks can be fully automated, while time spent on another 42% can be significantly reduced, freeing up 8-10 hours per week for corporate workers. This translates to a productivity boost of 2.61% by 2030 in the organized sector affecting 38 million Indian employees and an additional 2.82% in the unorganized sector. The largest productivity gains from GenAI are expected in the services sector due to its higher labor share in gross output, while manufacturing and construction will see smaller impacts. However, even in these sectors, AI can drive efficiencies through better capital deployment and resource utilization, ultimately lowering labour expenses and improving overall cost efficiency.

Realizing this potential requires reimagining processes, redefining workflows and reskilling the workforce. The successful adoption of GenAI requires clear strategies, piloting use cases, and scaling solutions, alongside reimagining processes, redefining KPIs, and targeted reskilling. Large-scale upskilling initiatives, supported by public-private partnerships and AI-focused training programs, are crucial to bridging the skill gap. With investments in skills, data and infrastructure, GenAI can drive economic productivity and ensure a future-ready workforce for India.

Productivity gains across key sectors

This graph illustrates the labor cost as a percentage of gross output on the x-axis and the percentage productivity improvement through AI on the y-axis. The size of the bubble represents the potential labor efficiencies created by AI for the industry.



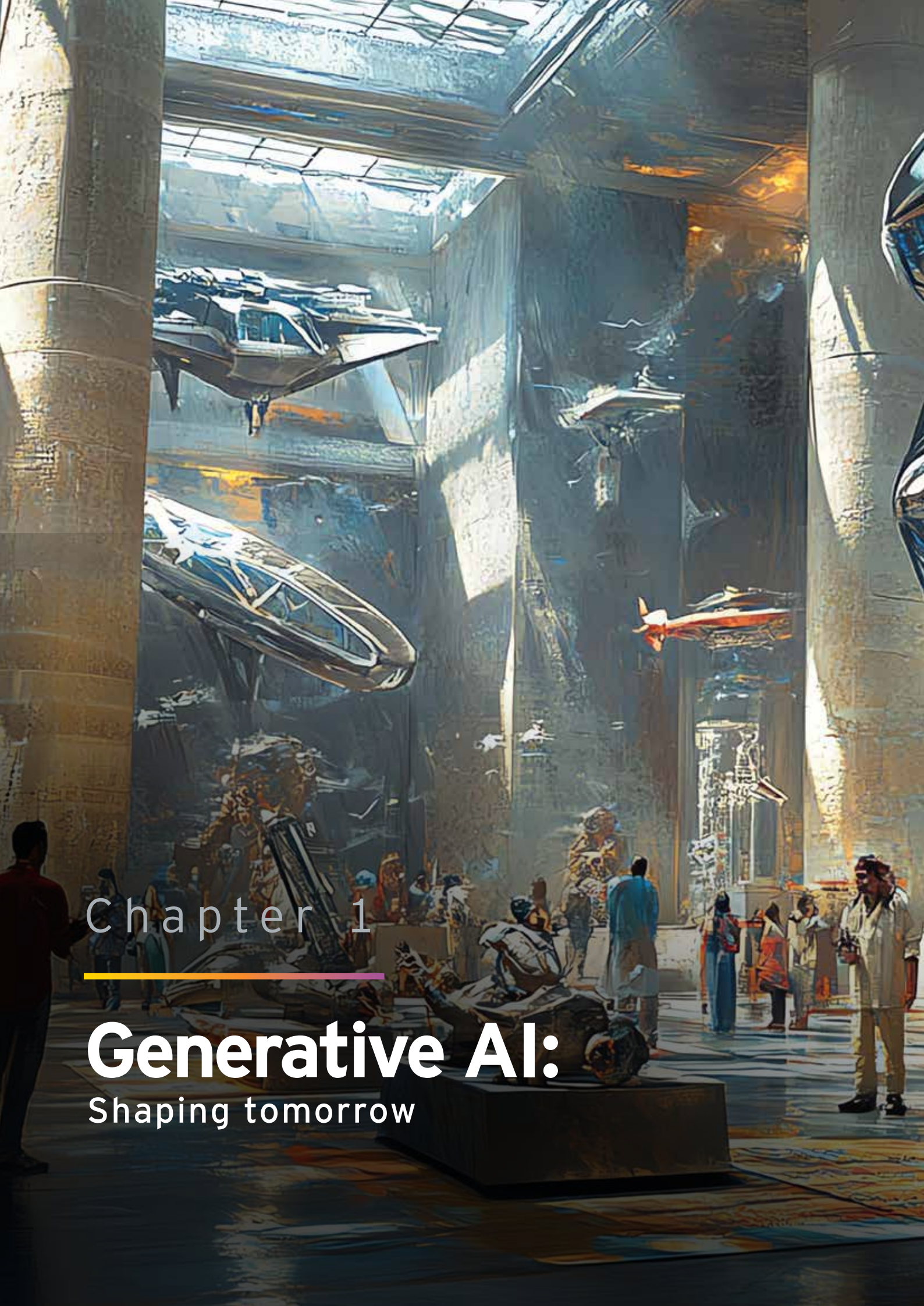
EY India jobs study: Transforming work with GenAI

A policy agenda for India

India's AI policy landscape reflects a balanced approach to fostering innovation while ensuring responsible deployment. The IndiaAI Mission stands at the forefront, with a financial commitment of over INR10,000 crore to develop India's AI ecosystem across seven pillars, including access to high-quality datasets, expanded compute infrastructure, and responsible AI governance. Key initiatives include establishing the India Dataset Platform for organized, sector-specific data access, deploying 10,000 GPUs to scale AI research, and promoting AI solutions in critical sectors like healthcare and agriculture through R&D incentives and innovation challenges.

To ensure Responsible AI, the government has prioritized transparency, fairness and safety through consultations and oversight. Plans include forming a National Committee on Responsible and Trustworthy AI, addressing bias, privacy and accountability. The DPDP Act requires businesses to adopt privacy-preserving AI tools, anonymization protocols, and compliant workflows, aligning AI development with evolving data protection standards.

India's strategic AI policies, anchored in inclusivity, data sovereignty and accountability, aim to position the country as a global AI leader while mitigating risks, promoting innovation, and ensuring ethical AI adoption across public and private sectors.



Chapter 1

Generative AI:
Shaping tomorrow

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Generative AI:
Shaping tomorrow

- Multimodal AI advancements, agent-driven systems, and hardware advancements like NVIDIA's Blackwell are reshaping global applications, moving GenAI from labs to enterprise-grade solutions
- The rise of open-source LLMs and the success of smaller, domain-specific models are addressing privacy, efficiency, and targeted use-case needs
- The rapidly falling costs of AI solutions, like 80% drop in the price of OpenAI's APIs over two years, are making advanced capabilities increasingly accessible to enterprises
- India is leveraging GenAI for regional language accessibility, digital inclusivity, and transformative consumer apps
- As Indian enterprises adopt AI-embedded tech stacks; start-ups and SaaS companies will lead the charge, driving innovation and integration across industries in the coming years

The promise still holds

Over the past few years, innovation in GenAI has progressed at an extraordinary pace, reaffirming its transformative potential across a number of domains. The possibilities are vast and hold the promise of profound changes on the horizon. In the domain of healthcare, AI could accelerate breakthroughs in biology, enabling the rapid development of cures for diseases like cancer and AIzheimer's while extending human lifespans. In neuroscience, it offers hope for understanding and treating mental illnesses such as depression and schizophrenia, while also enhancing human cognition and emotional well-being. Economically, AI promises to potentially uplift billions out of poverty by optimizing resource distribution and revolutionizing industries like agriculture and clean energy. In governance, AI might strengthen governance by enhancing public services and reducing corruption. Finally, in education and work, AI can democratize knowledge access and redefine meaningful human contributions, ensuring an inclusive future where technology enriches, rather than replaces, human purpose.

But GenAI is not without its skeptics

Yet, as with all transformative technologies, GenAI has its share of doubters. While its promise is vast, concerns about the pace and magnitude of its impact linger. Goldman Sachs, for instance, has highlighted the imbalance between the massive investments being funneled into AI and the uncertain returns. In a June 2024 report titled "Gen AI: Too Much Spend, Too Little Benefit?", the firm projected that tech giants and other companies are set to invest nearly US$1 trillion

in AI-related expenditures over the coming years, spanning data centers, specialized hardware, and infrastructure upgrades. Despite these staggering sums, the tangible benefits remain elusive. Adding to the tempered outlook, MIT economist and Nobel laureate Daron Acemoglu provides a cautious evaluation of AI's economic impact. His research suggests that contrary to ambitious forecasts of transformative productivity gains, AI may yield GDP growth of a more modest 0.93% to 1.16% over the next decade, with the possibility of reaching 1.56% under optimal conditions. These critiques underscore the need to balance enthusiasm with realism, tempering grand visions with practical assessments of AI's current capabilities and its path forward.

The year of exponential breakthroughs

Year 2024 proved to be one of phenomenal advancement in the field of GenAI culminating with the announcement of OpenAI's o3 class of models, which promise to offer a quantum leap in foundational LLM capabilities and reasoning. Earlier in the year, the transition to multi-modality allowed seamless handling of diverse data formats, while advancements like expanded context windows and retrieval-augmented generation (RAG) improved reasoning and accuracy. Landmark achievements, including Nobel-recognized contributions to protein structure prediction (AlphaFold2) and industry-specific LLMs for domains like healthcare and finance, highlighted the technology's potential. Global investment in GenAI surged, driven by tech giants like Google, OpenAI and Microsoft. Record-breaking funding rounds and open-source contributions from Meta and others intensified competition, while advancements in hardware, such as Nvidia's Blackwell platform, provided the computational power to support increasingly sophisticated models. Emerging trends, such as Agentic AI and synthetic data generation, expanded AI's capabilities, enabling autonomous, multi-step tasks and addressing data scarcity. SLMs offered cost-effective solutions for smaller enterprises. Despite concerns like overfitting and model collapse, GenAI's strides in reasoning, multimodality and adaptability cemented its position as a key driver of innovation and productivity across sectors.

> Every once in a while, a new technology, an old problem, and a big idea turn into an innovation
>
> ***Dean Kamen***
> *Engineer and entrepreneur*

Emerging trends such as Agentic AI and synthetic data generation expanded AI's capabilities by enabling autonomous, multi-step tasks and addressing data scarcity

We are still early in the game

Despite challenges, even today's innovations in GenAI offer immense enterprise value. The focus is not just on GenAI but also on integrating AI, data, and automation to build tailored solutions. Rapid advancements have made AI 'good enough' for scaling across many use cases. Techniques like RAG and CoT address issues like hallucination, while guardrails secure data privacy and safety. The cost of AI has also dropped significantly, promising returns on existing investments.

Human-like adaptability of AI Agents

AI Agents operate, within an enterprise context, to achieve specific goals. They can be instructed in natural language and act autonomously on behalf of users. Users specify objectives in terms of 'what' or task goals, leaving the AI agent to figure out 'how' this is to be accomplished using available tools. An agentic architecture represents a fundamentally new approach to building computer systems. If successful, it signifies a leap forward as the focus is on outcomes rather than processes.

A key innovation is that much of the control logic in an AI Agent is driven by LLMs. This approach introduces dynamic, non-deterministic behavior – similar to human decision-making – with its associated benefits and challenges. Decision making, with AI agents, is no longer limited to rigid programming. Agents can adapt to contexts and improve outcomes dynamically.

Applications of AI agents across contexts

Personal assistants

Advanced personal assistants, such as Apple's AI-driven assistant, showcase how AI can handle complex, context-dependent queries. For instance, when asked about a family member's flight arrival and dinner plans, the assistant seamlessly integrates information from emails, messages, maps, calendars and third-party apps. These systems build a semantic model of the user, which enables navigation across applications to respond accurately. As AI becomes more embedded in devices and productivity tools, personal assistants are poised to adeptly manage digital lives, streamlining user interactions and enhancing productivity.

Reasoning Agents

OpenAI's O1 (and now O3) models exemplify AI's growing reasoning capabilities. Using chain-of-thought methodology, O1 formulates step-by-step plans to solve problems, improving both accuracy and transparency. Users, too, can trace the model's logic, identify errors and make corrections. Notably, O1 has achieved over 80% accuracy in solving complex mathematical problems, marking a substantial advancement over previous models. Reasoning agents highlight the potential for AI to bring clarity and reliability to intricate problem-solving tasks.

Functional Agents

Salesforce's Agentforce platform brings agentic architectures into the enterprise realm. These autonomous AI Agents personalize customer interactions, streamline support and orchestrate actions across multiple channels. This innovation shifts traditional business models toward outcome-based pricing – where costs are tied to completed tasks rather than per-user licenses. Such a model aligns software costs more closely with business outcomes, offering enterprises a flexible and value-driven approach.

Agents in the real world

Anthropic's research on AI Agents emphasizes their ability to interact dynamically with the world to accomplish tasks and learn from those interactions. This vision extends beyond the digital realm to where agents can control physical tools, robots or laboratory equipment, or even design equipment for specific tasks. However, such dynamic systems bring challenges in ensuring safety, reliability, and predictability – an essential focus for developers.

However, adoption remains low. Our survey of Indian enterprises suggests that 36% of enterprises have budgeted and started investing in GenAI while another 24% are experimenting with it. Technology sector clients have been leading the way with Life Sciences and Financial Services following suit. At the same time business value delivered is relatively low with only 15% of Indian enterprises report having GenAI workloads in production, and just 8% being able to fully measure and allocate AI costs. The survey highlights the need for packaged solutions to bridge the gap and accelerate adoption. As innovations mature, they will drive a new wave of digital transformation, unlocking extraordinary business benefits. At the same time, global trends positively influence GenAI developments in India through collaboration, investment and research.

Key GenAI trends across the globe

01 Multimodal AI

Traditionally, processing varied data forms required separate, specialized models, each tailored to a specific modality. This approach necessitated complex pipelines to combine outputs from different models, often leading to increased computational overhead and latency. Recent advancements have led to the development of unified multimodal models capable of processing multiple data types within a single framework, streamlining integration and enhancing efficiency.

The evolution of multimodal models brings AI systems closer to human-like data processing capabilities. Further, a significant advantage of multimodal models is the reduction in latency when processing mixed-form content. By handling multiple data types within a single model, these systems eliminate the need for separate processing stages and the associated data transfer. This unified approach not only accelerates processing times but also reduces the computational resources required, making it more feasible to deploy advanced AI capabilities in real-time applications.

GenAI's wide impact means the future of work requires AI-specific talent and reskilling. While many enterprises use Ai tools, few have the required in-house AI talent

02 Open source LLMs

The emergence of open source LLMs (OS LLMs) from organizations like Meta and Mistral intensified competition, prompting closed-source providers such as Anthropic and OpenAI to enhance their offerings to justify premium pricing. For instance, DeepSeek v3 has been able to surpass OpenAI's GPT-4o in performance across several industry benchmarks.

The shift also benefited hardware providers like NVIDIA. Demand for GPUs expanded to include organizations deploying OS LLMs privately, leading them to invest in NVIDIA hardware to run models like Meta's Llama 3.1 405B internally, rather than relying on API-based access to closed-source models. This diversification of customer base potentially stabilized GPU demand, reducing reliance on a few large-scale buyers.

Deploying private OS LLMs offered advantages for scenarios where data sensitivity and privacy were paramount. Industries such as healthcare and finance utilized these models within secure environments, complying with stringent data protection regulations. For example, a financial institution fine-tuned an OS LLM on proprietary transaction data to detect fraudulent activities without exposing sensitive information externally, enhancing operational efficiency while maintaining robust data privacy standards.

03 Use of Agentic AI and tools

The advent of Agentic AI has changed the way LLMs are deployed. Unlike traditional LLMs that passively generate text based on input prompts, Agentic AI endows these models with the capability to autonomously plan, reason and execute tasks. This evolution enables LLMs to function as proactive agents, performing complex operations without continuous human intervention. For instance, OpenAI's forthcoming autonomous AI Agent, code-named "Operator," is designed to operate independently, marking a substantial shift from passive response models to active, decision-making entities.

The integration of tool-use capabilities further enhances the functionality of LLMs, allowing them to interact with external systems and APIs to retrieve information, perform calculations, or execute specific commands. This development has led to the creation of more dynamic and versatile

AI applications. Frameworks like LangChain have evolved to incorporate tool use, allowing the integration of third-party APIs ranging from simple Google search to niche and domain specific APIs. This broadens their applicability across various domains. Consequently, LLM deployment has evolved from static, text-based applications to more interactive and autonomous systems capable of complex, multi-step tasks, thereby expanding their utility in real-world scenarios.

AI Agents are a promising step forward and we can expect a significant portion of software in particular and the internet at large to be re-written for use by agents rather than humans.

AI Agents promise to redefine efficiency, reasoning and personalization across industries. As their capabilities evolve, these agents will seamlessly blend digital intelligence with human-like adaptability, empowering enterprises and individuals alike.

04 Reasoning in foundation models

The question "Can LLMs reason?" became one of the most debated topics of 2024. While skeptics like Nobel laureate Geoffrey Hinton and Professor Subbarao Kambhampati questioned their reasoning capabilities, others, such as former OpenAI chief scientist and founder Safe SuperIntelligence Inc. Ilya Sutskever, defended the notion that LLMs possess some form of reasoning ability. However, a consensus is emerging across the industry that, in their current state, LLMs are unlikely to achieve artificial general intelligence (AGI), though this could change based on early independent assessments of OpenAI's o3 models.

CoT prompting has become the leading technique to enhance LLMs' ability to tackle complex problems such as in domains like science, programming and mathematics.

OpenAI's GPT-4o, o1 and o3 exemplify these advancements, excelling in reasoning tasks and serving as a cognitive partner for decision-makers. Their applications are particularly notable in machine learning, where they aid with tasks such as data preprocessing, model training and optimization, and performance evaluation.

Google has also advanced the field with math-focused reasoning models like AlphaProof and AlphaGeometry 2. These models are designed to handle intricate scientific reasoning and have achieved high performance, ranking in the 89th percentile for competitive programming tasks. By generating hidden reasoning tokens to internally 'think through' problems before producing final visible answers, these models demonstrate significant progress in addressing complex reasoning challenges.

05 New chips, more powerful devices, new form factors

NVIDIA dominates the hardware market with a 70% to 90% market share. Its Blackwell microarchitecture significantly boosts GenAI capabilities, supporting LLMs with trillions of parameters and offering up to 25 times the energy efficiency of prior models. Additionally, the Nemotron-4 340B model suite produces high-quality synthetic datasets, which are crucial for training robust LLMs in various sectors.

Apart from traditional competitors Intel, Huawei and AMD, Amazon, Meta, Google and start-ups such as Cerebras Systems, Groq, and SambaNova Systems are also pushing the boundaries in this field as AI accelerators and GPUs are becoming increasingly vital to the industry's future.

The global chip race

Company	Chip	Focus area
Established companies		
NVIDIA	Blackwell B200	Next-generation GPU architecture for AI and deep learning
AMD	MI325X	AI processing for data centers; competes with NVIDIA's offerings
Intel	Gaudi 3	AI training and inference processors for data centers
Meta	MTIA	Custom AI inference accelerator for deep learning, optimized for recommendation models
Qualcomm	Snapdragon 8 Gen 3	AI performance advancements for mobile devices, targeting edge AI applications in smartphones
Custom chips		
Microsoft	Azure Maia 100, Cobalt 100	AI accelerator for cloud workloads, LLM training, ARM-based CPU for general-purpose cloud workloads
Google	TPU v6	Enhanced performance for AI workloads, part of Google Cloud infrastructure
AWS (Amazon)	Trainium 3	Custom chip for training machine learning models
Start-ups		
Cerebras	Wafer-Scale Engine (WSE-2)	World's largest chip, designed to accelerate deep learning models across data centers
Rivos	Custom RISC-V CPU	High-performance RISC-V CPU as a cost-effective alternative to NVIDIA's GPUs
Groq	LPU (Latency Processing Unit)	Optimized for LLMs, enhancing speed and efficiency in AI tasks

List is not exhaustive

06 New device form factors redefine the user experience

GenAI, multimodal LLMs, and specialized chips are leading to changes in device design, which is moving beyond conventional smartphones and laptops. AI-integrated devices like 'AI phones' are emerging, offering highly personalized services tailored to user behavior. These devices feature advanced AI-powered assistants that can perform tasks such as email summarization and recommendations. Apple's advanced writing tools, Samsung's on-device AI processing, and Deutsche Telekom's app-less T-Phone highlight the trend toward more seamless, context-aware interfaces

Emerging technologies like smart glasses and compact assistants further redefine user experiences. Meta's smart glasses integrate AI-powered voice controls, while Rabbit Inc.'s R1 prioritizes AI Agents over traditional apps. Start-ups are creating edge-focused chips for devices, enabling local AI inference for faster, more efficient processing while reducing server reliance.

With rising operational costs and issues such as energy supply, energy-efficient designs are critical for scaling AI solutions. The industry is prioritizing lower power consumption without sacrificing performance, paving the way for broader adoption of live AI inference across applications.

07 Small language models (SLMs)

LLMs offer remarkable capabilities but often come with high computational costs, making them less accessible for smaller businesses. In contrast, SLMs provide a more cost-effective alternative. Optimized for specific tasks, SLMs leverage fine-tuning techniques to reduce computational demands, enabling them to run efficiently on edge devices. Leading examples include Microsoft's Phi-4, DeepSeek v3, Google's Gemma, Alibaba's Qwen 2.5, Meta's Llama 3.2, and Mistral's suite of SLMs.

SLMs combine robustness, safety, and adaptability, making them ideal for low-latency, limited-scope applications. They can also be securely deployed on-premise or in private cloud environments, significantly reducing the risk of data leakage.

As practical and efficient tools, SLMs are well aligned with the needs of modern businesses and are poised to play a transformative role in the future of enterprise AI solutions.

The role of SLMs in the enterprise

SLMs have been a powerful tool in the arsenal of enterprise architect for a number of reasons.

Edge deployment
SLMs are lightweight and optimized for deployment at the edge—closer to where data is generated and consumed. This is particularly valuable in scenarios requiring low-latency responses, such as in manufacturing, healthcare devices, or IoT systems. For instance, an SLM trained for predictive maintenance can operate on-site in a factory, analyzing machine data in real-time without relying on cloud connectivity.

Cost efficiency
Unlike LLMs, which demand significant computational resources for both training and inference, SLMs are designed to operate on smaller-scale infrastructure. This leads to lower operational costs, including reduced energy consumption and the need for fewer hardware resources. Companies can thus deploy sophisticated AI capabilities without incurring the high costs associated with running large-scale models, making AI adoption viable for smaller enterprises.

Domain expertise and precision
SLMs excel in tasks requiring deep domain knowledge. Whether it is legal document analysis, financial forecasting, or medical diagnostics, these models are fine-tuned to understand the specific language, terminologies, and nuances of a given field. This enhances their precision and relevance, outperforming generalized models in specialized tasks.

Data privacy and security
By deploying SLMs at the edge, businesses can minimize the need to transfer sensitive data to centralized servers. This reduces privacy risks and ensures compliance with stringent data protection regulations, a critical factor in industries such as healthcare, finance, and government.

Scalability and collaboration
Domain-specific SLMs enable organizations to scale AI initiatives across diverse use cases efficiently. For instance, a retail company could deploy one SLM for inventory management and another for personalized marketing. Open collaboration within AI ecosystems, powered by platforms like Hugging Face, facilitates sharing pre-trained domain-specific models, accelerating innovation while reducing time-to-market.

As domain-specific SLMs gain traction, they will play an increasingly pivotal role in reshaping enterprise applications. By integrating edge-ready, cost-efficient, and highly specialized models, businesses can unlock the full potential of AI while ensuring sustainable and scalable deployment.

08 Continued investments into GenAI technology

While investment in GenAI has been on the rise since 2018, 2023 was a breakout year and this momentum continued in 2024. The funding surge, particularly from giants like Microsoft, Amazon and Google, is reshaping the business landscape and leading to transformative changes. While OpenAI raised US$6.6 billion in October 2024, boosting its

Large investments driving GenAI innovation for enterprise use

Company	Amount	Investors	Announced	Funds to be deployed towards
Perplexity AI	US$500 million	Institutional Venture Partners, SoftBank, Nvidia, Jeff Bezos	Dec-2024	Enhancing AI-powered search capabilities and expanding market reach
Databricks	US$10 billion	Thrive Capital, Insight Partners, Nvidia, Andreessen Horowitz	Dec-24	Expanding cloud-based AI technology solutions and preparing for potential IPO
Jivi	Undisclosed	AI Fund (founded by Andrew Ng)	Oct-24	Enhancing AI-driven healthcare solutions, including diagnosis and treatment recommendations
Neysa	US$30 million	NTTVC, Z47 (formerly Matrix Partners India), Nexus Venture Partners	Oct-24	Scaling AI infrastructure, advancing R&D, and launching integrated Gen AI Acceleration Cloud Service
OpenAI	US$6.6 billion	Thrive Capital, Softbank Vision Fund 2, Coatue and others	Oct-24	To enhance AI research and increase computing capacity; valued at US$157 billion
Anthropic	US$4 billion follow on	Amazon	Sept-24	Develop AI models on AWS infrastructure
Sarvam AI	US$41 million	Not publicly disclosed	Jul-24	Developing large language models focusing on Indian languages
CoreWeave	US$1.1 billion	Coatue Capital, Magnetar and others	May-24	Scale operations for cloud services tailored for AI workloads
xAI	US$6 billion	Various VCs	May-24	For product development and infrastructure expansion
Moonshot AI	US$1.3 billion	Alibaba Group, Tencent, Gaorong Capital	Feb/Aug-24	Advancing AI technologies with a focus on long-context language models
Figure AI	US$675 million	Jeff Bezos, Microsoft, Nvidia, Intel, Amazon's and OpenAI's start-up funding divisions	Feb-24	Developing AI-powered humanoid robots for industrial applications

Major investments of 2024 included; list is not exhaustive

valuation to US$157 billion, Amazon invested in Anthropic with a portion of a US$4 billion round, reinforcing its commitment to advancing GenAI technologies on its cloud platform. The company continues to invest heavily in infrastructure that supports GenAI applications, partnering with various start-ups to enhance capabilities. Further, NVidia and Google's Deepmind are funding several specific projects aimed at advancing R&D in AI.

The rapid evolution of the GenAI landscape has brought transformative changes across the world in 2024, reshaping industries and redefining possibilities. While these developments are universal, their impact often takes unique forms in different regions. In the Indian context, where a dynamic mix of challenges and opportunities exists, it becomes imperative to identify the critical forces that will drive disruption. The following section delves into five key vectors of disruption that are poised to shape India's GenAI journey, spotlighting the areas where this transformative technology is expected to make the most significant impact.

GenAI in India: Key trends

India's GenAI landscape is rapidly evolving, characterized by unique market dynamics and a burgeoning ecosystem of innovation. Unlike developed markets, India's GenAI trajectory is shaped by its vast and diverse population, a young and tech-savvy workforce, and specific socio-economic challenges. In this chapter, we explore five key vectors driving GenAI disruption in India, highlighting both the tailored adoption of global solutions and the emergence of indigenous products and solutions designed to meet local needs.

01 Chat, voice, regional languages augment digital interfaces

Using mobile apps can be hard work. Screens are small, the navigation even for simple transactions can become complex and it is not easy to personalize the experience. For the less digitally savvy and those more comfortable in regional languages, apps and by extension a large part of the digital economy are largely out of reach.

GenAI is driving a dramatic change in digital interfaces. One can see the emergence of a new UI – led by AI assistants, activated by voice, extended into regional languages and augmented by chat. This will rapidly begin to augment and in some cases replace the current app-based point and click model. Over time, one can even imagine an LLM dynamically generating the UI based on the context of the transaction.

This is already beginning to happen. More than one-third of Google searches in India are voice-based, a stark contrast to just 5% in developed markets. This growing preference for voice interaction is evident in initiatives like the AskDisha chatbot by CoRover, which supports ticket bookings on the IRCTC app through voice, chat, and point-and-click interfaces. Similarly, the National Payments Corporation of India (NPCI) has pioneered solutions such as Hello! UPI, which enables transactions via simple voice commands. Feature phone users and those in low-connectivity areas can use UPI 123PAY through voice prompts, missed call services, and callback mechanisms, all without an active internet connection.

The new interfaces also have the potential to transform accessibility for underserved sections of India, particularly in semi-urban and rural areas. There is a need for affordable solutions in regional languages, intuitive interfaces and services designed for specific needs. GenAI is emerging as a transformative force, enabling innovations that drive financial inclusion, healthcare access, and educational outreach through localized, cost-effective solutions.

In education, AI-powered platforms will enable personalized tutoring in regional languages, offering adaptive learning experiences tailored to individual progress and needs. In healthcare, GenAI will address resource shortages by enabling remote diagnostics, analyzing longitudinal health data, and delivering personalized care recommendations. These advancements promise to redefine accessibility, empowering communities and creating a more inclusive digital ecosystem across India.

India's consumer landscape, unique characteristics and market dynamics

India 1

Comprises the top 10%-15% of households and approximately 100 million people. This segment is affluent, urban, and digitally savvy, driving a significant portion of the digital economy and consuming premium products and services.

India 2

Encompasses approximately 300 million individuals from smaller cities and semi-urban areas. These consumers have moderate purchasing power, are price-sensitive yet aspirational, and seek value-driven services in education, healthcare and finance.

India 3

The largest segment, with approximately 900 million people, is predominantly rural, lower-income, and less digitally literate, communicating mainly in regional languages and focusing on affordable, essential services.

How business strategies could differ for India 1 and India 3

Industry	Digital model	India 1 strategy	India 3 strategy
Financial services	Fintech	Personalized investment management, AI-driven wealth advisory, predictive analytics for portfolio performance	AI-based micro-lending, regional language support in financial apps, voice-based banking interfaces
	Insurtech	Predictive risk assessment, personalized insurance policies, automated claims processing	Affordable micro-insurance through AI-based risk assessment, simplified AI chatbots for policy inquiries
	Credit scoring	AI-driven credit scoring models using alternative data (social, transaction history)	Credit scoring for the unbanked using local data (e.g., mobile transaction patterns), low-cost loans accessible via mobile
Media	Digital media	Personalized content curation, AI-driven recommendation engines, targeted advertising based on behavior analysis	Regional language content recommendations, AI for local news curation, audio/voice-based access to content
	Entertainment	AI-generated media content (e.g., news articles, video recommendations), immersive AR/VR experiences	Regionalized AI-driven video recommendations, low-data streaming options, automated dubbing or subtitles
Healthcare	Healthtech	AI-driven diagnostics, predictive health analytics, telemedicine with AI-driven triage	AI-based mobile health diagnostics, offline AI health consultations, regional language support for healthcare apps
	Telemedicine	AI-driven virtual consultations with specialists, medical imaging analysis	Mobile-based telemedicine with basic AI for symptom checks, local language support for rural health workers
	Pharmaceuticals	AI-led drug discovery, personalized medicine, genetic analysis for tailored treatments	Low-cost AI solutions for public health issues, predictive analytics for vaccine distribution in rural areas
Retail and E-commerce	E-commerce	AI-driven personalized shopping experiences, dynamic pricing, targeted product recommendations	AI-driven local language shopping apps, voice shopping, inventory optimization for local vendors
	Supply chain	AI-based demand forecasting, real-time supply chain tracking, and logistics optimization	Simplified AI tools for small retailers, inventory management for local shop owners, predictive demand analytics
	Payments	AI-powered fraud detection, seamless digital payments, biometric payments	AI-based digital payments using local authentication methods, voice-activated transactions in local languages
Education	Edtech	Personalized learning paths, AI-driven tutoring, content recommendations based on learning patterns	Localized, AI-driven learning content in regional languages, basic mobile AI tutoring, voice-activated education platforms
	Assessments	AI-based proctoring, adaptive testing, automated grading	Low-cost, AI-based grading systems for large groups, offline AI tools for grading and assessments
	Skill training	AI-driven upskilling and reskilling programs with personalized learning tracks	AI-powered skill training for local workforce in regional language, mobile-based skill assessments and recommendations

02 Agents enable the transformation of knowledge work

The advent of AI Agents — autonomous LLM-powered software capable of understanding context, accessing a toolkit of resources skillfully, making decisions, and executing actions iteratively towards achievement of a goal — and agentic orchestration promises to further enhance advancements. The technical aspects of agents is discussed in detail in the previous section.

India's significant role in the global knowledge economy is evident through its extensive workforce in sectors like information technology, finance and customer service. The rapid integration of AI Agents into these fields is reshaping traditional ways of working, presenting both opportunities and challenges for Indian professionals. Most notably, Indian knowledge workers have leaned in, with 92% of them utilizing AI in their workplaces, meaningfully surpassing the global average of 75%, according to the 2024 Work Trend Index by Microsoft and LinkedIn.

In **software development**, AI-powered code editors such as Cursor can comprehend code context, suggest bug fixes, and implement related changes across entire files. Features like inline chat enable developers to direct the AI for modifications ranging from minor edits to extensive codebase overhauls. This evolution allows programmers to focus more on system architecture and logic, as AI manages repetitive tasks.

The **legal sector** is experiencing a transformation through AI in contract drafting and document review. Agentic tools like Type integrate with legal databases and precedent libraries, expediting the drafting process. These AI solutions enhance accuracy by suggesting pertinent clauses and ensuring compliance with regulatory standards.

Financial analysts benefit from AI systems that automate report generation, document processing, compliance monitoring, and anomaly detection. AI streamlines processes such as invoice management by extracting and integrating data into ERP systems, reducing manual errors.

Content creators leverage GenAI tools capable of producing drafts, performing grammar and style checks, and offering SEO optimization suggestions. These platforms enable writers and editors to focus on creative ideation and storytelling. AI-powered systems analyze extensive data to generate personalized content, enhancing engagement and relevance.

Integrating—

GenAI with traditional methods, compound AI systems are leading to more robust, efficient and intelligent applications across various sectors that harness these combined strengths

In **customer support,** AI-driven chatbots and virtual assistants efficiently handle routine inquiries, providing 24/7 support and prompt resolutions. AI tools today promise to manage a spectrum of customer interactions, from account balances and transaction histories to more complex financial advice, thereby enhancing customer satisfaction and operational efficiency.

By automating routine tasks, AI Agents will enable professionals to focus on strategic, creative, and complex aspects of their work, thereby enhancing productivity and fostering innovation. For India, with its extensive knowledge workforce, embracing AI Agents and agentic architectures is crucial to maintaining competitiveness and harnessing the full potential of its human capital. The impact of AI on human effort reduction and elimination extends beyond knowledge work, as detailed in the chapter 'Transforming work with GenAI'.

03 LLMs are not all you need: Toward compound AI systems

It is becoming increasingly clear that LLMs have significant limitations. They are expensive to use, hallucinate and often miss out on key context that is critical for enterprises as they seek to build intelligent systems.

Enterprises will increasingly rely on hybrid architectures, where multiple AI models — ranging from small, task-specific models on edge devices to large foundational models in the cloud — are orchestrated to work together. These models will operate at different levels of the enterprise stack, balancing cost, latency, and performance needs. For example, lightweight models might handle quick, edge-based tasks, while more complex models, fine-tuned to enterprise data, will reside in cloud environments.

In February 2024, the Berkeley AI Research (BAIR) Lab introduced the concept of compound AI systems, which integrate LLMs with traditional

How GenAI models amplify overall system capabilities

Construction project management

Advanced project management software now incorporates drone footage to assess construction sites. GenAI processes this visual data, providing insights that integrate with traditional AI models to enhance project oversight and decision-making.

Recommendation engines in online commerce

In e-commerce, images — such as those of a living room — are analyzed using multi-modal vision models. The interpretations inform classical ML-based recommendation engines, suggesting optimal décor options from catalogs. This integration improves the relevance and personalization of recommendations.

Financial services

Loan applicants interact with GenAI-powered chatbots to provide detailed information and answer follow-up questions. The collected data is processed by traditional ML models, refining credit decision-making processes and improving accuracy in risk assessment. The ensemble significantly reduces time to decision.

Education

Adaptive testing has evolved with GenAI, extending beyond multiple-choice to include long-form subjective answers. This advancement allows for more comprehensive assessments, tailoring question difficulty based on previous responses and providing a deeper understanding of student capabilities.

Industry 4.0 + GenAI

GenAI combines traditional ML models with diverse inputs like workers' logs and product manuals. This fusion enhances predictive maintenance strategies, leading to more informed decisions on the factory floor and reducing downtime.

AI/ML techniques, classical programming, and external tools like internet search APIs. This approach marks a big shift from relying solely on monolithic models to employing multifaceted systems that leverage the strengths of various components.

GenAI exemplifies this paradigm by enhancing existing systems across diverse industries. Rather than serving as standalone solutions, GenAI models are increasingly embedded within traditional AI and ML processes, creating synergistic effects that amplify overall system capabilities.

Compound AI systems are already prevalent today. A leading Indian pharmaceutical company relies on its field sales force to engage doctors and share product updates. Leveraging their extensive datasets such as visit logs, doctor feedback, prescription patterns, and local disease insights, which is a mix of quantitative and qualitative data. The revamped sales app now leverages all of these through traditional AI and GenAI to deliver personalized recommendations for each doctor, including tailored product suggestions, comparisons to regional peers, and relevant disease trends.

The evolution of Compound AI systems signifies a transformative approach in AI, where the integration of GenAI with traditional methods leads to more robust, efficient, and intelligent applications across various sectors. As this trend continues, we anticipate the development of innovative products that harness the combined strengths of these technologies, driving significant advancements in their respective fields.

Multimodal models offer significant advantage of reduced latency when processing mixed-form content. The faster processing times and less need of computational resources enhance real-time application

04 The falling cost of AI

The cost of implementing AI solutions has plummeted, making them increasingly accessible to enterprises. OpenAI's GPT API costs, for example, have dropped nearly 80% in two years, while open-source releases like Meta's Llama are unlocking new capabilities. India-specific fine-tuned versions of these models enable affordable customization. Although GPU supply remains tight, alternatives are emerging, allowing AI inference to run without high-end GPUs.

Open-source models such as Meta's Llama series, Mistral, Google's Gemini, Microsoft's Phi, and Alibaba's Qwen are providing powerful tools at a fraction of the cost of proprietary models. Innovations like prompt caching and batch processing further enhance affordability for LLM utilization.

Cloud providers are also driving cost reductions with pricing based on Tensor Processing Units (TPUs), delivering faster and cheaper AI solutions. Improved GPU access has enabled organizations to fine-tune and deploy open-source models, reducing reliance on heavy infrastructure. Hybrid strategies, combining on-premise solutions for sensitive data with cloud-based APIs for scalability, are proving to be cost-effective to expand AI deployments.

Technological advancements like quantization, which optimizes AI models for CPU efficiency, are further reducing hardware costs. Combined with affordable cloud services, these innovations are empowering businesses to scale AI initiatives and push the boundaries of innovation, driving unprecedented growth in AI applications.

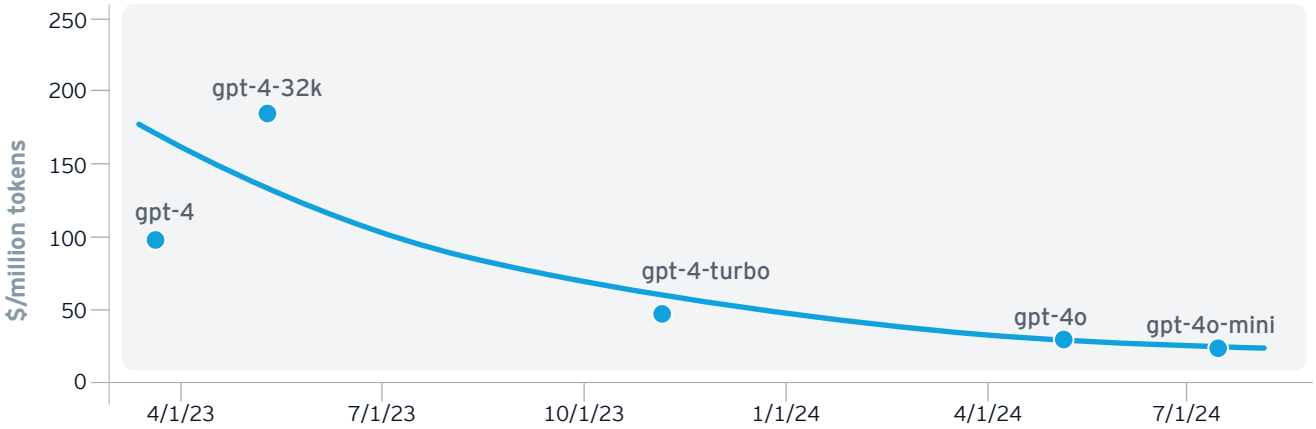
India's traditionally low labor costs have led some to question the cost versus quality trade-off in deploying LLMs to augment human effort in the Indian market. However, the rapidly decreasing costs associated with AI deployment are reshaping this perspective.

In August 2024, founder of DeepLearning AI and educator Andrew Ng noted, "Let's say you build an application to assist a human worker, and it uses 100 tokens per second continuously: At $4 per million tokens, you'd be spending only $1.44 (~INR120) per hour – which is significantly lower than the minimum wage in the U.S. and many other countries." With Sarvam AI's offer of INR1 per minute, this cost drops further to half as much (INR60 per hour), making LLM-led offerings extremely price competitive in the Indian context.

The convergence of declining AI deployment costs and a deep pool of tech talent capable of building AI applications presents a compelling opportunity for widespread AI adoption. As AI becomes more affordable, even for small and medium-sized enterprises, it has the potential to drive innovation, enhance productivity, and contribute to economic growth across various sectors.

Token cost of GPT-4 level models over time

Cost for 2 million tokens (input + output) decreased from US$180 to US$0.75 in two years, becoming 240x cheaper



Source: Elad Gil on X

05 The evolution of an Indic AI ecosystem

A lot has been said about India being the use case and data capital of the world. With more than 700 million connected consumers and the lowest data rates in the world, India will play home to many sunrise industries that will seek to infuse AI at scale across their business models. There is also now a significant focus on integrating AI into India Stack to buttress its already strong digital public infrastructure. Will India see an Indic AI stack with tools that compete with global offerings and is relevant in an enterprise context?

The race to build Indic LLMs and agents

One significant area of focus has been the linguistic diversity of India — there has been a mushrooming of Indic LLMs that leverage open-source models fine-tuned with Indian language datasets. A key initiative in this space is Bhashini, a government-led AI project aimed at creating an open-source Indic language dataset to expand internet and digital service accessibility in Indian languages. By facilitating content creation in languages like Hindi, Tamil and Bengali, Bhashini is democratizing the benefits of AI for India's multilingual population.

The global AI community has also expressed keen interest in Indic languages. For example, Abu Dhabi-based G42 introduced Nanda, a Hindi LLM trained on 2.13 trillion tokens, aiming to empower over half a billion Hindi speakers with GenAI capabilities. Similarly, BharatGen, the first government-funded multimodal LLM initiative, focuses on creating efficient and inclusive AI tailored to Indian needs. Tech Mahindra's Project Indus further advances the development of Indic foundational models, beginning with Hindi and its over 37 dialects, bridging linguistic gaps for enterprises. TWO.ai, another notable player, has introduced SUTRA, a multilingual AI engine supporting over 50 languages, including Hindi and Gujarati. SUTRA is designed to power immersive AI experiences that extend beyond text and voice, addressing India's linguistic diversity effectively.

AI4Bharat, a research lab at IIT Madras, has been instrumental in advancing Indian language technology. Their contributions include extensive open-source datasets like IndicCorp v2 and tools that underpin the growing Indic LLM ecosystem. Despite these advancements, challenges persist. The lack of robust datasets across India's diverse languages affects the training and performance of these models. Data often requires significant cleaning and processing to ensure usability, while concerns about responsible data use, privacy, and ethics remain pressing. Initiatives such as Project Vaani, a collaboration between IISc and Google to collect Indic speech datasets, are critical in addressing these gaps.

The development of AI Agents tailored to Indian contexts represents another promising area. These agents not only address linguistic diversity but are fine-tuned with domain-specific datasets, enhancing their utility in sectors like BFSI, healthcare, and legal technology. Sarvam AI leads the way with its GenAI platform featuring Sarvam Agents — voice-enabled, multilingual solutions designed for Indian enterprises. Their open-source models, such as Shuka 1.0 (an open-source AudioLM), and APIs supporting 10 Indic languages, mark significant milestones. Sarvam AI's cost-effective pricing model of INR1 per minute for AI-driven customer interactions ensures accessibility for businesses of all sizes. Similarly, Kogo.ai has developed a platform enabling companies to build AI agents that can converse in Indic languages. Starting with Hindi, Urdu and English, Kogo.ai plans to expand its offerings to additional languages, providing versatile solutions for enterprises seeking multilingual AI capabilities.

Benchmarks play a crucial role in measuring advancements in LLMs and Indic LLMs are no different. IndicGenBench, introduced in 2024, is a comprehensive benchmark designed to assess the performance of LLMs across 29 Indic languages. It includes tasks like cross-lingual summarization, machine translation, and question answering, providing multi-way parallel evaluation data for under-represented Indic languages. Such benchmarks are essential for driving innovation and ensuring the models meet the diverse needs of India's population.

These developments collectively represent a growing ecosystem of Indic LLMs and agents designed to cater to India's linguistic and cultural diversity. From addressing challenges in data quality to building sophisticated AI Agents and creating robust benchmarks, the Indic AI landscape exemplifies the transformative potential of AI to make technology more inclusive and impactful for a multilingual society.

A burgeoning GenAI start-up ecosystem

India's burgeoning GenAI start-up ecosystem has also contributed to this momentum. The number of GenAI start-ups in India surged 3.6 times from over 66 in the first half of 2023 to more than 240 by mid-2024, according to Nasscom's "India's Generative AI Start-up Landscape 2024" report. These start-ups have cumulatively attracted over US$750 million in funding, with 75% generating revenue in the first half of 2024 compared to just 22% in the same period the previous year. The ecosystem now includes 17 native GenAI language models and a significant increase in start-ups offering GenAI assistants, placing India sixth globally in GenAI start-up ecosystems among major economies.

Towards a sovereign AI cloud

In parallel, the development of digital infrastructure in India has gained momentum. Leading corporations such as Reliance, Tata Group, Tech Mahindra, and Wipro have partnered with Nvidia to procure advanced GPU infrastructure. Mid-sized players like Yotta Data Services, E2E Networks, and Sify are also providing cloud GPU resources to enable the hosting of LLMs. Moreover, the Ministry of Electronics and Information Technology (MeitY) is actively working to empanel partners capable of delivering up to 10,000 GPUs, thus empowering start-ups, researchers, and academicians to contribute to AI innovation.

The development of an Indic AI ecosystem reflects the potential for India to leverage its unique linguistic and cultural diversity in shaping AI innovations. Initiatives like Bhashini, BharatGen, and the commitment to purchase 10,000 GPUs, along with the rise of GenAI start-ups, demonstrate significant early progress. However, addressing challenges such as data quality, infrastructure gaps, and ethical considerations will be critical for sustained growth.

Despite the hurdles, the strides made so far underscore a strong foundation for further development. Collaborative efforts among government, industry, and academia are setting the stage for a comprehensive AI ecosystem tailored to India's needs. While there is still much work ahead, the momentum and focus evident today are encouraging indicators that India is well-positioned to create an AI ecosystem that is inclusive, impactful, and globally relevant.

Chapter 2

Pivoting to AI-first digital transformation

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Pivoting to AI-first digital transformation

- AI-first strategies are reshaping Indian enterprises by automating workflows, optimizing value chains, and introducing new interfaces for enhanced efficiency and value creation
- Enterprises are adopting domain-specific models, intelligent automation, and AI-embedded tools from various providers to accelerate deployment and enhance operational adaptability
- Robust data governance, scalable modern data stacks and proprietary datasets are critical enablers for AI success
- Change management is essential for ensuring workforce adaptability and unlocking the full potential of AI, bridging the gap between technological innovation and practical execution
- Organizations are addressing risks like bias and cybersecurity by leveraging explainable AI models, automated compliance systems and regulatory frameworks like India's DPDP Act

Similar to the transformative impact of the digital revolution, the accelerating shift toward AI-driven platforms is poised to reshape every factor influencing a company's EBITDA. Across Indian enterprises, AI-first approaches are steadily taking root, embedding themselves throughout the value chain to enhance operational efficiency and unlock new avenues of value creation.

A fully reimagined technology stack is emerging – one that enables innovative customer experiences, drives agentic automation, and prioritizes data as the cornerstone for fueling AI models. This evolution is prompting organizations to reassess their enterprise risk posture, develop new frameworks for managing AI in production, and address evolving cybersecurity challenges.

As AI reshapes the nature of work, organizations are redefining role architectures and reimagining learning methodologies to equip their workforce for this paradigm shift.

Survey: From experiment to adoption

We conducted a survey of more than 125 Indian enterprise leaders to understand their experience with GenAI and their current thinking on it. While there continues to be significant optimism about GenAI, survey results show a mixed picture when it comes to adoption. While nearly all Indian enterprises are exposed to GenAI through its integration into existing software, only 15% of surveyed enterprises have directly implemented GenAI in production. A significant 36% have yet to commence any experimentation, reflecting

The agenda for enterprises

Reimagine the business and operating model

- Optimize the existing value chain with AI
- Enhance existing revenue streams: channels, portfolio, pricing
- Transform delivery with new interfaces: D2C, social, digital sales
- Launch new products and services: for example, India 3 consumers, connected products

Rethink the tech stack

- Move to an AI-first app strategy: interfaces, models, architecture
- Prepare for the coming wave of AI-embedded enterprise apps
- Leverage next-generation approaches to automation (RPA) and integration

Move to AI-ready data

- Nurture datasets that provide competitive advantage
- Implement a robust data governance framework
- Implement a scalable data infrastructure

Getting your people ready for AI

- Build a GenAI strategy around applications for sustainable, innovative competitive gains
- Develop use cases for productivity, automation, and customer experience
- Assess value realization in revenue, savings, efficiency, and engagement
- Reimagine business processes and workflows

Confronting the changing frontier of risk

- New risk management frameworks to address the dynamic and probabilistic nature of AI models
- Real-time governance mechanisms (e.g., anomaly detection, explainable AI) ensure transparency and accountability
- Better techniques and training data filtering improve AI system reliability
- AI-powered security solutions, cyber defense strategies, and continuous learning minimize risks

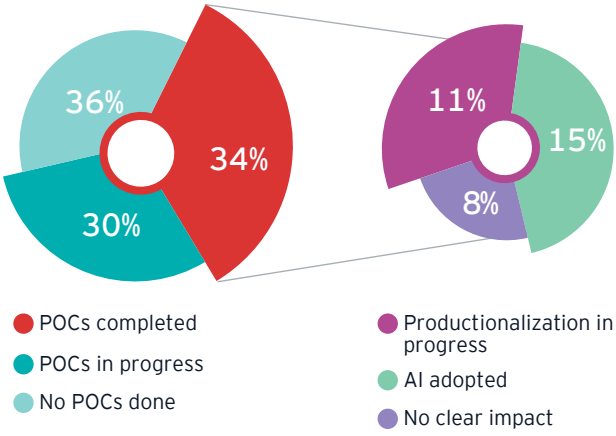
the early stage of adoption. Meanwhile, 8% of enterprises that have experimented with GenAI report challenges in realizing tangible impact.

Despite these early struggles, the promise of GenAI remains undeniable. Its potential to drive efficiency, innovation, and growth across industries is immense. Indian enterprises stand at the cusp of a new era, where those that successfully harness GenAI will unlock transformative value and establish a competitive edge in the AI-driven future.

AI-powered automation is slashing time and costs, transforming process time from weeks into tasks completed in hours, setting new standards for efficiency

Experience with GenAI POC engagements

Integration with existing software means enterprises' exposure to GenAI is high. However, only a few have the technology in production.



Source : EY India C-suite GenAI Survey 2024

Reimagine the business and operating model

GenAI is poised to drive significant shifts across business and operating models, reshaping industries at both foundational and strategic levels.

At a foundational level, AI allows firms to digitize operations and enhance existing revenue streams by embedding AI into every aspect of their value chains. Unlike traditional deterministic automation, where business logic is hardcoded into applications, AI-powered systems process data streams, detect patterns, and generate insights or actions, creating closed-loop systems for continuous learning.

A GenAI model can analyze various data streams - conversations over chat or email, a set of dynamic supply chain variables or employee attrition data to identify patterns, predict outcomes, and recommend or automate actions, thereby fundamentally reengineering business processes.

Consider the IT industry. Amazon CEO Andy Jassy recently shared how their GenAI assistant "Q" slashed the time required to upgrade some apps from 50 developer days to just a few hours, cumulatively saving 4,500 developer years across their upgrade projects. Google reports that 25% of its code is now AI-generated, a move accompanied by a 25% reduction in its Python team over 2024. This automation will dramatically reshape productivity expectations for the Indian ITeS industry, which may force companies to pass on cost savings to customers and creating a competitive environment where such efficiencies become a baseline.

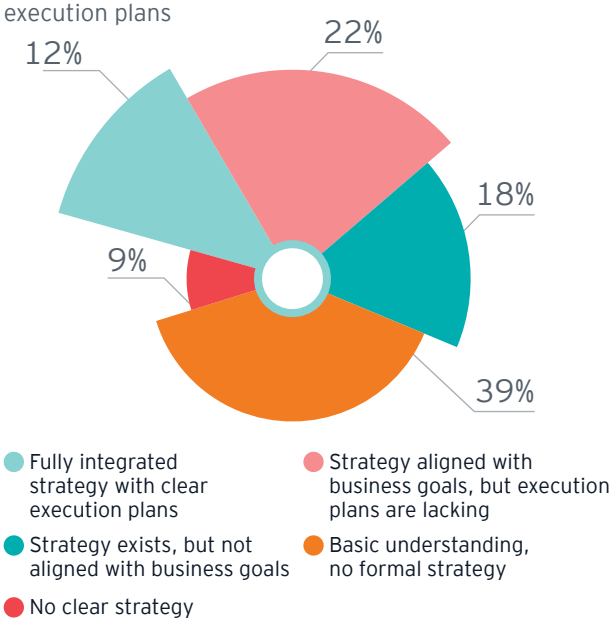
Beyond cost savings and operational efficiency, AI is enabling businesses to move toward more customer-centric models. Companies are reimagining their value chains, launching new products, and creating innovative services.

Towards AI-led value chains, products services:

- **Customer service:** AI-powered voice agents, available for just a few rupees per interaction, are reshaping the unit economics of customer support. Tomorrow's bank, for instance, could potentially operate with a fraction of its current workforce.
- **Consumer products:** Companies are increasingly focusing on D2C (direct-to-consumer) channels, transforming search, catalog management, and personalization with AI.
- **Media:** Media organizations are building AI-driven ecosystems to deliver personalized, on-demand content.

Organization's readiness in adopting GenAI: Strategy (direction and alignment)

More than half of the enterprises have a GenAI strategy but only some have a fully integrated one with clear execution plans



Source : EY India C-suite GenAI Survey 2024

- **Social commerce:** Platforms leverage AI to connect sellers directly with buyers, bypassing traditional retail models.
- **Agritech:** Start-ups are providing AI-powered farm management solutions, offering data-driven insights to farmers and creating new revenue streams for agribusinesses.
- **Automotive:** Auto companies are expanding their connected vehicle ecosystems through AI, enabling predictive maintenance and enhancing customer experiences.

GenAI represents more than just an incremental improvement — it is a transformative force. By enabling operational efficiencies and fostering customer-centric innovation, AI will fundamentally reshape industries, creating new competitive benchmarks, business models, and revenue opportunities.

Implications for companies

- Optimize the existing value chain with AI – across customer engagement, supply chain operations, finance and HR
- Enhance existing revenue streams – through advanced market segmentation, channel optimization and pricing
- Transform delivery with new interfaces – D2C, social, digital sales
- Launch new products and services – for example, new services targeting India 3 consumers, connected products

Rethink the tech stack

From the GPU chips that power AI server farms to intelligent agents that are changing the app landscape as we know it, a new tech stack is being fashioned.

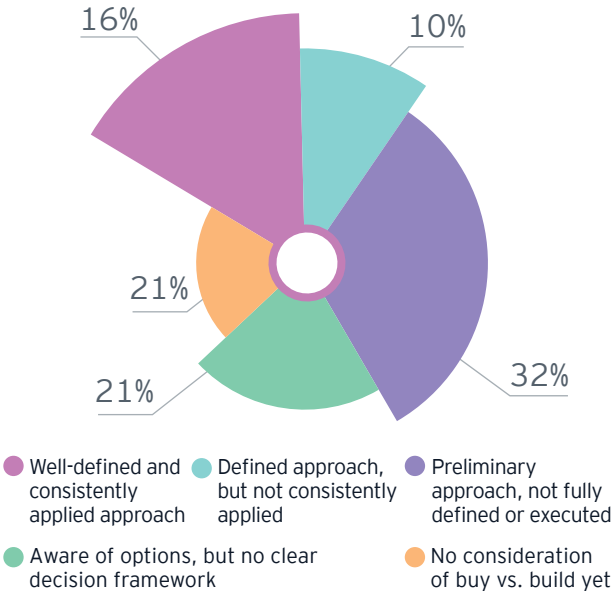
Beyond LLMs

Companies are using a range of models to meet their AI needs. This helps balance capability, cost and data privacy concerns. For instance, companies in regulated industries like pharmaceuticals use public LLMs such as OpenAI GPT for non-sensitive tasks like summarizing content or generating marketing insights. At the same time, they rely on private, on-premise open-source LLMs to handle sensitive R&D data.

The size of a model determines its cost and SLMs are becoming the workhorses for specific domain bound tasks that do not need the heavy processing power of LLMs. (Read more about the edge deployment, cost, precision, scalability and other features of SLMs in 'Generative AI - Shaping tomorrow'.)

Organization's readiness in adopting GenAI: Implementation (buy vs. build approach)

Approximately one in four have defined approach but application is uneven



Source : EY India C-suite GenAI Survey 2024

Implementation: Building with next generation components

Layer					
Apps and experiences	**App** **Enterprise-wide experiences**	Content generation	Agentic assistants	Dashboards and control towers	Enterprise knowledge management
Orchestration	Intents toolbox	Agent / chain orchestration	APIs and plug-ins	Infrastructure and operations	
Models	Classic machine learning (ML)	Open models	Proprietary models	Emerging models	
Intelligence	Data pipeline	Embedding models	Vector stores	Semantic indices	Monitoring and observability
Governance	Trust model	Enforceable guarantees	End-to-end encryption		
	Auditing and traceability	Security and zero trust	Regulatory compliance	Responsible AI and ethics	

What this means for enterprises

- Build apps with a new focus on embedded intelligence
- Create enterprise/group wire experience store
- Rethink traditional models of automation (RPA, process engines)
- Treat models as first-class citizens in the enterprise architecture
- Enable the move to modern data stack
- Move to an advanced security architecture governance model

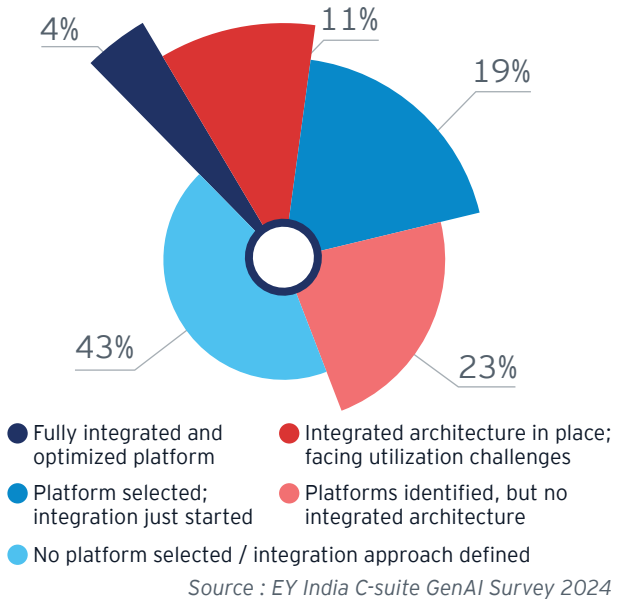
Cost reduction strategies for GenAI implementation

While the cost of intelligence is falling, implementing enterprise-grade AI applications can be complicated. However, deploying a range of approaches can reduce the total cost of ownership

Strategy	Description	Impact on costs
Model optimization	Development of smaller, more efficient models (e.g., GPT-4o mini)	Up to 60% reduction in operational costs
Open-source models	Adoption of open-source alternatives (e.g., Llama, Gemma, Mistral, Phi and Qwen)	Lower licensing fees and customization costs
Infrastructure-as-a-service	Utilizing cloud-based services for model training and deployment	Pay-per-use model reduces hardware costs
Fine-tuning models	Tailoring models for specific tasks to improve efficiency	Decreased inference costs
Automation of workflows	Implementing automated processes to streamline operations	Reduced labor costs and increased efficiency
Data volume management	Optimizing context to reduce token usage	Lower data storage and processing costs
Caching LLM responses	Caching LLM responses helps economise usage and avoid repetitive LLM usage for the most common queries/use-cases	Decreased inference costs

Organization's readiness in adopting GenAI: Architecture (GenAI platform and integration approach)

Architecture integration is limited and enterprises are looking at ways to increase application



Source : EY India C-suite GenAI Survey 2024

The coming tsunami of AI-enabled enterprise apps

Enterprise app vendors are racing to embed AI into their offerings. This will be the way by which many enterprises get their first taste of AI. Enterprise apps will seek to use the transaction context that they are aware of to offer out-of-the-box AI solutions. This bypasses tricky implementation decisions related to buy versus build question, LLM choice and data wrangling – enterprise app vendors are already incumbents and will have the advantage of being able to drive quick adoption of their offerings.

Imagine entering a purchase order into a next generation ERP. Embedded AI models dynamically analyze historical spend data, supplier performance and contract terms to recommend optimal purchasing decisions in real time. Fields are pre-filled, anomalies are flagged and cost-saving alternatives recommended, all while ensuring compliance with procurement policies. With

seamless integration into spend management systems, AI enables instant insights into spending patterns, automates approvals, and provides analytics to optimize supplier relationships, transforming purchase order processing.

Enterprise SaaS behemoths like Salesforce, SAP, and Oracle are already racing to integrate AI into their platforms. The primary reasons to choose app-native GenAI solutions are:

01 Seamless integration with the rest of the application

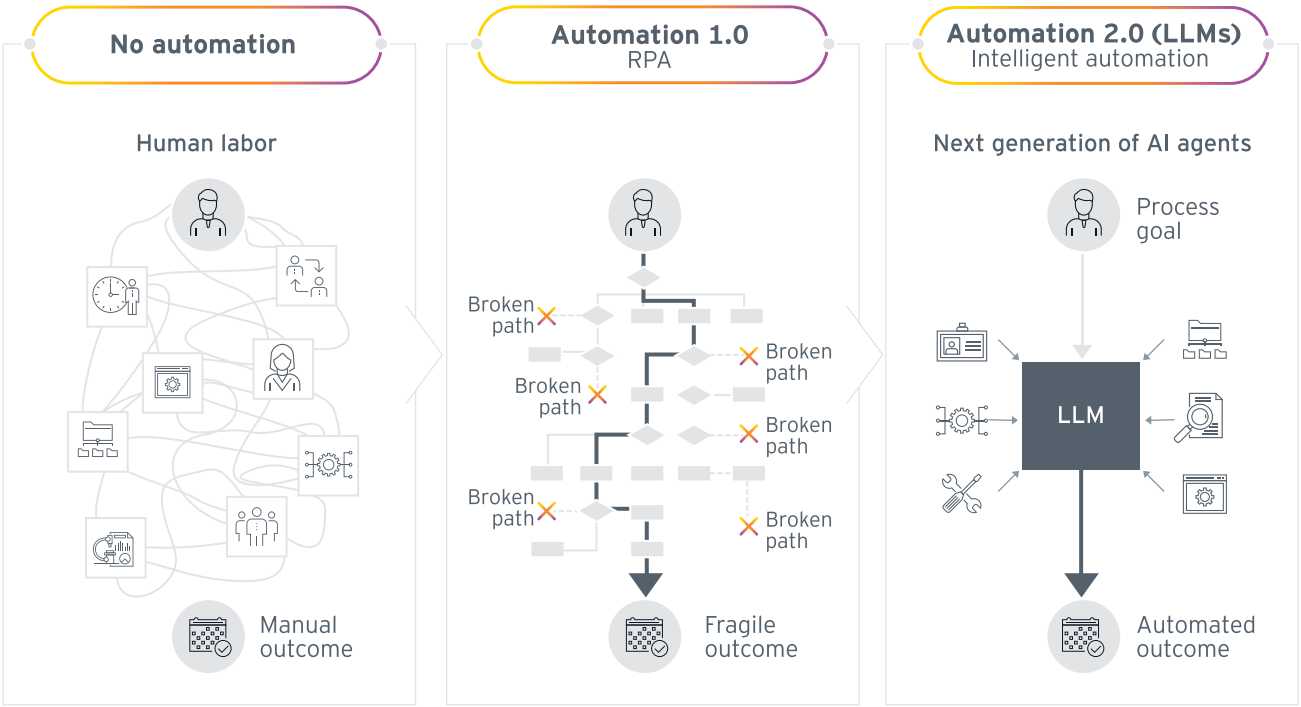
02 Grounding in app specific data to create relevance

03 Ensuring privacy and compliance by keeping data within the application

For example:

- **ServiceNow's Now Assist** offers incident summarization, code generation, and resolution note creation, enabling IT agents to expedite tasks and improve efficiency. Recent expansions include Now Assist in Virtual Agent, which facilitates advanced GenAI chat experiences; flow generation, which converts plain text into low-code workflows for rapid development; and Now Assist for Field Service Management, aiding field teams with task summaries to streamline operations.
- **Salesforce's Einstein** delivers conversational AI across all the organization's applications, allowing for proactive suggestions and actions, such as recommending follow-up tasks, after-sales calls, or generating personalized marketing content.
- **SAP's Joule** supports tasks like executing transactions, navigating applications, retrieving information, and generating analytical insights.
- **Oracle Fusion** brings over 50 GenAI capabilities directly into business workflows across finance, supply chain, HR, sales, marketing and service.

How AI changes RPA



Source: a16z

A new approach to RPA

GenAI is enabling new approaches to automation by combining LLMs with automation workflows. While traditional RPA relied on scripted bots to mimic human actions, often struggling with process changes and requiring costly implementations, GenAI enables adaptable agents that can interpret end goals and execute tasks across various data inputs and evolving business processes. For example, GenAI can extract relevant information from emails or PDFs and input it into enterprise systems, adapting to variations in content and format without needing manual intervention.

This shift has profound implications. Intelligent automation reduces costs by eliminating the need for constant updates and maintenance of rigid RPA systems. It also unlocks new productivity gains, enabling employees to focus on strategic, value-adding tasks while automating complex, time-consuming processes. Furthermore, companies can use this technology to scale operations more efficiently, enhance customer experiences, and create competitive differentiation through smarter workflows and decision-making.

As a result, businesses that adopt intelligent automation early stand to gain a significant edge in their respective markets.

Implications for companies

- Move to an AI-first app strategy – adaptive and interactive interfaces, self-improving models and architecture that is scalable, flexible, and can heavy computational demands
- Prepare for the coming wave of AI embedded enterprise apps that will feature cognitive services and adaptive learning
- Leverage next-generation approaches to automation (RPA) and integration

Moving to an AI-ready data foundation

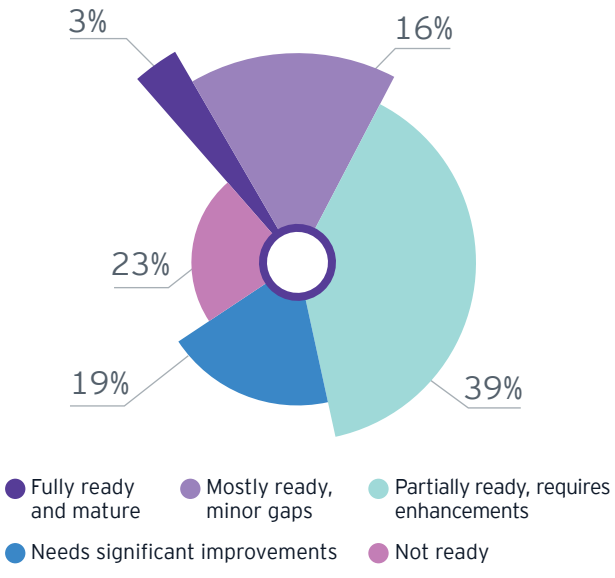
Data is the lifeblood of AI initiatives, as it forms the foundation on which models are trained, tested and deployed. The quality, diversity and volume of data directly influence the accuracy and performance of AI systems. Without clean, structured, and representative data, even the most advanced algorithms can produce biased or unreliable outcomes. In the context of AI, data enables the identification of patterns, predictions, and insights that drive innovation, decision-making and automation.

In India, with its explosion of population scale digital platforms, the difference between winners and losers in the AI race will in many cases boil down to the ability to procure and leverage diverse datasets that address unique challenges.

Enterprises are rapidly building the data fabric essential for enabling model-first digital transformation with over 68% of surveyed Enterprises having made meaningful strides towards data readiness for AI use. To move beyond commodity model performance, companies are focusing on identifying, nurturing, and leveraging datasets that offer competitive advantages. Simultaneously, enterprise-grade

Organization's readiness in adopting GenAI: Data (platform readiness)

Enterprises in India are at different stages of data readiness, with only a few at a mature level



Source : EY India C-suite GenAI Survey 2024

Advent of new technology stacks is compelling organizations to reassess their risk posture, develop new frameworks for managing AI in production, and address cybersecurity challenges

technologies—collectively known as the modern data stack—are simplifying data ingestion, storage, analysis, and integration, enabling businesses to unlock the potential of their data.

Preparing data for AI

As businesses increasingly adopt GenAI, they face a critical challenge: most data is not well-prepared for AI implementation. While organizations often have vast amounts of structured and unstructured data, they lack effective systems for managing and structuring it. Comprehensive metadata – data about data - is equally crucial, as it provides the context necessary to deliver high-quality, timely, and relevant information. Without these foundational systems, data quality and governance issues undermine productivity and decision-making.

Establishing a robust data framework

To fully harness AI technologies, businesses must implement comprehensive data governance frameworks. This includes ensuring data accuracy, consistency, and seamless integration across departments. Our recent report, 'Data 4.0: Making your data AI-ready', highlights the need for agile data architectures and frictionless frameworks, advocating a shift from siloed data repositories to unified platforms capable of managing complex data landscapes and generating actionable insights.

Role of data pre-processing

Data preparation is a critical step before feeding information into AI models. For example, implementing standardization rules can address inconsistencies and fill data gaps, particularly in sectors like healthcare. Organizations that neglect data quality put themselves at a competitive disadvantage. A master data management system serving as the GenAI context is vital for establishing a single, reliable source of truth across all transactional data.

Data requirements for GenAI and traditional AI/ML differ

Aspect	Traditional AI/ML	GenAI
Data scope	Narrow, task-specific	Massive, broad, diverse
Labeling	Essential, expensive	Initially minimal; may be required to ensure alignment later
Data quality focus	Accuracy, consistency	Filtering harmful, biased or copyrighted content
Data preparation	Feature engineering, structured formats	Large-scale ingestion, deduplication content moderation
Infrastructure	Standard (extract, transform, and load) ETL process, feature stores	Distributed storage, vector databases, retrieval-augmented set-ups
Governance and compliance	Known frameworks, simple anonymization	Complex filtering, legal/IP checks, preventing sensitive data leaks
Bias and ethics	Manageable with balanced sampling	Heightened risks due to scale and diversity of training data
Evaluation	Quantitative metrics on labeled sets	Qualitative, human-in-the-loop, alignment tests
Lifecycle and maintenance	Periodic updates, stable pipelines	Continuous refresh, dynamic retrieval augmentation
Tooling and skills	Established ML ops, data engineers, labelers	Prompt engineers, content moderators, large-scale data curators

Unlocking AI's full potential

Ultimately, effective AI utilization begins with robust data management practices. Proactive governance, quality assurance, and seamless data integration are essential for navigating the complexities of data readiness for AI.

AI-ready data is a competitive differentiator. Companies that focus on unique datasets and robust data governance will unlock better-than-benchmark AI performance

Implications for companies

Focus on and nurture datasets that provide competitive advantage- these will yield better-than-benchmark model performance

Implement a robust data governance framework - ensure accuracy, security, and compliance of the data estate aligned with regulations like India's Digital Personal Data Protection Act

Implement a scalable data Infrastructure – Invest in cloud platforms or data lakes, real-time processing tools, and AI-ready hardware like GPUs/TPUs to handle large datasets

Getting your people ready for AI

Change management is a critical component to achieving the most out of GenAI. EY estimates that GenAI could impact 38 million jobs in India. We discuss our assumptions, methodology and implications in the chapter on AI and jobs.

Our enterprise survey suggests that only 3% of Indian enterprises possess the in-house talent and resources to make the most of what AI has to offer. Enterprises need to address the gap through a mix of programs to hire and retain high quality AI talent or by seeking help from third party experts in the short term to bridge the gap.

At the same time, reports suggest that over 92% of Indian professionals are leveraging AI at work, surpassing the global average of 75%. This suggests that educating the rank and file on how to use GenAI well and where the risks lie, along with arming them with GenAI tools appropriate for citizen developers, may be one approach to encouraging and scaling GenAI adoption.

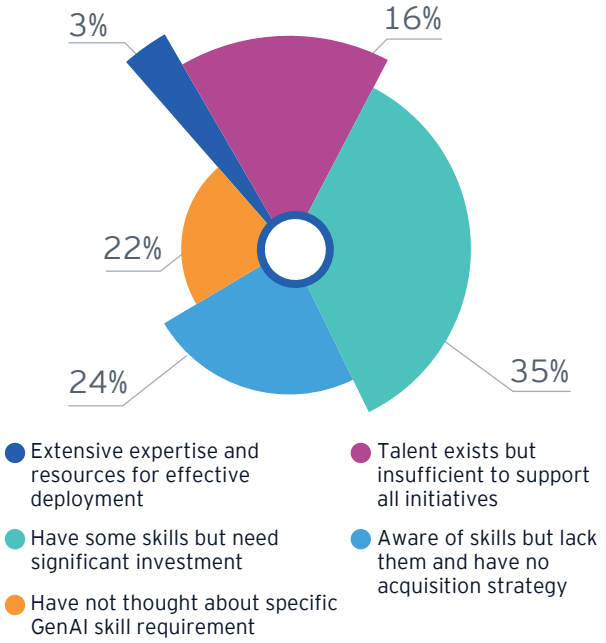
Increase in deepfake scams and AI-driven cybersecurity threats highlight the urgent need for real-time governance, explainable AI, and proactive cyber defenses

Finally, the productivity gains from GenAI will be unequally distributed with certain functions such as Call Center Management seeing significantly greater gains than R&D. In certain instances, AI will replace human effort while elsewhere it will augment or amplify the same.

Enterprises should systematically evaluate the role of AI at the level of functions, jobs and tasks in order to re-orient and re-skill their workforce to get the most out of what GenAI has to offer. This is discussed further in our chapter 'Transforming work with GenAI'.

Organization's readiness in adopting GenAI: Talent (resource availability)

AI expertise is a key need for most enterprises as they undergo GenAI transformation



Source : EY India C-suite GenAI Survey 2024

Implications for companies

- Prepare your organization for GenAI by educating them across rank and file
- Scope out and prepare to hire GenAI specifi- talent or expertise to deliver your transformation initiatives
- Systematically explore what GenAI can deliver for your organization through a bottom up evaluation of each job and task rather than a top-down brainstorming for GenAI ideas and use-cases

Confronting the changing frontier of risk

As GenAI adoption becomes more prevalent, it requires a nuanced and well thought out approach to understanding and tacking the underlying risks. Traditional risk management frameworks, designed for deterministic systems, often fall short in addressing the dynamic and probabilistic nature of AI models. GenAI systems can inadvertently introduce biases, especially in sensitive applications like credit scoring, potentially leading to the exclusion of underserved groups.

To mitigate such risks, organizations must implement real-time governance mechanisms, including anomaly detection systems, automated compliance checks aligned with regulations, and the development of explainable AI models to ensure transparency and accountability. Similarly, the European Union's AI Act, as an example, aims to regulate AI systems based on their risk levels, from minimal to high-risk applications. Addressing issues like AI hallucinations through improved techniques and better training data filtering enhances the reliability of AI systems in critical tasks such as medical diagnostics and financial predictions. Implementing Responsible AI practices is vital for regulatory compliance and maintaining trust with consumers and stakeholders. These topics are discussed in greater detail in our chapter on Policy and Responsible AI.

Ensuring accuracy in AI systems

Ensuring the accuracy of GenAI systems is crucial in both consumer and enterprise contexts. Intelligent assistants like Amazon Alexa, Microsoft Bing Chat, Google Assistant and Apple Siri, for example, have long faced criticism for inaccuracies. In enterprise settings, such errors can prove to be much more expensive both financially as well as leading to injury or loss of life in an industrial setting.

In 2022, Air Canada's AI-powered customer service chatbot provided incorrect information to a customer seeking a bereavement fare. The chatbot erroneously stated that the customer could apply for a refund within 90 days after booking, contradicting the airline's actual policy, which does not allow refunds for travel already completed. When the customer applied for the refund, it was denied, leading to a legal dispute. The Canadian Civil Resolution Tribunal ruled against Air Canada, ordering the airline to honor the refund and emphasizing that companies are responsible for the information provided by their AI systems

In January 2024, a Hong Kong-based employee of the UK engineering firm Arup fell victim to a sophisticated cyber scam involving deepfake technology, resulting in a loss of approximately US$25 million. The fraudsters used AI to create hyper-realistic video and audio deepfakes, impersonating senior company executives during a video conference. Convinced of the representations' authenticity, the employee proceeded to transfer funds across multiple bank accounts as instructed. The deception was uncovered when the employee later verified the transaction with the actual executives. Arup promptly reported the incident to Hong Kong police, who have classified the case as "obtaining property by deception" and are actively investigating it. This event underscores the escalating threat posed by deepfake technology in cybercrime, highlighting the urgent need for organizations to enhance their cybersecurity measures and employee training to detect and prevent such sophisticated fraud attempts.

Implications for companies

- New risk management frameworks are needed to address the dynamic and probabilistic nature of AI models
- Real-time governance mechanisms such as anomaly detection systems and explainable AI models ensure transparency and accountability
- Better techniques and training data filtering add to the reliability of AI systems
- AI-powered security solutions, cyber defense strategies and continuous learning across the organization can minimize risk

GenAI's ability to produce highly realistic synthetic content introduces significant challenges in distinguishing genuine information from fabrications. This capability can be exploited to spread false narratives, manipulate public opinion, and erode trust in institutions. Additionally, GenAI can be leveraged to craft sophisticated phishing attacks, generate malicious code, and create deepfakes, amplifying the capabilities of cybercriminals and posing substantial security risks.

Traditional cybersecurity training and measures, while essential, may not suffice against the evolving landscape of AI-driven threats. Cybercriminals are increasingly leveraging AI to execute sophisticated attacks that can bypass conventional defenses, rendering static security protocols inadequate. To address these challenges, organizations will need to adopt AI-powered security solutions capable of real-time threat detection and response, implement proactive cyber defense strategies, and foster continuous learning environments to keep pace with the rapidly changing threat landscape.

Chapter 3

Transforming work with GenAI:

EY India jobs study

Chapter 3

Transforming work with GenAI:
EY India jobs study

- An EY study on analysing over 10,000 tasks across critical industries that contribute to the Indian economy reveals that 24% of tasks can be fully automated, while time spent on another 42% can be significantly reduced, freeing up 8-10 hours per week for corporate workers
- This translates to a productivity boost of 2.61% by 2030 in the organized sector affecting 38 million Indian employees and additional 2.82% in the unorganized sector
- The largest productivity gains from GenAI are expected in the services sector due to its higher labor share in gross output, while manufacturing and construction will see smaller impacts
- Realizing this potential requires reimagining processes, redefining workflows & KPIs and reskilling the workforce. Large-scale upskilling initiatives, supported by public-private partnerships and AI-focused training programs, are crucial to bridging the skill gap

Unlocking the productivity revolution

AI, particularly GenAI, is reshaping the world of work, heralding a transformative era for the Indian economy. It is set to transform every job, from farm labor to the role of a CEO, unlocking immense potential for productivity and economic gains. India's workforce, therefore, is poised for significant transformation, with every job in the organized sector expected to experience a paradigm-shifting impact over the next 3-5 years.

To realize this potential, organizations must act decisively, moving beyond piloting use cases, to redefine processes, job roles, and KPIs and skilling journeys. The government needs to foster an enabling environment for AI adoption while addressing the need for workforce adaptation and skill development.

An EY study to understand the impact of AI on jobs aims to address critical questions in this transformative era: How will GenAI redefine jobs in India? What are the key shifts across industries? What steps must organizations in India take to achieve sustainable productivity gains? And how can the Indian government facilitate a smooth transition into an AI-augmented work environment? By exploring these questions, the study offers a strategic roadmap for India to excel in a time of rapid technological progress and evolving economic landscapes.

Productivity survey highlights:

AI-driven transformation is expected to impact 38 million employees across India's organized sector

IT, banking, and insurance sectors are expected to see significant impact, with business processes like customer service and software development experiencing fundamental shifts

This could potentially drive a 5.44% boost in productivity for the Indian economy

Research approach and methodology

For the purpose of this research study, we have defined the following terms:

- 'Tasks' are discrete individual activities performed using human skills and tools to achieve desired outcomes
- 'Jobs' are structured collections of these tasks, encompassing a set of responsibilities and duties to achieve organizational objectives
- 'Business processes' are sequences of interlinked tasks and activities designed to produce a specific outcome that drives broader organizational goals

As the foundation of the study, we have studied over 10,000 tasks across critical industries that contribute to the Indian economy. Every task is analyzed on these factors:

- Exposure (extent to which any task lends itself to improvement in productivity through the use of automation and GenAI)
- Complementarity (degree to which the task will require human oversight and therefore GenAI augmented)
- Intensity (frequency of tasks analyzed in granular time units to estimate volume and effort)

The task analysis has been aggregated at a business process and industry level to generate actionable insights. This study also analyzes the impact of AI on labor productivity using RBI's KLEMS database, modelling the impact of labour productivity improvement on gross output. For more details on the methodological framework, please refer to the annexure.

Understanding productivity gain at the task level

The analysis of tasks across exposure, complementarity and intensity generates an actionable framework for unlocking a 'productivity uplift' at a job role, business process and organization level. Based on this analysis, the impact on tasks can be classified into three categories:

- Automate (tasks, if not already done so, can be completely automated or eliminated from the workflow)
- Augment (tasks can be enabled by GenAI, leading to significant reduction in time to perform them)
- Amplify (tasks that can be transformed, requiring elevated outcomes, cognitive processing and/or interactions)

Our analysis across multiple sectors reveals that approximately 65% of tasks across industries have the potential for automation or augmentation. The greatest potential for transformation exists in sectors like IT, banking, insurance, and telecom, where AI is set to reshape operational efficiency and drive value creation.

Productivity gain insights

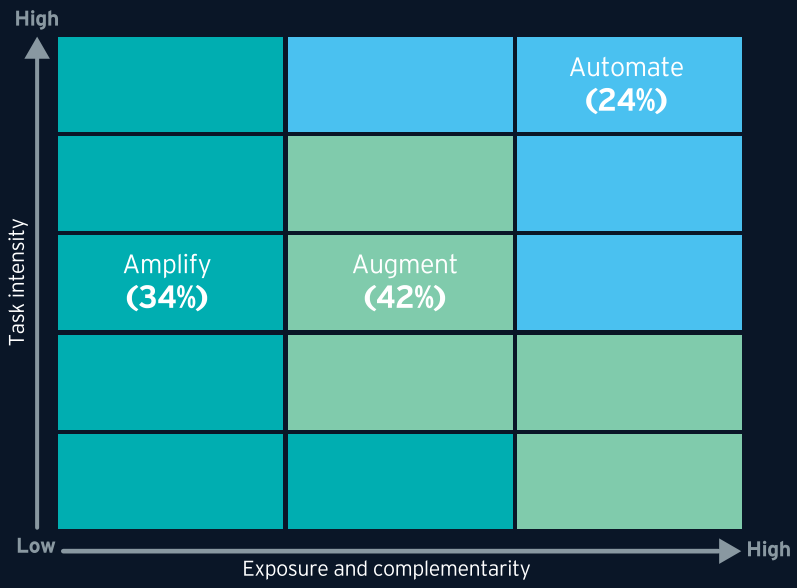
This exhibit illustrates the exposure and complementarity to AI on the x-axis and the intensity of doing the same task on the y-axis. It highlights areas with the highest potential for return on investment and opportunities for redefining job roles.

Amplify

(Tasks that can be transformed, requiring elevated outcomes, cognitive processing and/or interactions)

A few examples are:

- Investment decisions
- Strategic business planning
- Devising annual operating plans
- Product design
- Pricing strategy
- Product diversification strategy
- Acquisition or merger decisions
- Personalized patient care
- Counselling
- Delivery services
- Home technical services



Automate

(Tasks that, if not already done so, can be completely automated or eliminated from the workflow)

A few examples are:

- L1 customer service
- Scheduling meetings or reminders
- Invoice reconciliation
- Resume screening and prioritization
- Order tracking
- Website analytics
- Basic IT support

Augment

(Tasks that can be enabled by GenAI, leading to significant reduction in time to perform them)

A few examples are:

- Competitor analysis
- Loan structuring
- Market forecasting
- Fraud detection
- Supply chain optimization
- Event planning
- Social media strategy

Automate
Tasks like L1 customer service, scheduling appointments and reminders, matching and reconciling documents and invoices, content creation etc. are either fully automated or on track to be phased out. These account for 24% of repetitive, transactional activities.

Augment
Tasks such as competitor analysis, loan structuring, forecasting, fraud monitoring, event planning etc. can be significantly accelerated with GenAI. These comprise 42% of tasks, which necessitate a strong human-AI collaboration to deliver superior outcomes in lesser time.

Amplify
Tasks such as personalized patient care, counselling, hospitality services, delivery services, home technical support as well as strategy and business decision making will increasingly require elevation through higher order thinking, personalization, and empathy.

Understanding productivity gain at the business process level

The pace of workforce transformation is likely to accelerate, given increases in the potential for technical automation and GenAI across major business processes.

Understanding productivity gain at the industry level

Our analysis based on the impact of AI adoption on labor productivity improvement by the organized sector suggests potential to increase the productivity of the economy by 2.61% up to 2030. Further productivity improvement of up to 2.82% is possible with the unorganized sector adopting AI, resulting in combined potential productivity gains of 5.44%.

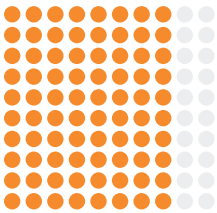
Our estimates indicate that nearly 38 million employees will be impacted. The integration of AI into our work environment has the potential to free up 8-10 hours per week for every corporate worker, over the next 3-5 years. This freed-up capacity presents a transformative opportunity for organizations and industries to reinvest in growth and innovation. Businesses can leverage this productivity boost to explore new markets, expand into untapped categories, enhance customer experience, or streamline operations to reduce costs.

At the broader economic level, India can open up new pathways for innovation, strengthen its global competitiveness, and develop solutions customized to its distinctive socio-economic context.

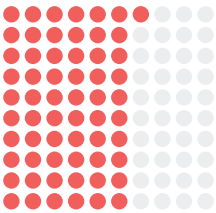
The largest gains are projected to accrue in the services sector, as the share of labor in gross output tends to be higher in this sector. The impact on manufacturing and construction output will be lower, as the labor income share in gross output

What GenAI adoption means for business processes

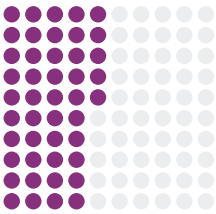
These charts summarize the productivity uplift potential across several business processes ranging from call center management where 80% productivity enhancement is expected to new product development where productivity uplift could be muted, and to the tune of 17% tends to be lower.



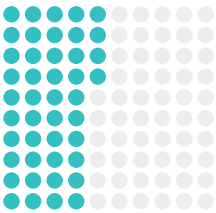
80%
Call center management



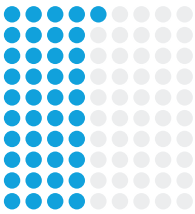
61%
Software development



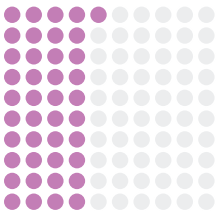
45%
Content development and distribution



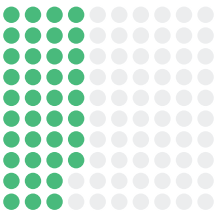
44%
Customer service



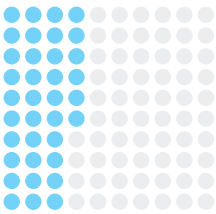
41%
Sales and marketing



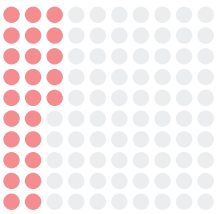
41%
Supply chain band merchandising



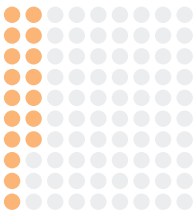
38%
Store operations



36%
Production and maintenance



25%
Quality and regulatory compliance



17%
New product development

However, even in sectors with a low income share of labour in gross output, additional productivity gains could accrue as AI applications enable more efficient capital deployment and resource utilization, such as energy and materials.

Realizing productivity gains: What should organizations do?

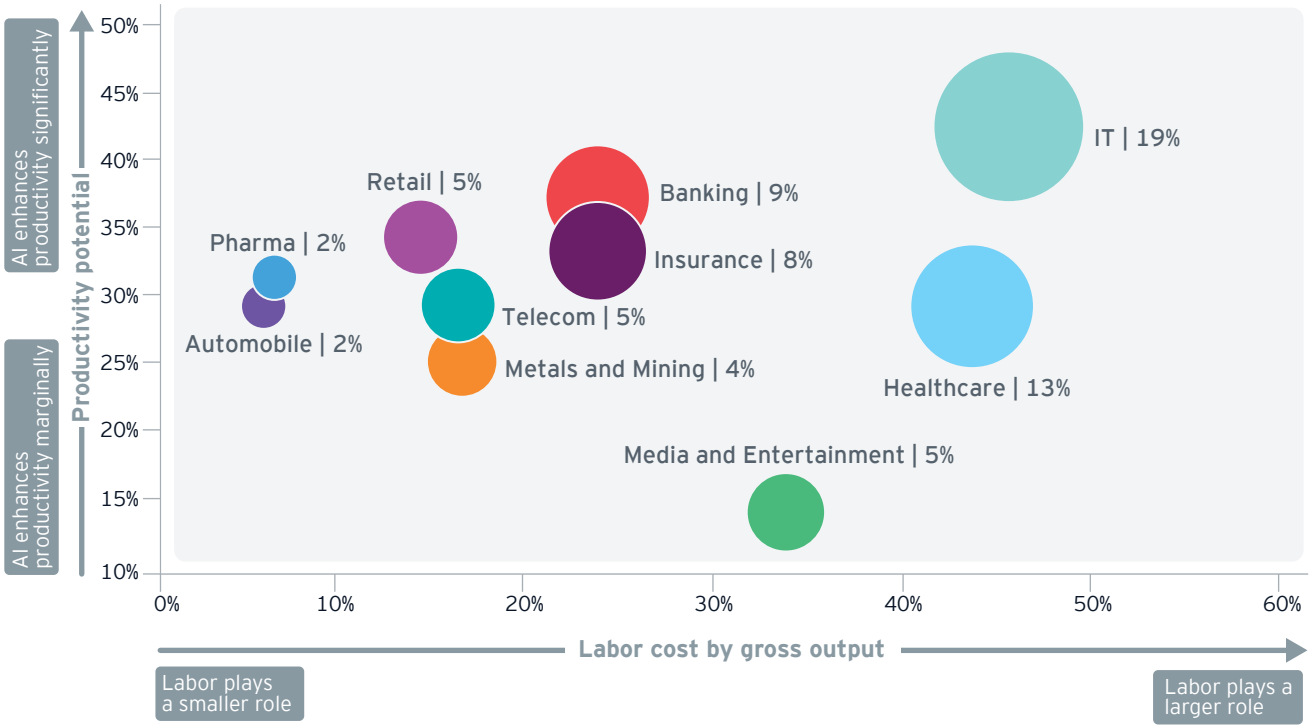
In the past, technology advances and automation largely impacted manual labor and process-centric knowledge work. This time around, it is different. The script has been flipped; GenAI will change what is generally called knowledge work — everyone from entry-level number crunchers to seasoned heads of business units and C-suite executives will see their job evolve over the next decade.

While some organizations may still struggle with unclear AI strategy, evolving AI regulation, and talent inadequacy, investments in AI are on the rise. It is seen as one of the most revolutionary technological advancements in recent history and as a multi-year opportunity. AI impact is just about starting to show up in corporate bottom lines, with a small percentage of companies already reaping the rewards of AI and GenAI.

In India, organizations have progressed from AI helping answer questions, to AI making predictions, to GenAI agents. While the ability to intelligently automate tasks and gain instant insights has the potential to boost workplace productivity, translating this potential to profit is still a discovery. Some companies may experience underwhelming results even after a year of investment in such initiatives, leading to disillusionment or a loss of momentum in their transformation efforts. But this is not the time to let go, stand on the sideline, or wait and watch.

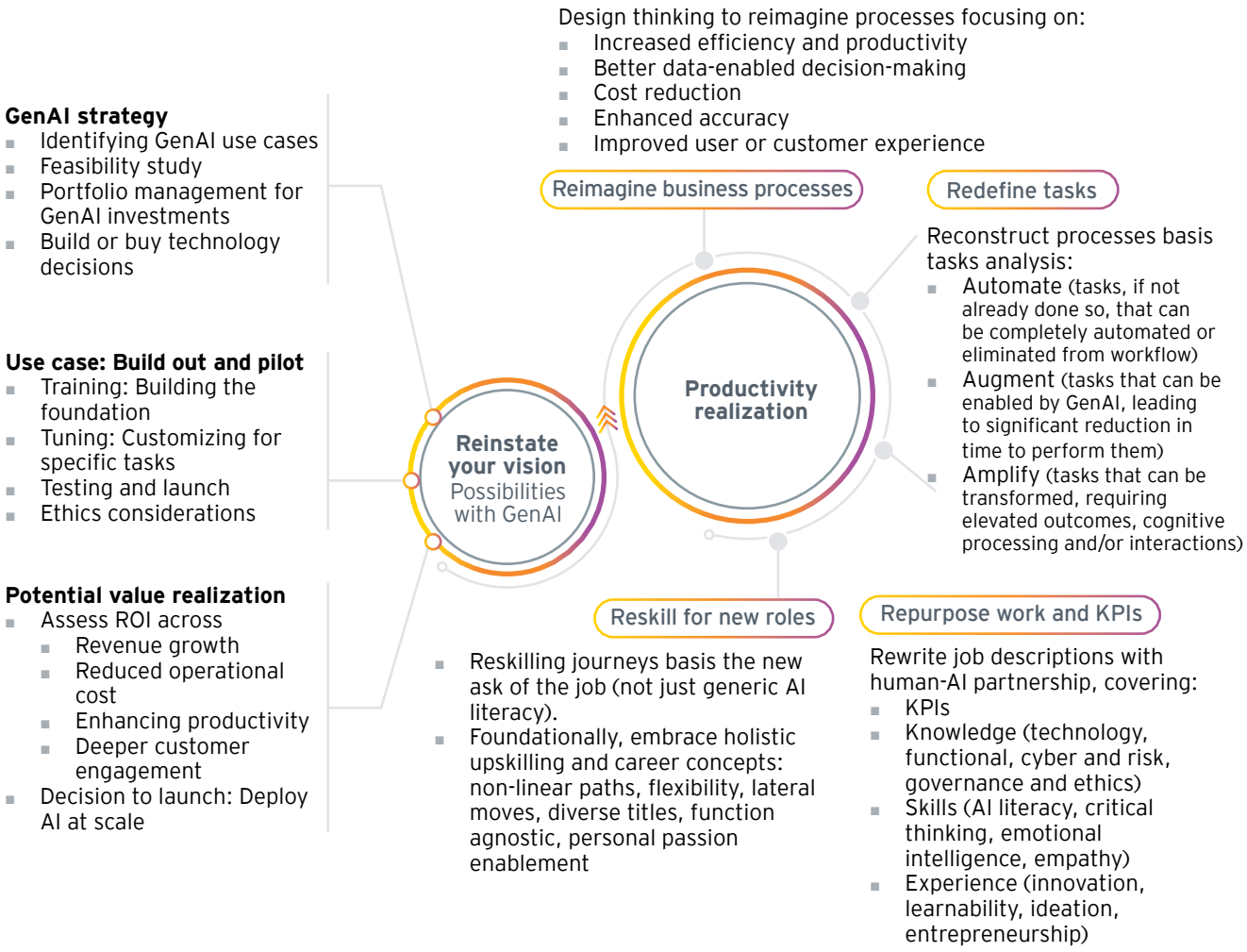
Productivity gains across key sectors

This graph illustrates the labor cost as a percentage of gross output on the x-axis and the percentage productivity improvement through AI on the y-axis. The size of the bubble represents the potential labor efficiencies created by AI for the industry.



Introducing a structured approach to unlock productivity potential

By embracing the following tenets, organizations can take the necessary steps to bolster confidence, build trust, and open the door to a new age of productivity



Reinstate your vision: Unlocking GenAI's potential

01 **GenAI strategy:** Identifying where GenAI co-pilots can create real competitive advantages is essential. A value-based portfolio approach ensures priority use cases are both innovative and financially sustainable.

02 **Use case - Build and pilot:** Develop use cases to enhance productivity, automate tasks, and modernize customer experiences. Each use case follows four key phases: training, tuning, testing, and ensuring ethical deployment.

03 **Potential value realization:** This critical stage evaluates whether AI investments are delivering tangible outcomes such as revenue growth, cost savings, improved efficiency, and enhanced employee engagement. Promising results within 1-3 years justify scaling AI implementations.

At this juncture, organizations can decide whether to scale AI adoption, setting the stage for transformative productivity gains.

Productivity realization

01 **Reimagine business processes:** Rethink how work is performed by examining existing tasks, identifying inefficiencies, and leveraging new technologies to drive innovation and effectiveness. Shifting from traditional methods to transformative approaches is key

02 **Redefine tasks:** Analyze and optimize task construct using the 3A framework: Automate, Augment, Amplify

03 **Repurpose work and KPIs:** Elevate critical thinking and human-centered tasks, redefining job descriptions and key performance indicators to align with GenAI capabilities

04 **Reskill for new roles:** Focus reskilling efforts on preparing employees for new job constructs, moving beyond basic AI literacy. As Generations Z and Alpha enter the workforce, redefine jobs and career paths to reflect evolving aspirations and technological landscapes

GenAI will influence companies across all industries, but true success — marked by increased profitability — will belong to those who prioritize process optimization, workforce engagement, and cultural alignment alongside technology adoption.

Upskilling at scale: Preparing 38 million people for tomorrow's economy

The government can play a significant role in fostering the AI ecosystem in India ensuring and even enhancing the competitiveness of domestic businesses. To ensure the success of these initiatives, policy makers will have to closely collaborate with industry bodies, corporates and their leadership.

Several critical areas where government intervention is expected to be pivotal are outlined below:

Bridging the skill gap: According to the Ministry of Skill Development and Entrepreneurship, only 51.3% of college final-year students in India are employable, highlighting a significant education-employability skill gap.

GenAI will change 'knowledge work' — everyone from entry-level number crunchers to heads of business units and C-suite executives will see their jobs evolve over the next decade

Establishing AI-focused training centers and incentivizing industry-led upskilling will enhance employability. For example, integrating AI into the 14,000-plus ITIs and more than 1,100 universities can build a future-ready workforce.

AI-focused Apprenticeship Scheme (AIAS): Developing an 'AI-mindset' within the industrial ecosystem requires a large-scale AI-focused apprenticeship scheme (AIAS) to skill the domestic workforce. Designed in partnership with the corporate sector, AIAS can build industry-aligned capabilities in youth. Learnings from the recently announced Prime Minister's Internship Scheme (PMIS) can provide a valuable template for its successful implementation.

Leveraging Public-Private Partnerships (PPP): India can look to replicate the success of PPPs in the utilization of Digital Public Infrastructure, which helped turbocharge India's digitization journey. PPPs can be leveraged to develop the ecosystem for the effective diffusion of AI within the economy, including skilling, datasets, security, compute capacity, trust, and application development.

As India stands at the cusp of a transformative era, the convergence of GenAI and human ingenuity offers unparalleled opportunities for productivity and growth. By embracing this change with a structured, holistic approach—redefining processes, reskilling talent, and fostering a culture of innovation — the nation can unlock significant economic value.

Through a shared collaborative vision between, and decisive action from, both its policy makers and corporate leaders, India can lead the way as a global leader in AI-powered growth and innovation.

Chapter 4

Industries in transformation

Transforming transactions with GenAI: Financial services

- GenAI is revolutionizing financial services across customer engagement, operations and risk assessments
- Indian firms are adopting GenAI majorly for voice bots, email automation, business intelligence, and workflow automation
- GenAI is expected to boost productivity (34% to 38% by 2030 in some segments), with significant improvements in key areas like customer service and operations

The financial services sector saw strong real-world adoption of GenAI and a business case-based implementation drive in 2024 compared to innovation projects in 2023. Large banks have been cautious in adoption of GenAI given their large size and compliance requirements compared to NBFCs and a few mid-sized banks. The strongest adoption has been among NBFC lenders and insurers. NBFCs have implemented GenAI-driven solutions that have started proving business value. Leading companies are publicly stating their concrete and numerical benefits in media as well as investor and analyst presentations, especially during the last few months of 2024.

Financial services enterprises are experimenting with various GenAI use cases to build advanced architectural solutions that, connect GenAI with core financial systems like CRM, loan origination and card management

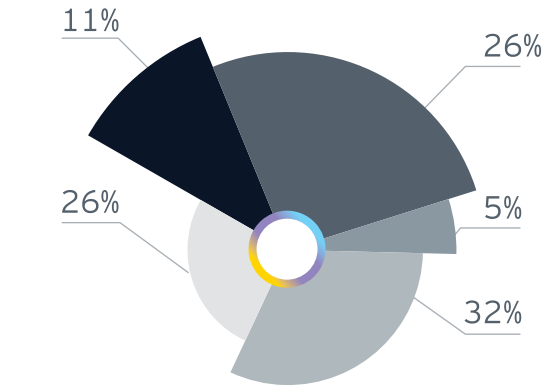
Companies have also reported decrease in cost of per unit normal business operations activities from 1/4th to 1/10th of the traditional manual operating costs using AI for applications like:

- Customer calling and text driven interactions (across WhatsApp, Email, SMS, mobile app, website and voice channels),

Question

What has been your experience with GenAI POC engagements?

74% respondents have initiated POCs; with 11% running in production

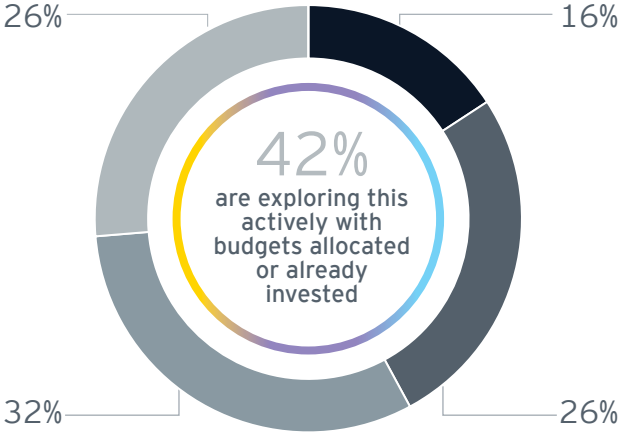


- GenAI running, in production
- POCs completed - successful POCs lined up for production
- POCs completed, but no clear impact realized
- POCs in progress
- No POCs done

Source : EY India C-suite GenAI Survey 2024

Question

What is your organization's overall inclination to invest in GenAI?



- Bullish, investing
- Exploring actively, budgets allocated
- Wait and watch with small experiments
- Exploring, no immediate investment
- No plans to invest

No response for "No Plans to Invest"

Source : EY India C-suite GenAI Survey 2024

Question

Across organizations, select functions/ departments being prioritized for GenAI implementation *(Mark all that apply)*

Customer service	68%
Operations	47%
Underwriting	32%
Sales	26%
IT	21%

Source : EY India C-suite GenAI Survey 2024

- Credit Underwriting Summary Automation,
- Marketing collateral generation for SEO driven website content writing,
- Learning and development video creation, etc.

GenAI is being used to increase the span of coverage for costly manual routine activities like customer care call quality evaluation, percentage of audit evaluation samples coverage, compliance queries and checks, etc.

Additionally, NBFCs are aggressively building conversational business intelligence bots that understand the "vocabulary of the orgs" to query business operations data to go beyond static dashboards and ask n-th level deep dive and dissection questions for operations productivity and profitability enhancements as well as diagnostics of issues to focus upon.

Tata AIA Life, for example, has launched Tasha bot that has completed a sizable number of 7.5 million customer interactions with a remarkable goal completion rate of 98%. The bot allows policyholders to access over 60 services such as policy information review, payment updates, document downloads, and profile updates digitally using AI. Additionally, it also acts as a sales coach to the frontline salespeople helping them with lead management and prioritization, deliver tailored advice and provide training and performance information.

While banks have been relatively conservative in number of production-level use cases, big banks have taken up large-scale implementation projects specifically focused on GenAI, towards the last few months of 2024. These large scale and ambitious projects talk of: using GenAI in all areas ranging from cyber security copilot and corporate lending underwriting copilots to AI driven customer care (inbound and outbound multi-channel) platform implementations and on-premise GPU cloud deployments.

Mid-sized banks that are more innovative have also developed large scale GenAI driven orchestration layers enabling GenAI systems to communicate with core banking systems using Agentic AI layers showing a longer-term strategic intent behind use of GenAI across multiple functions.

In December 2024, IDFC FIRST Bank announced the launch of AI-powered holographic digital avatar of legendary actor Amitabh Bachchan, for customer engagement. The Holographic Extended Reality (HXR) device has touch capability, allowing users to interact directly with the digital avatar. Through this, customers can engage with the digital avatar and get information on bank products and services, including zero fee banking, monthly interest credits, mobile banking, and their current accounts.

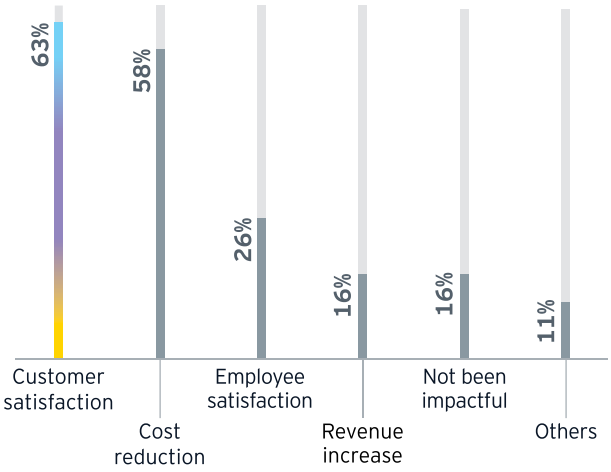
The bank also has developed an AI-based bank statement analyzer that gives deeper level insights to customers on their spending habits, inflows, and transactions.

Question

Where has AI been impactful?

(Mark all that apply)

AI has been most instrumental in driving customer satisfaction and reducing costs



Source : EY India C-suite GenAI Survey 2024

Overall, there was concrete on-ground progress with proven and significant business benefits in 2024, delivered by GenAI systems at production scale with large-scale Indian NBFCs at the forefront of innovation, followed by midsized innovative banks. We expect large scale banks to also trace a similar trajectory in 2025.

GenAI use cases

In the financial services sector, GenAI driven innovation can be broadly categorized by key adoption areas in different categories:

Voice agents for customer interaction: Over the past year, many NBFCs have been deploying GenAI-powered voice bots to enhance customer engagement:

- **"Call-me" button support:** Customers can request a callback to learn more about products or policies.
- **Soft-bucket collections (0–30 days past due):** AI bots engage customers in free-flowing conversations to address payment challenges and encourage timely EMI payments.
- **Recovering incomplete digital journeys:** AI agents can reconnect with customers who abandon applications mid-process to resolve issues and drive completions within 30 seconds of drop-off.

Email automation: GenAI agents are automating email management by classifying queries, allocating tickets and drafting initial responses for human review. For example, Tata Capital has successfully implemented this to achieve a 20% cost saving while reducing resolution time from one day to 20 minutes.

Conversational business Intelligence: Business leaders can now query real-time metrics – such as branch performance or NPA rates – through conversational GenAI tools, which provide data insights using visual formats like bar charts and heat maps. Custom-built solutions enable advanced analyses such as correlation studies, simulations and root-cause diagnostics.

Complex workflow automation: GenAI automates tasks traditionally handled by experienced employees, such as insurance claims processing, underwriting and credit memo creation. These AI agents can analyze PDF reports, financial statements and scanned documents to extract critical data points efficiently.

Enterprise copilots: GenAI copilots are gaining traction as productivity tools, providing employees secure access to LLMs for tasks like referring to internal policies, FAQs and circulars.

Case Study: Bajaj Finance uses GenAI for transforming customer care, sales and onboarding

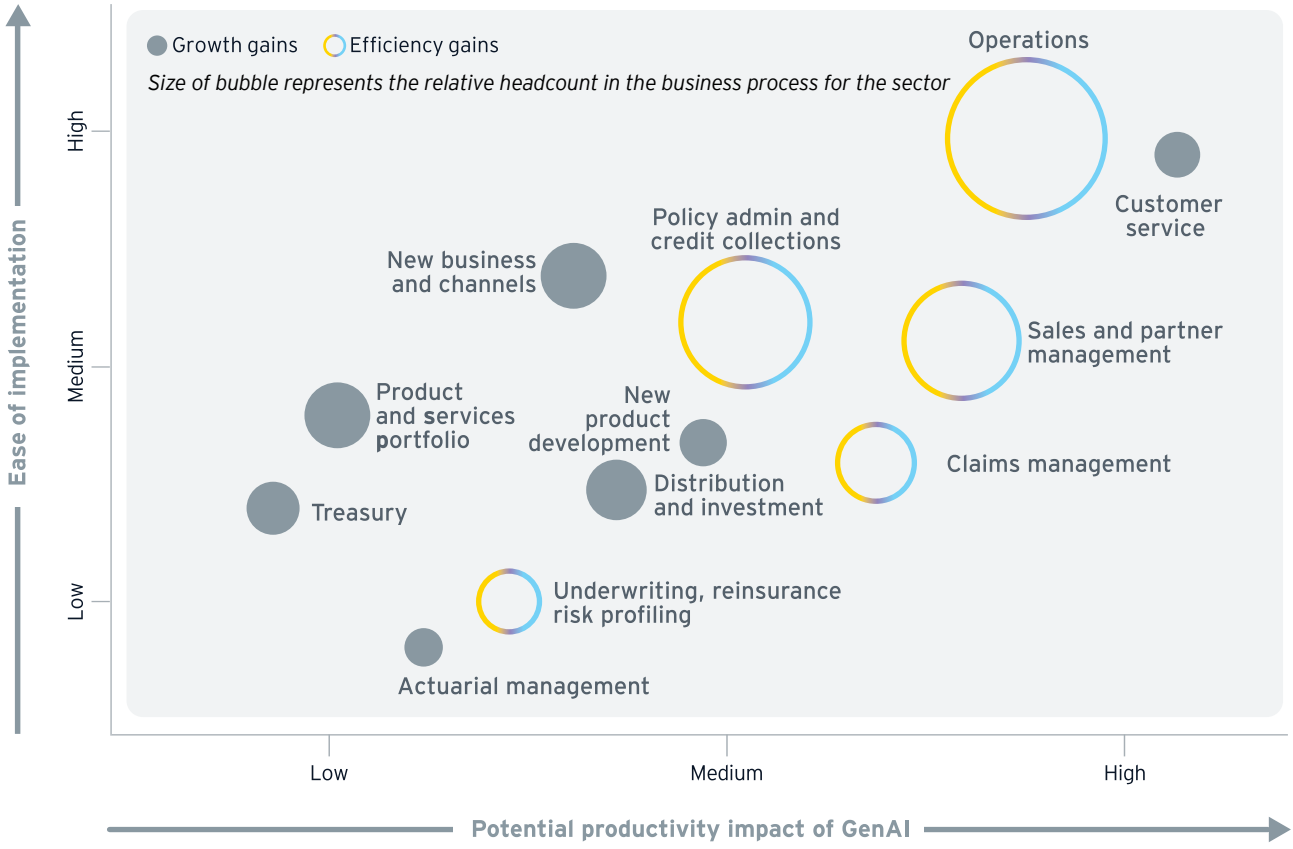
Bajaj Finance has unveiled a 5-year all-round AI adoption roadmap. This year, it has attributed a saving of INR150 crore to AI compared to last year in multiple business operations areas. It is using AI-driven bots to provide hyper personalized loan offers and cross-sell offers. The company aims to grow its targeted messaging base to 500 million from 160 million at present. Additionally, it plans to use AI to allow customers to evaluate which loan product is most suitable for them, book an appointment with a sales manager and even automate the eKYC procedure in the future. Bajaj Finance is aspiring to increase its direct sales conversion rate as well as cross-sell conversion rate by 3X using conversational sales copilot based in GenAI.

GenAI's impact on productivity

India's financial services sector, employing millions across banking, insurance, and asset management, is set for a significant productivity transformation driven by GenAI.

Our study analyzing over 700 roles in the sector (more than 300 in banking and 400 in insurance) projects that GenAI will drive a 34% to 38% productivity improvement, paving the way for growth and operational transformation in the industry.

GenAI impact on productivity across banking and insurance value chain



Source: EY India jobs study

Mid-sized banks

are developing orchestration layers with Agentic AI, enabling seamless integration with core banking systems and showcasing a strategic commitment to leveraging AI across multiple functions for long-term growth

Banks

Functions with highest potential for productivity impact include banking operations (44% to 46%), sales and customer service (38% to 40%) and credit and collections (34% to 36%), which can together account for 40% to 42% of productivity improvement

Functions like channel management, products and services portfolio are also expected to see significant productivity improvement

Insurance

Customer service (~48%), new business (46%), and sales and partner (45%) management can account for 45% to 48% of overall productivity improvement

Investments and new product development, along with claims management, are also key areas offering opportunity for productivity improvement

Challenges and way ahead

Despite its transformative potential, the financial services sector faces challenges in scaling GenAI, primarily due to strict regulatory frameworks and data privacy concerns, such as:

Data localization: Financial services firms must ensure LLM endpoints are hosted within India, through on-premise solutions or India-hosted hyperscaler endpoints

Data privacy: Firms must avoid sending Personally Identifiable Information (PII) to GenAI APIs by using PII redaction tools and anonymized data

Cybersecurity: Hosting LLM architecture within Virtual Private Cloud (VPC) environments is essential for securing enterprise systems

Indian financial services firms are accelerating innovation in GenAI with a focus on hyper-personalized financial products (for example, personalized credit cards) and GenAI-driven customer interactions. By embracing conversational AI and intelligent banking solutions while ensuring compliance, this sector is poised to lead the global adoption of GenAI technologies, driving a seamless and customer-centric future.

11

Redefining consumer engagement with GenAI:

Retail, consumer and e-commerce

- GenAI is transforming retail, consumer, and e-commerce through innovation in product development, sales and marketing and customer engagement
- GenAI is expected to boost productivity by 35% to 37% by 2030, with significant impact on insights-driven pricing and promotions and customer experience
- Future GenAI success will depend on balancing automation with human experiences and overcoming skill gaps

GenAI has become a mainstream technology across the consumer, retail and e-commerce sectors. The EY Future Consumer Index, released in July 2024, highlighted growing acceptance of AI-driven solutions, particularly in the Asia-Pacific region. Despite initial apprehensions regarding risks such as bias and reputational damage, companies are adopting robust risk management frameworks to scale GenAI enterprise wide.

Global players are leveraging GenAI to transform business processes and consumer experiences. Companies like H&M are enhancing sustainability initiatives, product development, and marketing; Coca-Cola is optimizing delivery routes and stock management; and Amazon Go is enabling

GenAI is set to make the retail sector more agile, efficient and customer-centric by connecting diverse processes including procurement, supply chain and quality management

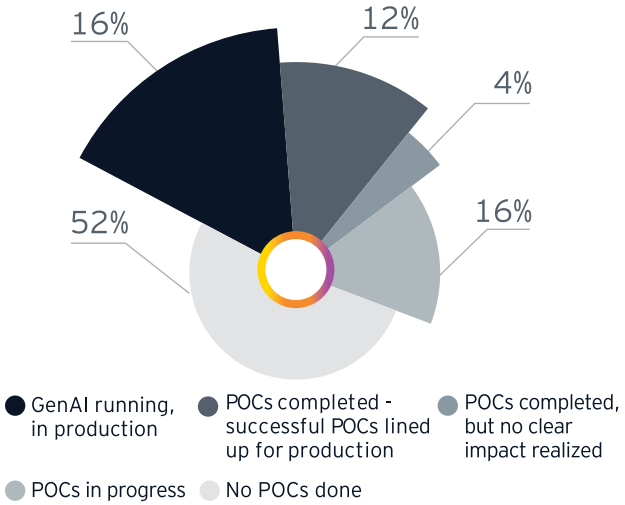
cashier-less checkout. Similarly, Zalando employs fraud detection systems, Macy's uses dynamic pricing algorithms, and Sephora offers AI-powered personalized skincare consultations. These applications showcase the transformative potential of GenAI to reshape operations and consumer interactions.

In India, companies are leveraging GenAI-driven solutions to address diverse consumer needs, drive efficiency and innovate, enabling growth and adaptability even with resource constraints.

Question

What has been your experience with GenAI POC engagements?

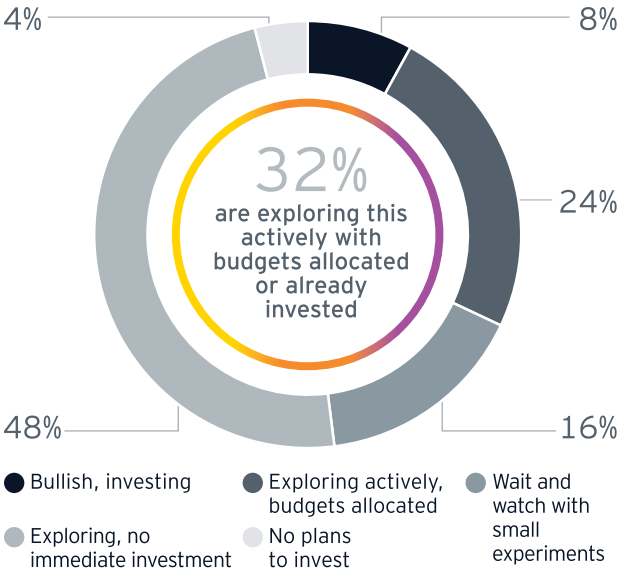
48% respondents have initiated POCs; with 16% running in production



Source : EY India C-suite GenAI Survey 2024

Question

What is your organization's overall inclination to invest in GenAI?



Source : EY India C-suite GenAI Survey 2024

Question

Across organizations, select functions / departments being prioritized for GenAI implementation *(Mark all that apply)*

Sales	52%
Supply chain	48%
Manufacturing	40%
Marketing	36%
Finance	32%

Source : EY India C-suite GenAI Survey 2024

GenAI use cases

GenAI is transforming the consumer, retail, and e-commerce industries across a wide range of use cases:

Product development: GenAI is driving innovations by continuously analyzing consumer preferences and behavior, enabling the creation of more relevant and appealing products.

Marketing: GenAI is empowering hyper-personalized campaigns by targeting micro-segments, creating precise audience profiles and delivering tailored content through segment creation and content adaptation.

Sales and recommendations: AI recommendation engines are enhancing shopping experiences. For example, the Indian captive of a global retailer is developing an AI platform to assist consumers with home improvement needs, while the Indian arm of a global snack food company is providing its sales force with real-real-time insights on retailers' buying patterns. Platforms like Amazon's Rufus, Flipkart's Flippi, and quick-commerce apps such as Zomato, Blinkit, and Swiggy are using GenAI for personalized product suggestions, intuitive customer interactions, and Indian language queries.

Merchandizing: Designers are using GenAI to create store layouts, mood boards and visual merchandising designs, optimizing time and improving efficiency.

Pricing strategies: GenAI is enabling real-time competitive pricing analysis, helping brands respond to market shifts and maximize revenue while staying aligned with consumer expectations.

Customer service: GenAI-powered chatbots and voice assistants are delivering 24/7 customer support, enhancing interactions by understanding context and regional languages. For instance, the Indian captive of a global consumer goods company is optimizing customer care through a GenAI platform that provides guided workflows, pre-emptive alerts and automated call summaries, improving resolution rates and reducing handling times.

Security and anti-counterfeiting: A global consumer goods company in India is using GenAI-powered tools to compare product data against verified databases, issuing high-alert notifications to combat counterfeit goods and protect brand integrity.

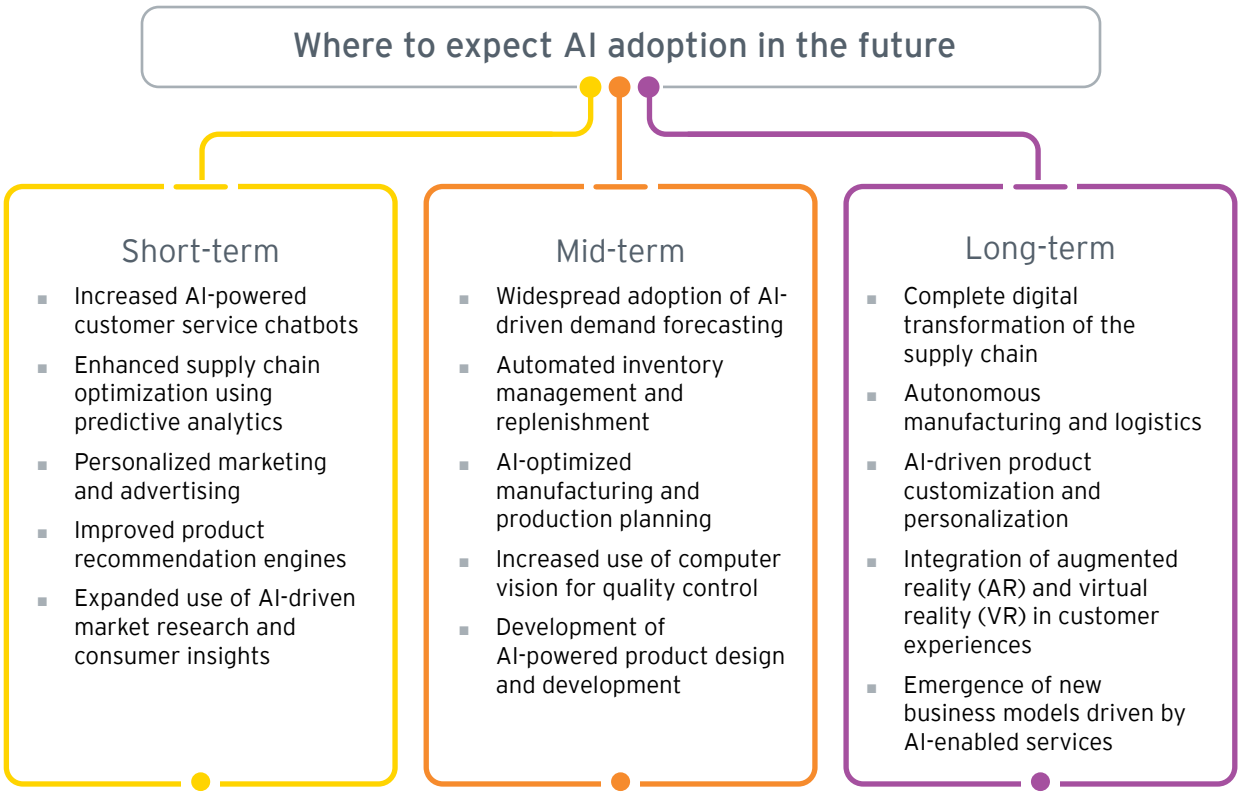
Manufacturing: GenAI is improving in-line quality control, enabling digital twins for predictive maintenance and service, and enhancing worker training programs.

Supply chain and inventory management: GenAI is optimizing demand forecasting, route planning and warehouse operations, reducing errors and increasing overall efficiency.

Post-sales: Enhanced feedback mechanisms and predictive maintenance is allowing brands to reach out to customers through chat platforms for reminders on upcoming service schedules.

Last-mile connectivity: GenAI is streamlining last-mile logistics by optimizing demand planning, route management and warehouse automation to ensure seamless delivery experiences.

Through these and other use cases, GenAI is continuously reshaping the industry by driving efficiency, fostering innovation and delivering personalized consumer experiences.



Case study: Aditya Birla Fashion and Retail

Aditya Birla Fashion and Retail (ABFRL) has implemented GenAI solutions to accelerate product development and enhance cataloguing for online and offline channels. Key initiatives include:

- **Trend and competition analytics:** Automated bots scrape the web for fast-moving trends and competitive intelligence.
- **Mood boards and design creation:** Internally developed tools, powered by fine-tuned LLMs, generate mood boards and product designs.
- **Success rate prediction:** AI models analyze historical data to predict the success of new designs with over 70% accuracy.
- **AI-led cataloguing:** Computer vision tools extract product attributes (for example, collar type, print type) to auto-populate marketplace attribute sheets.
- **SEO-optimized product descriptions:** GenAI generates compelling product descriptions that attract online shoppers and improve search visibility.
- **Product recommendations:** AI algorithms recommend products based on browsing patterns and in-store preferences.

ABFRL has reduced digital print creation time from 8 hours to 2 hours, achieved approximately 12% improvement in PDP-to-cart conversions, and cut product description generation costs by over 90%. The sample creation process, which previously took three weeks, now takes 48 hours due to a 3D ecosystem. Accuracy on prediction of success metric for future designs based on test data was more than 70%.

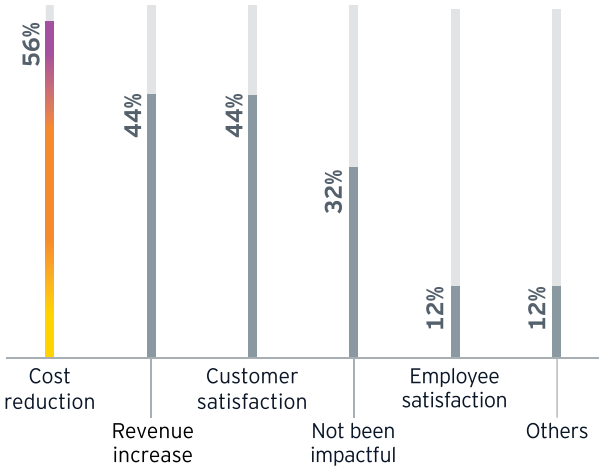
AI-based demand forecasting, optimized manufacturing and production planning and product design are expected to spread in the retail sector in the medium term.

Question

Where has AI been impactful?

(Mark all that apply)

AI has been instrumental in reducing costs,increasing revenue and driving customer satisfaction



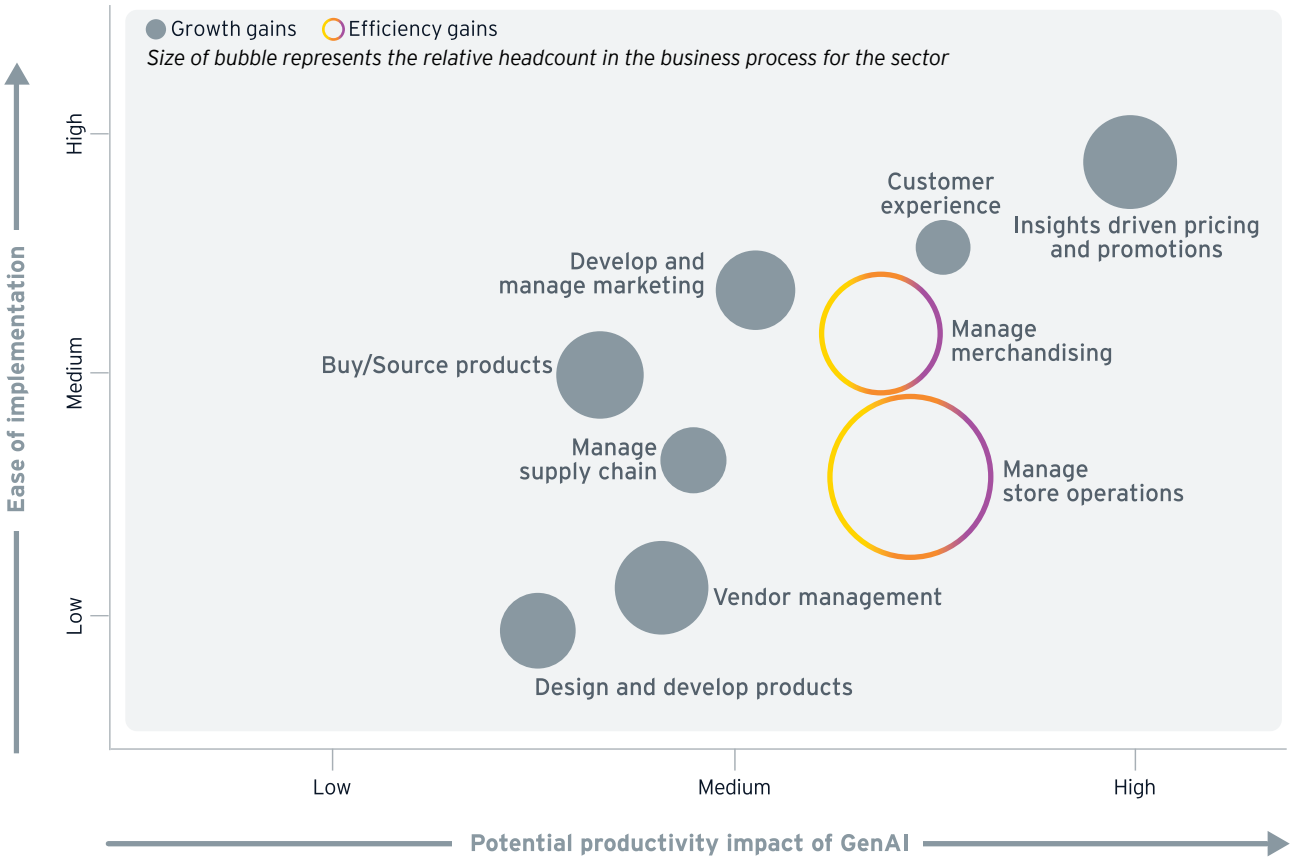
Source : EY India C-suite GenAI Survey 2024

GenAI's impact on productivity

The Indian consumer, retail, and e-commerce sectors, which contribute significantly to the economy and employ millions, are undergoing a profound transformation with the adoption of GenAI. As companies roll out enterprise-wide AI solutions, productivity gains are expected to be substantial.

According to EY India, GenAI is projected to deliver a productivity impact of 35% to 37% by 2030 across roles in the retail sectors, driving operational transformation and growth. While GenAI is expected to have an impact on most business processes, a few stand out when measured by the automation impact on tasks as share of headcount deployed to deliver the task:

GenAI impact on productivity across retail value chain



Source: EY India jobs study

- Insights-driven pricing and promotions and customer experience are expected to have maximum productivity impact of 40% to 45% followed by store operations accounting for 38% to 40% of productivity improvement
- Merchandising operations and marketing are also expected to see significant productivity improvement

Innovations in these processes are enabling businesses to achieve greater cost efficiency, operational excellence, and customer satisfaction.

Challenges and future roadmap

Looking ahead, as GenAI evolves, its ability to dismantle technology silos and enhance collaboration across ecosystems will be key. By connecting diverse processes—such as procurement, supply chain visibility and quality management—GenAI is set to make the industry more agile, efficient and customer-centric. However, maintaining a balance between automation and human-centric experiences will remain essential for long-term success.

III Re-imagining India's healthcare with GenAI: Healthcare

- Healthcare providers in India are leveraging GenAI for workforce efficiency, predictive analysis, clinical decision support and supply chain management
- GenAI is expected to boost productivity by 30% to 32% by 2030, largely driven by non-clinical operations, clinical operations in addition to sales, branding and community outreach
- Despite challenges like data sensitivity and legacy systems, GenAI is poised to revolutionize India's healthcare sector, driving productivity and improving patient outcomes

Global leaders in AI and healthcare are driving innovative projects that highlight the transformative power of GenAI. Healthcare providers worldwide are embracing GenAI to improve patient care, optimize operations and foster innovation. From personalized treatment plans and automated diagnostics to virtual health assistants and drug discovery, GenAI is reshaping traditional healthcare models and enhancing outcomes across the industry.

Healthcare institutions are also integrating GenAI into their systems. For example:

- Healthians launched WelliO, a personal health chatbot, to provide users with tailored health insights and recommendations. WelliO interacts with users to answer health-related questions and suggest relevant tests, making healthcare guidance more accessible. Healthians also rolled out an AI-powered IVR Bot, enhancing customer service by efficiently managing calls and resolving issues in real time. By harnessing AI in these areas, Healthians aims to transform the healthcare experience and make healthcare more accessible and user-centric.
- Apollo 24|7 , digital platform of Apollo Hospitals group, worked with Google Cloud to build a Clinical Intelligence Engine (CIE) using Google Cloud's Vertex AI and GenAI models. This

enables doctors to identify the next best action for patients during consultations. The CIE service leverages data from Apollo Hospitals and LLMs from Google Cloud to create a proprietary solution in which all patient data is kept securely within the hospitals' systems.

- Cleveland Clinic leveraged AI-powered predictive analytics in cardiology to enhance early detection of cardiovascular diseases. This approach improved risk assessment accuracy, enabled earlier interventions, reduced healthcare costs, and successfully identified patients requiring advanced care.

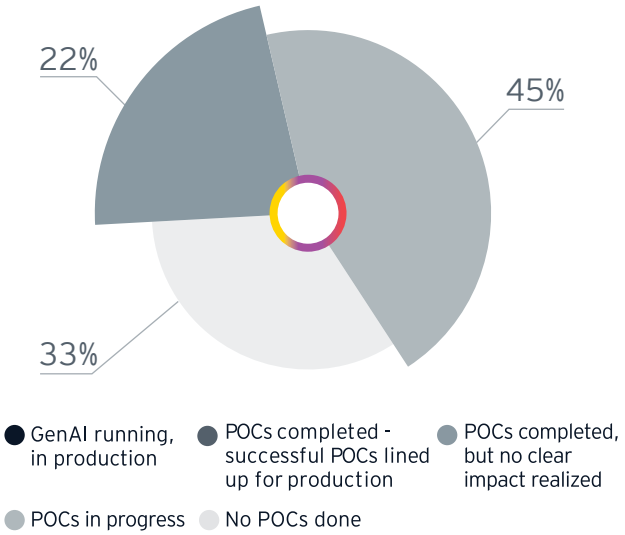
- Johns Hopkins Medicine implemented the AI-powered Targeted Real-Time Early Warning System (TREWS) to detect sepsis early by analyzing real-time patient data within its EHR system. This innovation improved early detection, reduced sepsis-related mortality, shortened hospital stays, and enhanced clinical workflows, setting a benchmark for AI in critical care.

GenAI adoption in India's healthcare sector is accelerating as providers modernize their systems, enhance diagnostics, and boost operational efficiency. It is being used to tackle critical challenges like increasing diagnostic precision, advancing telemedicine, and extending healthcare access in rural areas.

Question

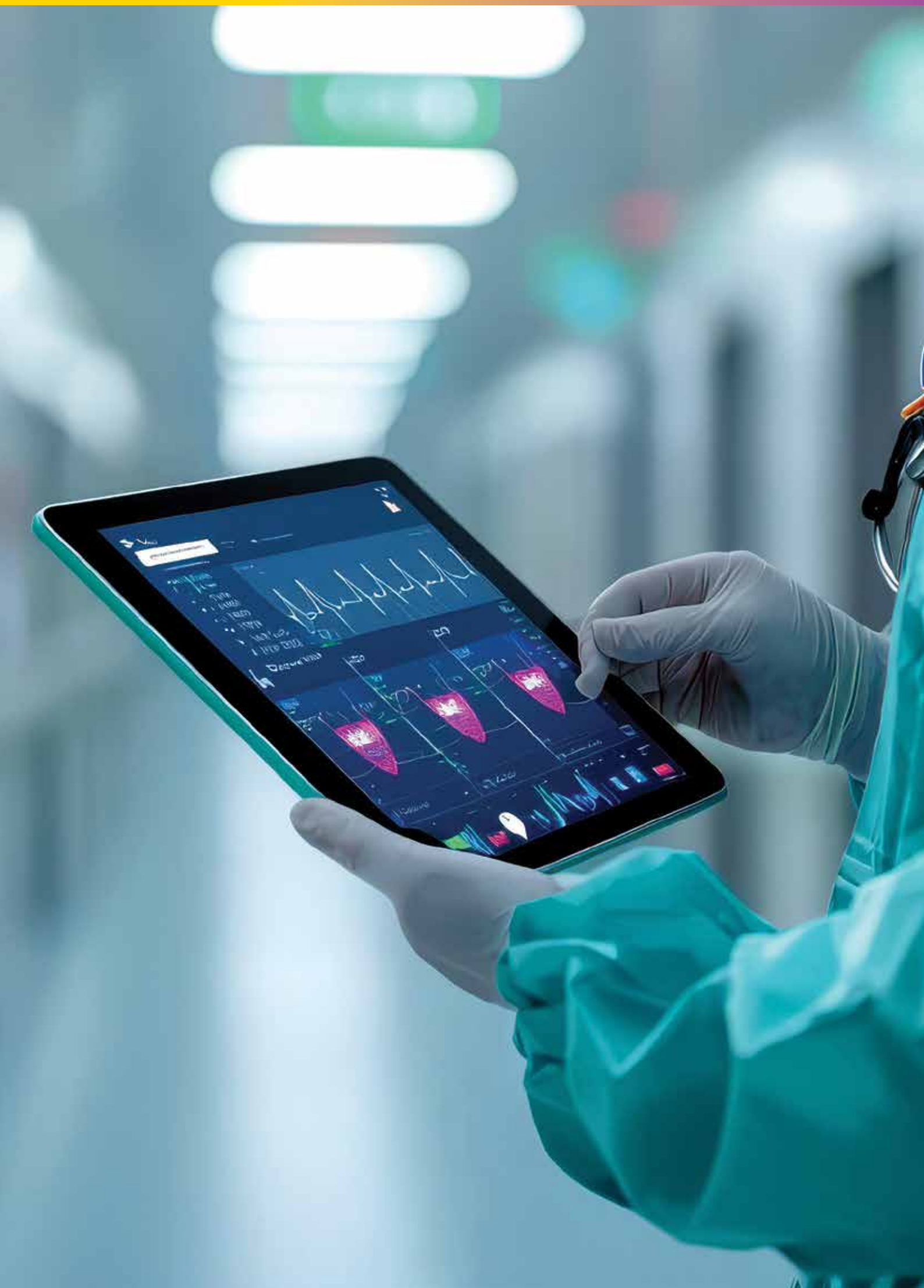
What has been your experience with GenAI POC engagements?

66% of the respondents have initiated POCs



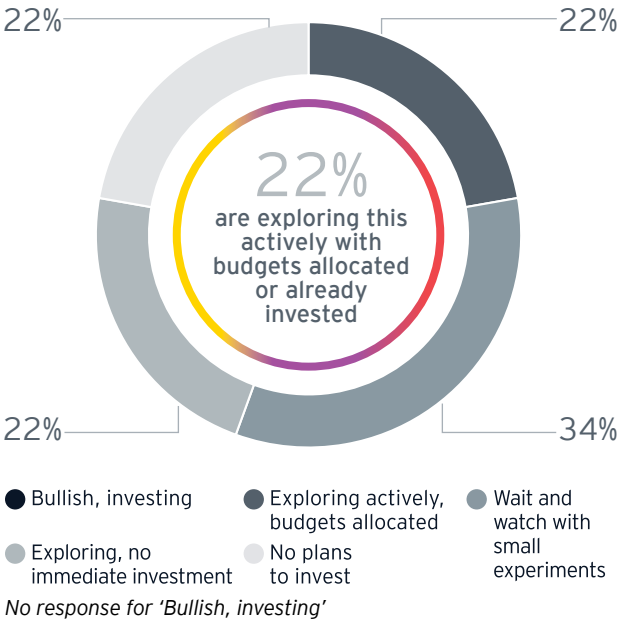
No response for 'GenAI running, in production' and 'POCs completed-succesful POCs lined up for production'

Source : EY India C-suite GenAI Survey 2024



Question

What is your organization's overall inclination to invest in GenAI?



No response for 'Bullish, investing'

Source : EY India C-suite GenAI Survey 2024

Use cases: Transforming the healthcare value chain

With most healthcare organizations in India focusing on bringing efficiencies into processes in the short term, the efforts are towards creating strong datasets through Electronic Medical Records (EMR) and the Hospital Information System (HIS), which will create the foundation for implementation of various GenAI solutions:

Workforce efficiency
GenAI can automate administrative tasks like appointment scheduling, medical documentation and patient data management, reducing the workload on healthcare professionals.

Virtual assistants provide patients with basic health guidance and monitor vitals remotely, enhancing service delivery and data utilization. Such global and local advancements highlight GenAI's potential to transform healthcare.

Disease surveillance and preventive healthcare
GenAI can enhance predictive analysis in healthcare by identifying high-risk groups for early disease detection and enabling focused screening and prevention. It can forecast pharmaceutical and supply demand to optimize stock levels, minimize waste, and detect supply chain issues, ensuring timely availability of essential healthcare provisions.

Medical imaging and diagnostics
GenAI can accelerate the analysis of medical images and lab results, improving accuracy in disease detection. AI-driven imaging tools assist clinicians in making faster, more precise diagnoses.

GenAI tools are increasingly being deployed in healthcare organizations, either at pilot or full implementation stages, to address critical needs in clinical assistance and revenue and finance processes.

01 One prominent use case is the medical documentation co-pilot, which helps hospitals create and manage patient records more efficiently. This automation reduces time spent on documentation, allowing healthcare professionals to focus more on patient care.

02 Another application is in revenue cycle management, where GenAI solutions streamline administrative processes, enhance accuracy, and lower operational costs.

03 GenAI also plays a significant role in improving patient engagement and healthcare delivery through health bots. These chatbots facilitate consistent patient interactions and experience, automate routine inquiries and support overall operational efficiency.

04 In addition, finance process automation powered by GenAI enables predictive analytics for financial planning, minimizes errors, and supports better decision-making, resulting in greater operational efficiency and cost savings. Together, these tools are transforming healthcare operations, making them more effective and resource efficient.

Question

Across organizations, select functions / departments being prioritized for GenAI implementation

(Mark all that apply)

Operations	56%
Clinical services and operations	44%
Finance	44%
Customer service	33%
Sales	33%

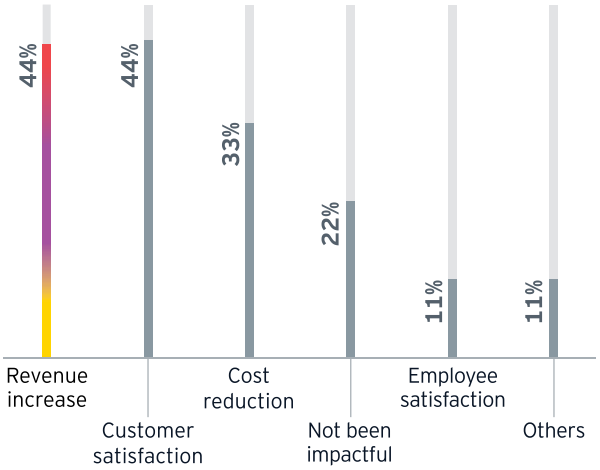
Source : EY India C-suite GenAI Survey 2024

Question

Where has AI been impactful?

(Mark all that apply)

AI has been instrumental in increasing revenue and driving customer satisfaction



Source : EY India C-suite GenAI Survey 2024

Case study: AI-powered disease surveillance by Wadhwani AI

Wadhwani AI has partnered with the Government of India to deploy an AI-powered media scanning solution for event-based disease surveillance. As part of the Integrated Disease Surveillance Programme (IDSP), this system automates the detection of disease outbreaks by monitoring over 100,000 media outlets across multiple languages.

The AI system continuously collects and analyzes data from news reports and digital media to identify potential outbreak signals. This information is integrated into the Integrated Health Information Platform (IHIP), enabling public health officials to take timely action. Alerts generated by the system are shared with Central Surveillance Units and State Units, eventually reaching District and Block Units to facilitate on-ground responses.

This solution has significantly reduced the time required to detect potential outbreaks, strengthening India's ability to respond to public health emergencies effectively.

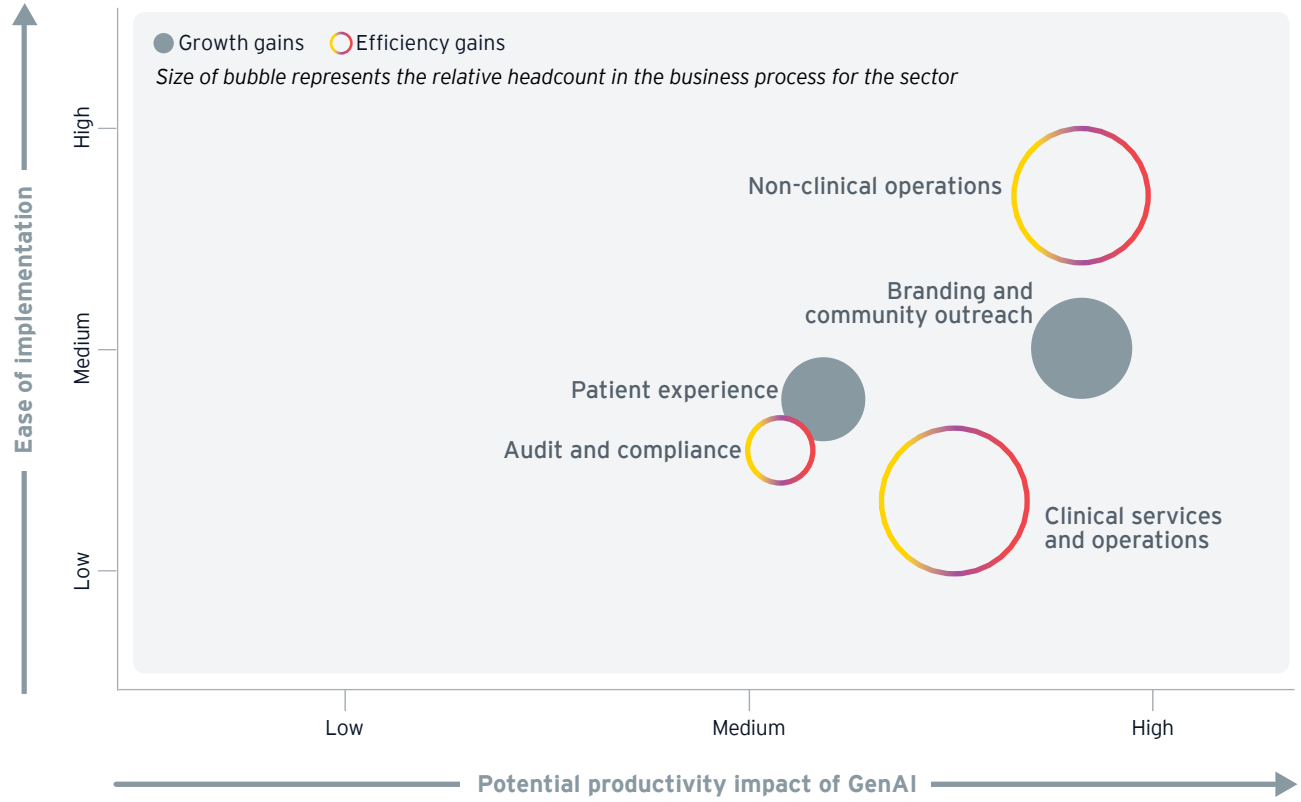
GenAI's impact on productivity

The Indian healthcare sector employs over 8 million individuals and faces significant challenges, including workforce shortages, infrastructure limitations, and high demand for services. GenAI has the potential to address these issues, driving transformation across hospital management, clinical operations, and patient engagement.

GenAI in the Indian Healthcare sector will have significant impact across hospital management operations, enablement of doctors and nurses (who comprise approximately 45% of hospital staff) and overall patient experience by enabling seamless data availability. Our study of 450-plus roles indicates a potential productivity impact of 30% to 32% by 2030 across the healthcare sector. For business leaders, embracing GenAI is not just an option; it is essential for driving innovation and achieving a significant productivity improvement.

Healthcare organizations in India are creating strong datasets as the foundation of GenAI implementation to achieve process efficiencies

GenAI impact on productivity across healthcare value chain



Source: EY India jobs study

Key areas of productivity improvement include

- Non-clinical operations (revenue cycle management, supply chain, control towers), clinical operations (documentation support), patient experience (digital front doors like chatbots, personalized engagement) and branding and community outreach (targeted marketing) can account for 30% to 35% of productivity improvement.
- Audit and compliance functions can also contribute to productivity improvement significantly.

Challenges and way ahead

Despite its transformative potential, GenAI adoption in healthcare faces several challenges. Data sensitivity and privacy concerns make it difficult to integrate GenAI solutions while ensuring compliance with strict regulations. Many healthcare providers rely on legacy systems like HIS and EMR, which are not designed for GenAI applications, necessitating infrastructure modernization for large-scale adoption. Additionally, there is a shortage of skilled professionals trained to implement and manage these technologies, highlighting the need for investment in training and upskilling. Regulatory and ethical considerations further complicate adoption, requiring robust governance frameworks to ensure the responsible use of GenAI. Limited pilot adoption and scalability of GenAI solutions also hinder widespread implementation, emphasizing the importance of expanding successful pilots and demonstrating clear ROI.

To address these barriers, healthcare organizations must build strong datasets through systems like EMR and HIS for seamless data integration and invest in modern infrastructure and AI talent development. Establishing responsible AI practices and fostering collaboration with technology providers, start-ups, and regulators will be critical to scaling innovations. As these solutions mature and more use cases emerge, GenAI has the potential to transform India's healthcare sector by enhancing efficiency, improving accessibility, and delivering better patient outcomes.

IV GenAI accelerates discovery: Life sciences

- GenAI is transforming drug discovery, manufacturing and quality management in the life sciences sector
- GenAI is expected to boost productivity by 32% to 34% by 2030, helping sales, supply chain and production functions
- However, to fully harness GenAI, life sciences organizations need to address challenges like data privacy, infrastructure gaps and skill shortages

Year 2024 marked a groundbreaking moment, as the Nobel Prize in Chemistry was awarded to Demis Hassabis, John Jumper, and David Baker for their pioneering work in protein science using AI models like AlphaFold, which accurately predicts protein structures. This achievement highlights the transformative potential of GenAI, especially in the life sciences sector, where pharmaceuticals and medtech are leveraging such advancements to catalyze drug discovery, enhance clinical trials, optimize manufacturing, strengthen quality adherence and reimagine drug launches and commercial models.

Globally, life sciences organizations are leveraging GenAI across the value chain to accelerate drug development and boost productivity. For instance, Moderna has collaborated with OpenAI to advance mRNA medicines, while Janssen has partnered with Syntegra to use high-fidelity synthetic data for internal projects. Sanofi's AI-powered logistics app predicts inventory shortages, enabling proactive action, and Fujifilm's AI-driven ECHELON Synergy system enhances MRI imaging through advanced reconstruction algorithms.

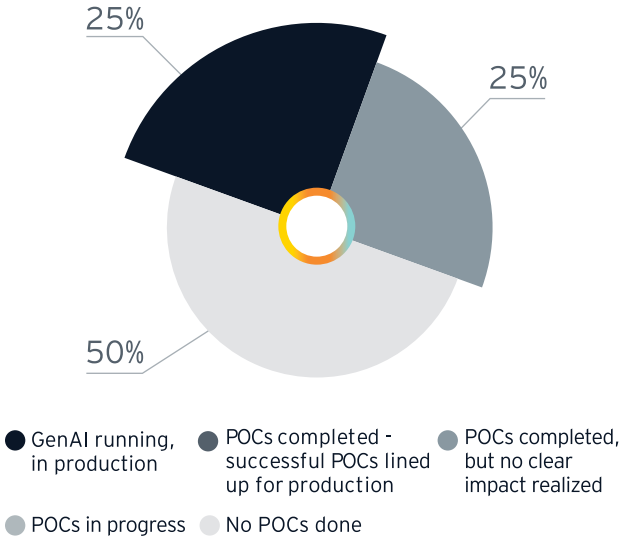
An EY-led GenAI transformation program for a global pharmaceutical company demonstrated a potential 14% incremental growth in EBITDA.

This growth was primarily driven by R&D (29%), manufacturing and quality (27%), and marketing and commercial operations (21%).

Question

What has been your experience with GenAI POC engagements?

50% of the respondents have initiated POCs; with 25% running in production



No response for 'POCs completed - successful POCs lined up for production' and 'POCs in progress'

Source : EY India C-suite GenAI Survey 2024

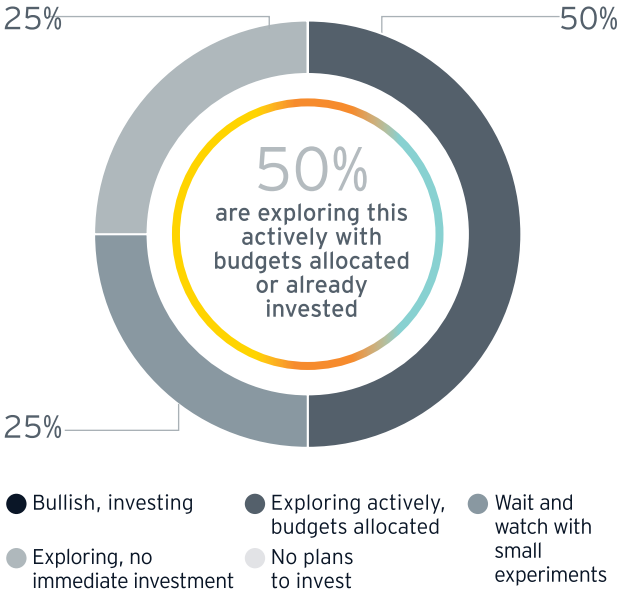
Use cases in India: Transforming value chain

India's life sciences sector is steadily integrating GenAI across its value chain. Building on past digital transformation initiatives, Indian pharma leaders recognize GenAI's potential to process structured and unstructured data, synthesizing insights to generate molecular, textual, and visual content. For example, Syngene, a leading Indian Contract Research Organization (CRO), has developed a proprietary AI platform Syn.AI™ and Sarchitect™ to expedite the drug discovery process. The expanded capabilities of Syn.AI™ include enhanced target identification and validation, pinpointing the most promising drug targets for a range of diseases.

AI start-ups are playing an increasingly crucial role in drug discovery. For example, Boltzmann's platform designs novel drugs, generates synthetic pathways for molecule creation, and uses patient data to enhance clinical trials and predict outcomes. Prescience Insilico accelerates optimization and evaluation in silico drug development using its SyMoG/AI platform and advanced virtual screening algorithms. Both start-ups leverage AI to address diseases effectively, including vaccine and antibody design.

Question

What is your organization's overall inclination to invest in GenAI?



No response for 'Bullish and already investing' and 'No plans to invest'

Source : EY India C-suite GenAI Survey 2024

Question

Across organizations, select functions / departments being prioritized for GenAI implementation *(Mark all that apply)*

Customer Service	50%
Manufacturing	50%
Supply Chain	50%
Operations	50%
Procurement	25%

Source : EY India C-suite GenAI Survey 2024

Use cases across the life sciences value chain can be seen broadly in five areas:

Research & Development (R&D)

GenAI for pharmacovigilance

GenAI is transforming pharmacovigilance by automating the detection, assessment, and reporting of adverse drug events (AEs) from unstructured data sources like clinician notes, publications and social media. It generates structured reports compliant with regional regulatory guidelines, minimizing compliance risks. Additionally, GenAI supports post-market surveillance, ensuring long-term drug safety monitoring through efficient processing of vast datasets.

Other use cases include **'GenAI-enabled R&D assistants'** to optimize synthetic routes for target molecules and **'Clinical agents'** that assist trial teams in study selection, CRO evaluation and regulatory submissions, ensuring efficiency and compliance.

Manufacturing

GenAI is transforming manufacturing processes with tools like Golden Batch Analytics, which identify optimal process parameters to produce consistent batches with improved yield, cycle time and quality. Additionally, Intelligent Process Optimizers for contract development and manufacturing organizations (CDMOs) leverage GenAI to enhance recipe generation and minimize waste, ensuring "Right First Time" production.

Quality management

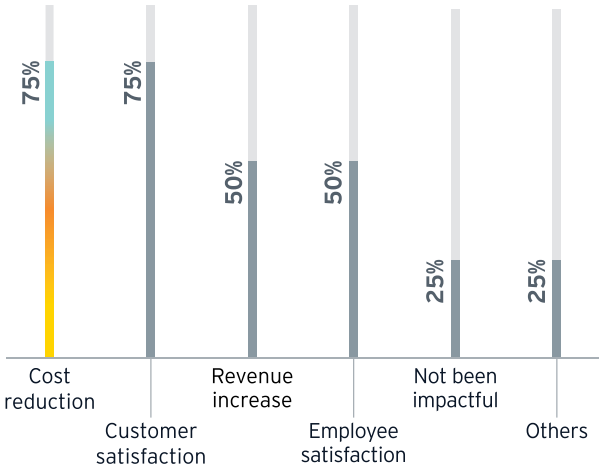
GenAI improves quality adherence by streamlining deviation management, Corrective and Preventive Action (CAPA) documentation, and root cause analysis. Tools like GenAI Chromatography Data Analyzers can reduce report drafting time by 40% to 50%, accelerating product release timelines. In Laboratory Information Management Systems (LIMS), GenAI co-pilots automate master data management, reducing errors and improving data consistency.

Question

Where has AI been impactful?

(Mark all that apply)

AI has been instrumental in reducing cost and driving customer satisfaction



Source : EY India C-suite GenAI Survey 2024

Supply chain

GenAI enables should-cost modelling for procurement, optimizing pricing decisions by analyzing data from diverse sources like research papers and market trends. This approach reduces material costs and enhances decision-making for new product launches.

Commercial operations

GenAI enhances salesforce effectiveness by analyzing doctor profiles, disease patterns, and micro-market trends to deliver personalized insights. This empowers medical representatives (MRs) to provide more relevant recommendations to healthcare professionals (HCPs). Additionally, GenAI aids in launch planning by generating data-driven insights on molecules, suppliers and market opportunities, reducing time-to-market and costs.

AI start-ups are playing an increasingly crucial role in drug discovery in areas such as delivery of personalized therapies, inventory and supply management, quality management, regulatory filings, and more

Case study: Driving doctor engagement with GenAI

A leading Indian pharmaceutical company has revamped its front-end tools with GenAI to customize interactions and improve insights based on underused data such as visit logs, doctor feedback, prescription patterns, and local disease insights. This creates an information ecosystem for field reps, area business managers and marketing teams.

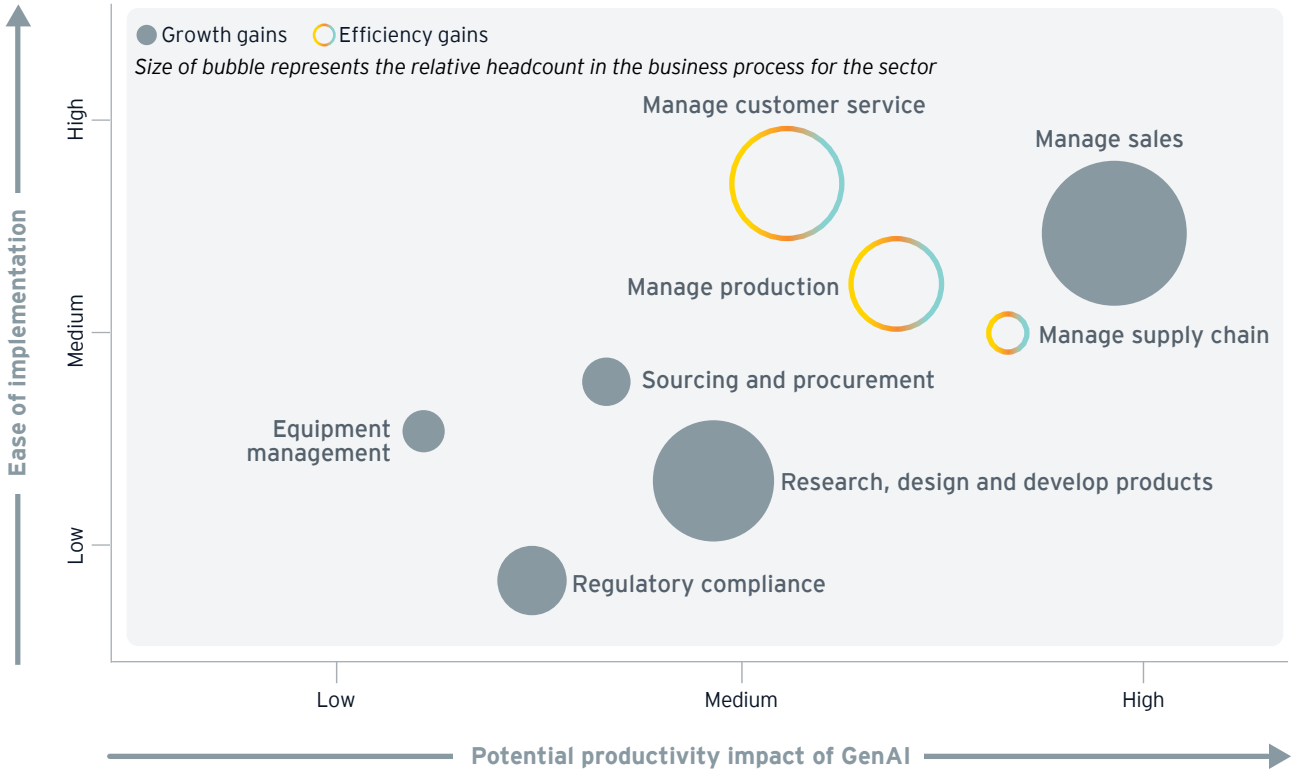
Field sales representatives can use GenAI-built analysis of non-personal aggregated data on patient wellness, region-specific disease, and prescription trends to generate insights and actions tailored to each doctor. Only the top insights and actions are shared for quick understanding and prevent information overload. Marketing and sales leadership use a custom visualization tool to assess trends at a location or cluster level and head office teams can improve their marketing strategies and budget allocations based on emerging trends.

Challenge: Training the LLM appropriately on the company's knowledge base and managing the output with business level prompt engineering. The company used an AI agent as a content editor, built in continuous feedback and self-training capability to remove hallucinations and generate contextual insights. Responsible AI guard rails included an AI maker-checker agent for generated content.

Impact of GenAI on productivity

The Indian pharmaceutical sector, among the largest globally, is set to achieve significant productivity gains through GenAI adoption. With an estimated 32% to 34% overall impact and 500-plus roles analyzed as per EY India's study, GenAI is poised to revolutionize operations across the value chain.

GenAI impact on productivity across life sciences value chain



Source: EY India jobs study

Globally and in India, life sciences organizations are leveraging GenAI across the value chain to accelerate drug development and boost productivity

Sales (~40%), supply chain (~38%) and production (~35%) can potentially account for 35% to 40% of productivity improvement. Other areas, such as customer service, sourcing and product development, also stand to benefit from GenAI, further enhancing overall sector efficiency.

Challenges and way ahead

While GenAI offers immense opportunities, it also introduces challenges for life sciences organizations, mostly in terms of:

Data privacy and security risks: The reliance on sensitive patient data raises concerns about data breaches and compliance with stringent regulatory requirements

Model bias and ethical concerns: GenAI models must be designed to avoid biases that could compromise drug safety or efficacy, requiring careful validation and monitoring

Infrastructure gaps: Many organizations lack the modernized infrastructure needed to scale GenAI applications effectively

To overcome challenges in adopting GenAI, life sciences organizations need a structured approach that includes implementing responsible AI practices to address bias, data security, and ethical concerns. Additionally strategic investments in modern infrastructure and AI talent development, coupled with collaborative ecosystems with technology providers, start-ups, and regulators will be key. By adopting these strategies, the sector can unlock GenAI's full potential, driving productivity, innovation and better patient outcomes.

V Empowering innovation with GenAI: Technology services

- Technology service providers are leveraging GenAI to unlock scalable innovation and accelerate growth
- From software development to customer engagement, GenAI is redefining how technology services deliver value
- With a 43 to 45% productivity boost across 520-plus roles by 2030, GenAI is reshaping the future of work in technology services
- Overcoming challenges, tech service providers are charting a strategic path to maximize GenAI's potential

In 2023, GenAI established itself as a transformative force, becoming a strategic priority for IT/ITeS companies globally. Its rapid adoption reflects the urgency felt by enterprises to embrace this shift in the enterprise technology landscape. Companies worldwide rushed to understand and capitalize on this transformative wave, leveraging technology service providers to conduct proofs of concept (POCs) focused on cost optimization, productivity enhancement and efficiency gains.

Year 2024 saw enterprises transitioning from exploration to scaling successful pilot programs. GenAI became a key agenda item in boardrooms and strategy discussions, with organizations investing heavily to capture the opportunities it presents. Service providers, in turn, are poised to redefine their portfolios, unlock profitability and create value across the next five years.

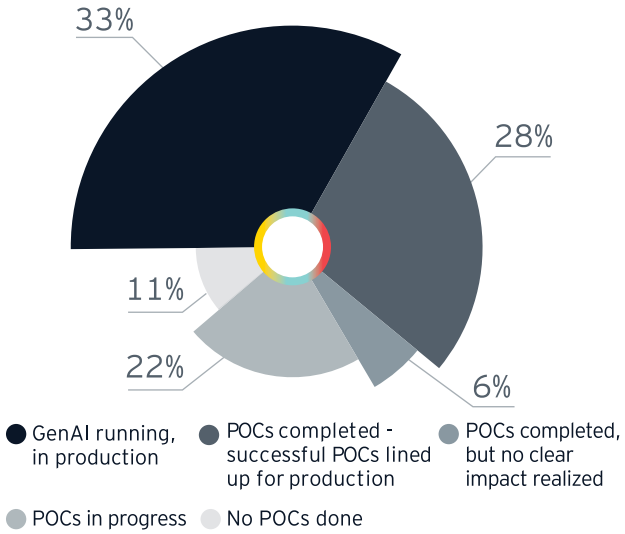
For GenAI integration in the long term, tech services firms are establishing AI offices, focusing on architecture, regulatory compliance and faster ROI through targeted POCs

Indian technology service companies have taken center stage in this movement, not only executing GenAI pilots for their clients but also incorporating GenAI into their internal operations. Many firms report automating up to 80% of software development tasks, fundamentally altering traditional workflows. Similarly, BPOs are deploying GenAI-powered virtual agents to enhance customer interactions and reduce operational costs. These developments signify a redefinition of business models, where AI is no longer a tool for experimentation but a core component of strategic planning.

Question

What has been your experience with GenAI POC engagements?

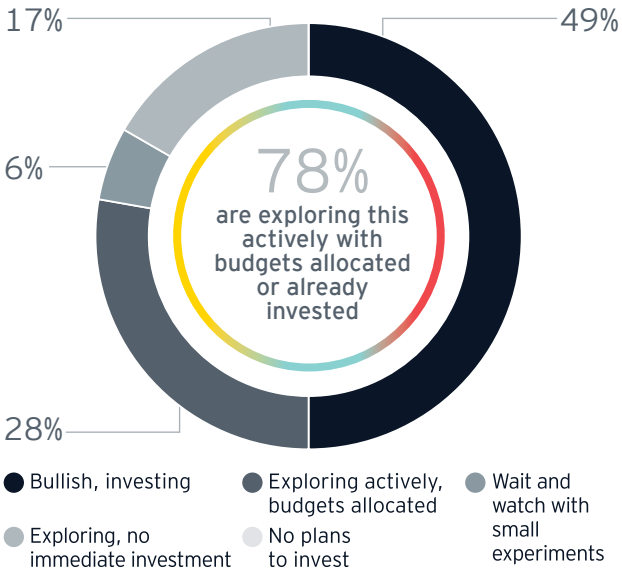
89% of the respondents have initiated POCs; with 33% in production.



Source : EY India C-suite GenAI Survey 2024

Question

What is your organization's overall inclination to invest in GenAI?



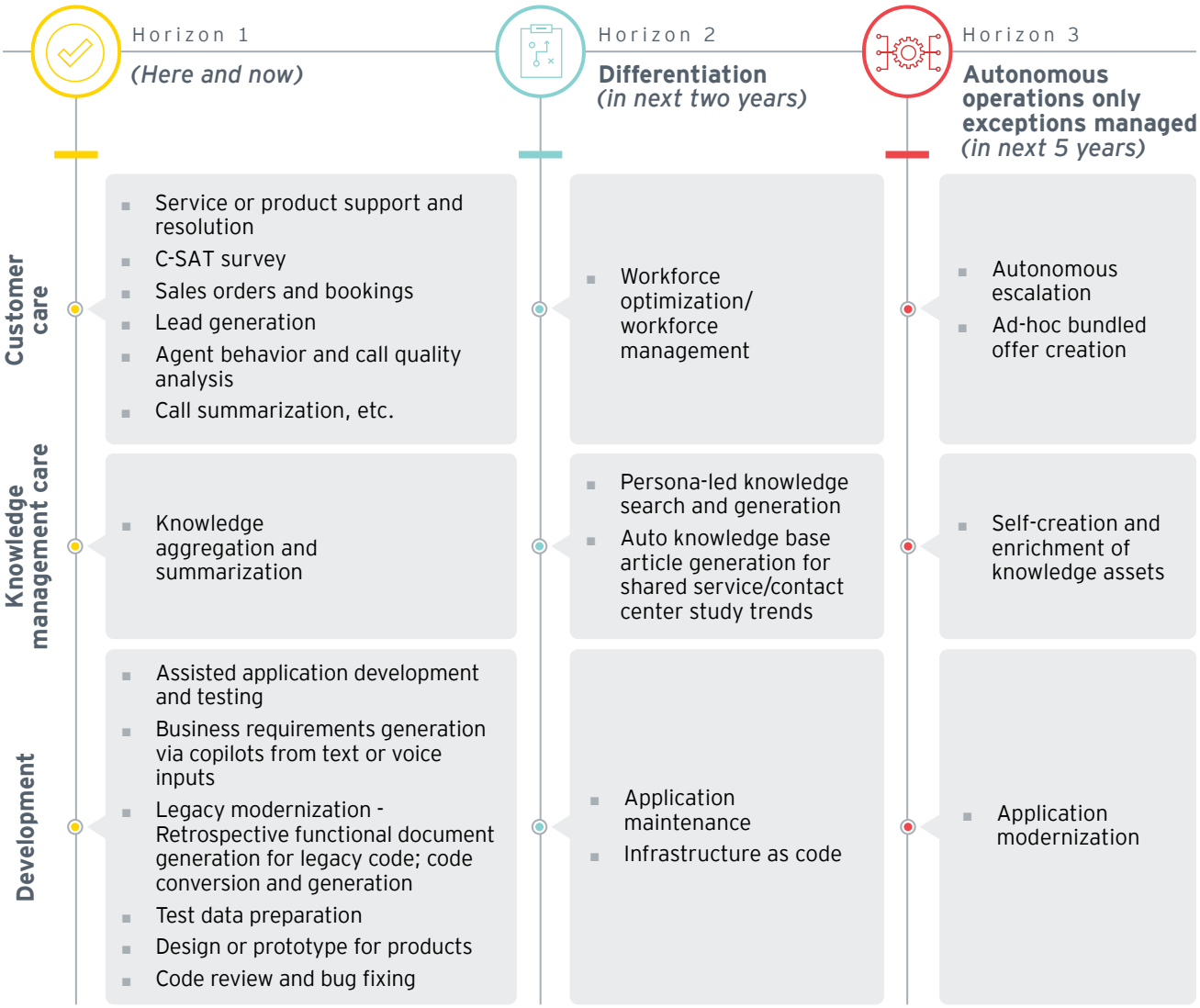
No response for 'No plan to invest'

Source : EY India C-suite GenAI Survey 2024

Use cases

The traditional tech services sector is undergoing a transformation as automation and packaged GenAI solutions reduce the need for outsourcing and managed support for routine tasks. GenAI has accelerated product development cycles by up to 75%, streamlining software development through capabilities like business requirement generation, code conversion, and test data preparation, though areas like product design, code reviews, and legacy documentation still lag behind expectations. BPO companies are leveraging GenAI for virtual agents in customer service, handling tasks like C-SAT surveys and lead generation more efficiently, while AI tools ensure accurate documentation through real-time call summarization. However, organizations need robust, scalable data foundations, often requiring shifts to public cloud solutions, to fully realize AI's potential. Tech services firms are also partnering with clients to establish AI offices, focusing on architecture, regulatory compliance and faster ROI through targeted POCs, paving the way for long-term GenAI integration.

The adoption of GenAI in the technology services sector spans a range of innovative use cases, categorized into three maturity horizons: Horizon 1 (immediate impact), Horizon 2 (medium-term differentiation), and Horizon 3 (long-term autonomous operations). These applications are reshaping traditional workflows, offering unprecedented efficiency and personalization.



Question

Across organizations, select functions / departments being prioritized for GenAI implementation *(Mark all that apply)*

Development	56%
Operations	39%
Quality & Testing	28%
Design & Prototyping	22%
Integration & Deployment	22%

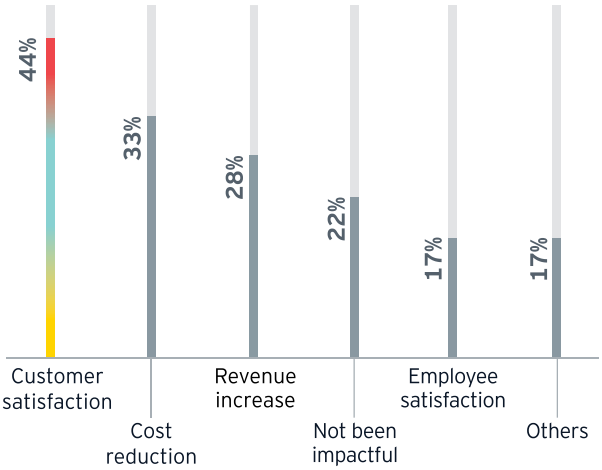
Source : EY India C-suite GenAI Survey 2024

Question

Where has AI been impactful?

(Mark all that apply)

AI has been instrumental in driving Customer Satisfaction and Reducing Costs



Source : EY India C-suite GenAI Survey 2024

Case study: Improving operational efficiency with GenAI

A US-India technology company leveraged Azure Cloud and Azure OpenAI's GPT-4-powered GenAI to enhance its technician productivity and service quality.

The solution integrates field service data, manuals and parts information into a unified platform, enabling technicians to access contextual data quickly. It identifies machines through serial numbers, links to past reports and provides insights into similar issues while facilitating peer-to-peer technician support.

The intuitive web application has reduced resolution time and increased operational efficiency by 25%, significantly boosting customer satisfaction. This scalable solution is now deployed across industries such as agriculture, automotive, and HVAC.

Enterprises are redefining business models as AI has become a core component of strategic planning

Impact of GenAI on productivity

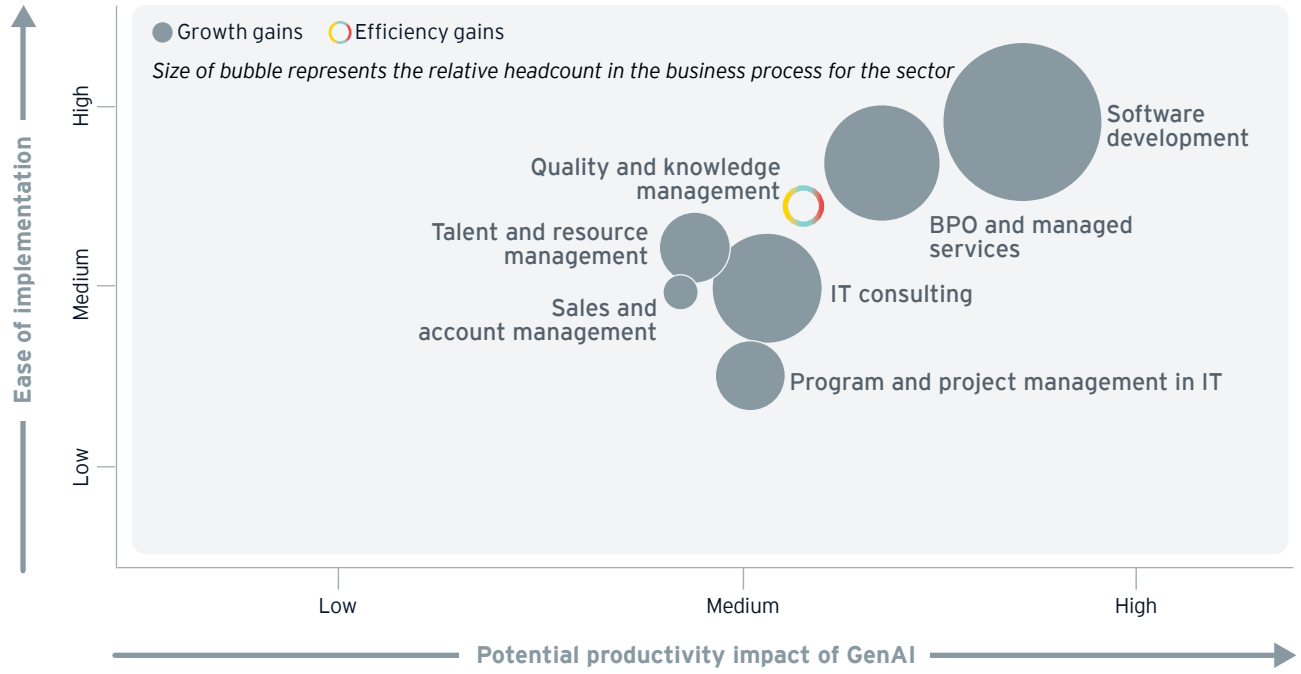
India's IT sector, employing over 5.5 million professionals, is undergoing a transformation as GenAI reshapes key functions such as software development, IT consulting, BPO services, and infrastructure management. Leveraging GenAI, the technology services sector has the potential to unlock substantial global economic value, with productivity improvements projected at 30% across critical functions like application development and business process management.

According to EY India's study of 520-plus roles in this sector, GenAI could drive an estimated 43% to 45% productivity gain, significantly enhancing efficiency and innovation in the sector.

01 Software development (~60%), BPO services (~52%) and IT consulting (~47%) could account for 50% to 60% of overall productivity improvement

02 Quality and knowledge management, program and project management along with RMG are also opportunity areas for driving productivity improvement.

GenAI impact on productivity across technology services value chain



Source: EY India jobs study

Challenges and way ahead

GenAI adoption presents significant opportunities, but technology service providers must navigate key challenges to fully realize its potential. Internally, fragmented AI initiatives, outdated infrastructure, and insufficient data readiness often undermine ROI from POCs. Many enterprises lack cohesive strategies, leading to uncoordinated efforts and limited scalability. The shortage of skilled talent further complicates adoption, as internal teams often require reskilling or external expertise to implement AI solutions effectively.

Externally, providers face hurdles like gaining client buy-in, ensuring compliance with evolving regulations and addressing rigid contractual terms that do not accommodate rapidly advancing technologies. High AI infrastructure costs and cautious client approaches to experimental investments also limit adoption speed. Most technology services CXOs want to be agile in assessing opportunity areas and developing their GenAI market propositions. This includes building new products and services on the one hand and developing go-to-market roadmaps on the other. In addition, customers' risk appetites would continue to vary when it comes to GenAI adoption – while some have already invested in the technology, most others are waiting for it to mature.

To overcome these challenges, technology service providers should:

- **Reinvent service portfolios:** Develop scalable, ready-to-deploy GenAI solutions to streamline adoption for clients
- **Focus on high-impact use cases:** Build sector-specific applications with measurable outcomes to deliver tangible value
- **Adopt outcome-based contracts:** Tie client engagements to productivity gains and other quantifiable results to demonstrate impact

In conclusion, GenAI has fast become a top strategic priority for technology services companies. The new delivery models, talent priorities and skilling programs would continue to be debated and evolve.

VI Gears of change: Auto and mobility

- GenAI is transforming the sector across design, manufacturing, autonomous driving, and customer engagement, enabling a shift from product-centric to service-oriented models
- Innovative business models, including ride-sharing and fleet management are emerging, helping organizations transition to sustainable, service-driven operations
- Indian auto majors and start-ups are leading the charge in GenAI innovation leveraging technology to streamline processes and enhance customer experience
- GenAI is projected to enhance productivity by 30% to 32% by 2030 across key roles in this sector

GenAI is reshaping the automotive and mobility sector, driving innovation across the value chain in a sector traditionally defined by mechanical innovation. The advent of this technology has necessitated a re-evaluation of long-standing practices, leading to advancements in manufacturing, system engineering and customer experiences. Key areas where GenAI is making an impact include product development, process optimization, testing and validation, customer engagement, automated driving and sustainability initiatives. Advanced technologies like autonomous driving and real-time analytics, are central to this evolution, reshaping the industry's landscape. Emerging business models like ride-sharing and MaaS optimize fleet management and ride-matching while facilitating the industry's transition from product-based to service-centric approaches.

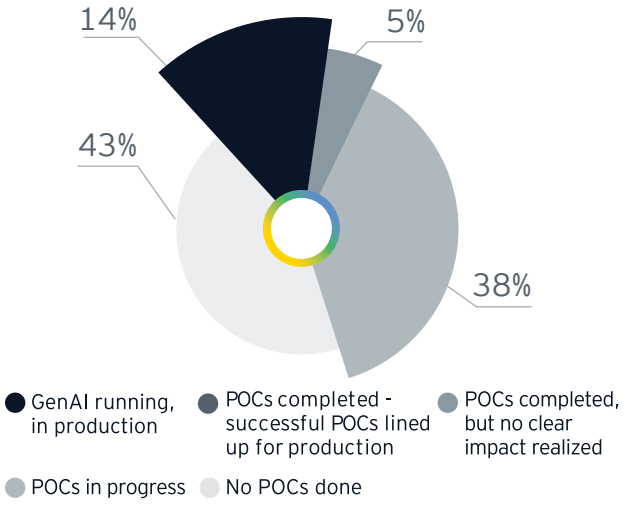
The evolution of autonomous vehicle (AV) technology is accelerating with the emergence of AV 2.0, defined by unified AI models capable of handling vehicle operations such as perception, planning and control. Companies like Tesla are driving this evolution with innovations like the Full Self-Driving (FSD) 12 software, which facilitates end-to-end neural network control. This breakthrough is expected to be a catalyst for robo-taxi deployment in 2025 and the proliferation of other autonomous vehicle models.

Start-ups are also leveraging AI to revolutionize autonomous driving. For instance, London-based Wayve utilizes Nvidia Blackwell GPU architecture to develop advanced AV systems, while Toronto-based Waabi integrates Nvidia DRIVE OS for AI-defined vehicle operations. These developments are laying the foundation for a future where fully autonomous vehicles can transform market dynamics.

Question

What has been your experience with GenAI POC engagements?

57% respondents have initiated POCs; with 14% running in production

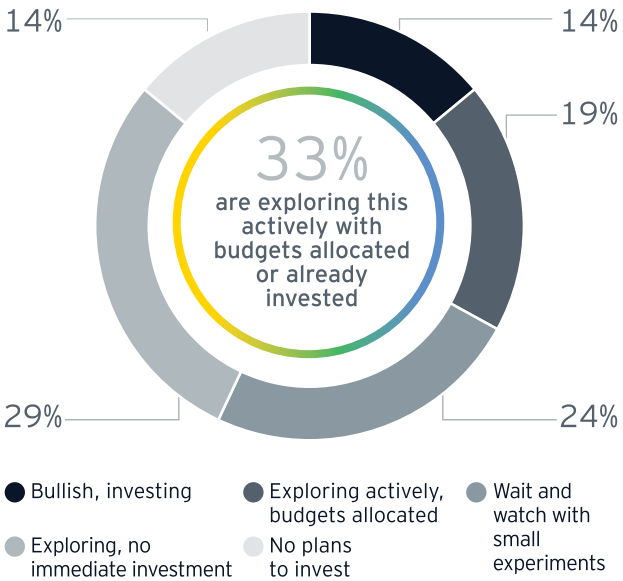


No response for 'POCs completed - successful POCs lined up for production'

Source : EY India C-suite GenAI Survey 2024

Question

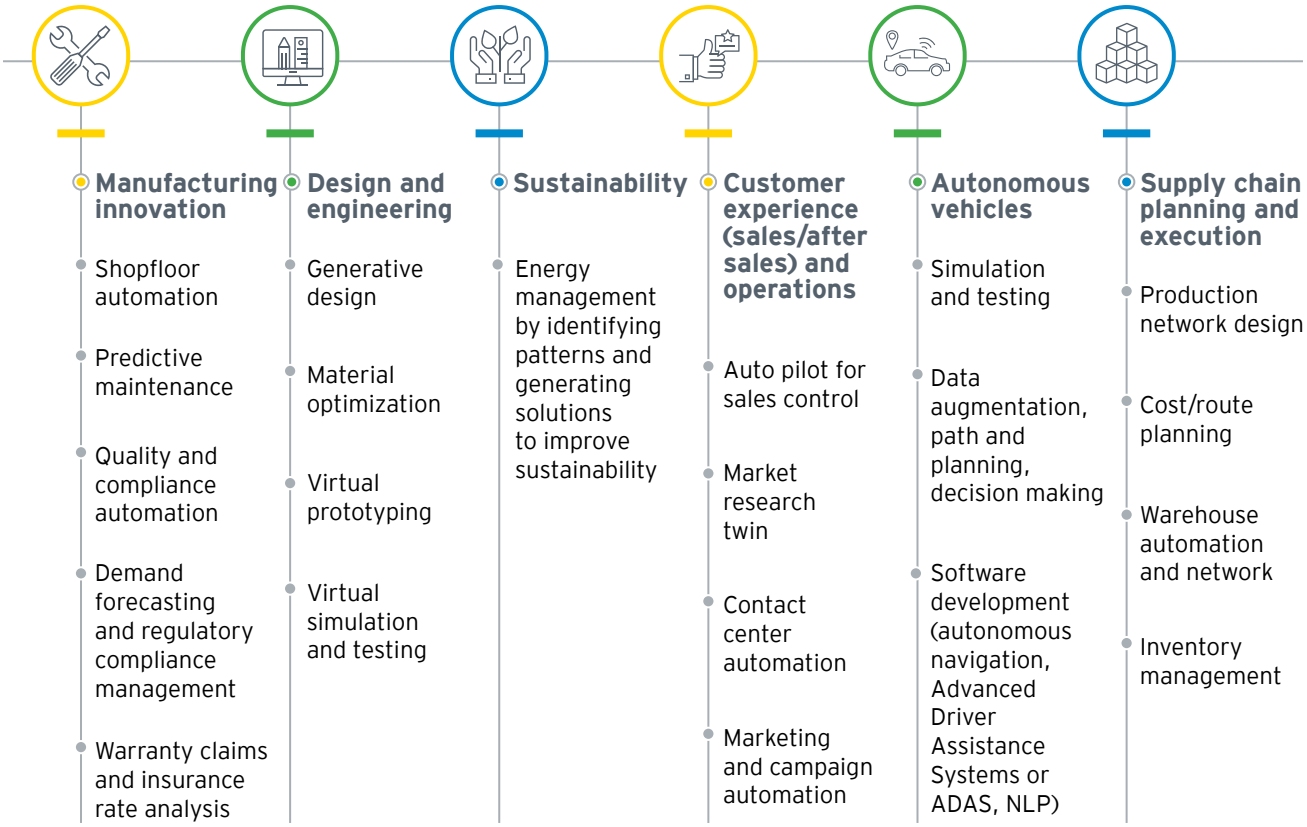
What is your organization's overall inclination to invest in GenAI?



Source : EY India C-suite GenAI Survey 2024

Automotive and mobility value chain

The integration of GenAI in the automotive industry presents opportunities for innovation across the value chain, from manufacturing to customer experiences.



Global start-ups are at the forefront of this transformation, leveraging GenAI to deliver cutting-edge solutions:

- **Skaivision:** A GenAI-powered platform that analyzes automotive dealership video footage to enhance operational transparency, validate performance, and optimize sales, service and security processes. The technology supports data-driven decisions to improve efficiency, profitability, and customer experience.
- **Ambro:** Leverages AI to automate vehicle damage detection and claim cost estimation, streamlining claims processing with features like real-time assistance, fraud detection, and integration with automotive part catalogs.
- **Brego:** Offers an AI-powered platform for real-time automotive valuations and analytics, supporting inventory management, risk assessment, and lending decisions. It serves various vehicle types and helps insurers, dealers, and lenders with fraud reduction, accurate valuations, and confident approvals.
- **Artificient Mobility Intelligence:** Offers smart mobility solutions using computer vision for real-time driving insights, including traffic sign detection, road risk assessment, and collision prevention. Its advanced features, like digital twin-driver profiling and crash detection, enhance safety and reduce insurance claim costs.
- **Hello Llama:** Developed AI-driven software for micromobility safety, featuring the Active Safety Halo system. It enhances rider safety with emergency braking, collision avoidance, traffic sign detection, and parking assistance, catering to drivers and the automotive industry.

These start-ups demonstrate how technology is enabling significant advancements in safety, operational efficiency, and customer service.

Case studies: GenAI transforming Indian auto majors

Leading Indian automotive companies are leveraging GenAI to streamline processes and enhance customer experience.

One four wheeler OEM has successfully integrated GenAI into backend operations, enabling workforce empowerment and reducing dependency on direct customer interactions. Its AI-powered maintenance bot assists shop floor workers by providing step-by-step solutions in multiple languages for complex industrial machinery issues. This approach has minimized machine downtime and reliance on specialized technicians while boosting worker confidence.

On the customer support front, it uses GenAI to generate comprehensive summaries of customer interactions, reducing response times and enhancing satisfaction by offering tailored assistance.

The company has taken a significant step into the mainstream by establishing a dedicated AI division to enhance business outcomes and drive success through AI.

A large two wheeler OEM employs GenAI to enhance lead management, sales pipelines, and customer engagement. Key solutions include conversational AI for 24/7 customer interaction, targeted lead conversion campaigns, and AI visualization platforms for immersive customer experiences. During campaigns like the Gen Z-focused "Xoom," AI drove significant lead recovery and customer engagement. Results include a 33% increase in lead conversion rates, with over 5 million customers interacting with AI-driven systems.

Question

Across organizations, select functions / departments being prioritized for GenAI implementation *(Mark all that apply)*

Marketing	57%
Customer service	48%
Sales and channel management	33%
Supply chain	19%
R&D	19%

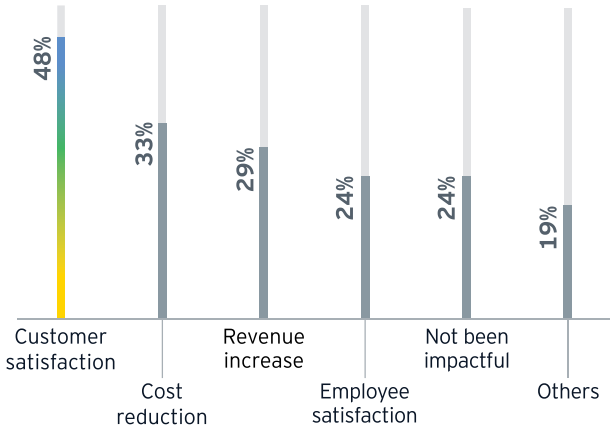
Source : EY India C-suite GenAI Survey 2024

Question

Where has AI been impactful?

(Mark all that apply)

AI has been most impactful in driving customer satisfaction



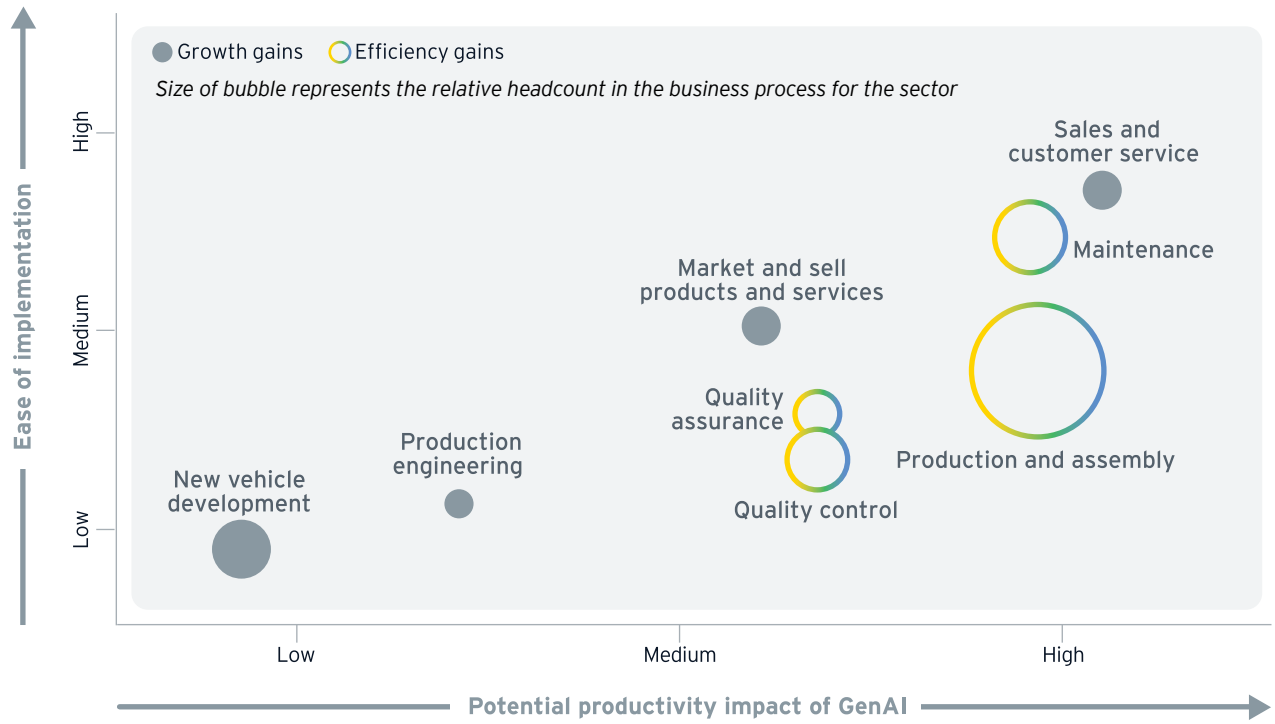
Source : EY India C-suite GenAI Survey 2024

GenAI's impact on productivity

Indian automotive sector, contributing 7.1% to the national GDP and employing over 19 million people, is expected to undergo a significant transformation driven by GenAI. According to EY India's study of over 2,300 roles in the sector, GenAI is projected to deliver a productivity impact of 30% to 32% by 2030, positioning the industry for growth and operational transformation.

GenAI is making an impact in several key areas, including product development, process optimization, testing and validation, automated driving and sustainability initiatives

GenAI impact on productivity across automobile value chain



Source: EY India jobs study

While GenAI has the potential to influence a wide range of business processes, certain functions / tasks stand out due to their significant automation potential:

01 Functions with highest potential for productivity impact include sales and customer service (37% to 39%), production and assembly (35% to 37%) and maintenance (34% to 36%) which together can account for 35% to 40% of productivity improvement.

02 Functions like quality assurance and control along with marketing are also expected to drive significant productivity improvement.

03 Innovations in these functions are reshaping the automotive value chain, enabling companies to achieve cost efficiency and operational excellence.

Challenges and future roadmap

Despite its advantages, the automotive industry faces challenges in GenAI adoption, including technical, regulatory, ethical and market barriers. Compliance and ethical considerations necessitate a balanced approach that combines innovation with responsibility. Collaboration among AI experts, automotive engineers, regulators, and ethicists is essential to address these challenges.

Many leading companies are making substantial investments in GenAI, with dedicated budgets and focused implementation strategies. Key priorities include areas such as manufacturing, customer experience, and autonomous driving. By investing in AI and focusing on augmenting human capabilities, companies can position themselves to lead the next phase of industry transformation.

VII

Powering efficiency and sustainability with GenAI: Industrials and Energy

- For the energy, power and utilities sectors, GenAI can improve grid stability, renewable energy integration, thermal plant efficiency, and carbon management, enhancing cost savings and sustainability
- For the oil and gas sector, GenAI can optimize exploration, refining, logistics, and retail with tools for demand forecasting, pipeline monitoring, and sustainability initiatives
- GenAI can drive smarter operations for the metals and mining sector, with advanced geological analysis, supply chain optimization and emissions reduction for greater efficiency
- In Industrials, GenAI can enhance productivity through predictive maintenance, generative design, and AI-enabled safety, transforming manufacturing and supply chains

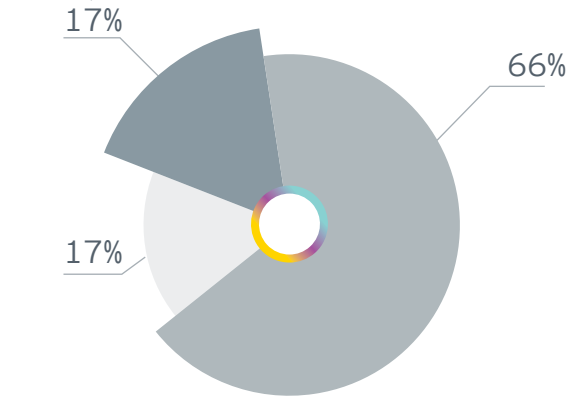
The integration of GenAI is reshaping the industrials and energy sectors in India, including energy, power and utilities, oil and gas, metals and mining and industrials. These sectors are leveraging AI to address long standing challenges, enhance efficiency and drive innovation across their value chains. From predictive maintenance to optimizing complex processes, GenAI is providing transformative solutions while enabling sustainability and improving decision-making. Below is a detailed exploration of the impact of GenAI on these industries, highlighting key use cases and transformative applications.

Industrial sectors leverage AI to address longstanding challenges, enhance efficiency and drive innovation across their value chains

Question

What has been your experience with GenAI POC engagements?

66% respondents have initiated POCs



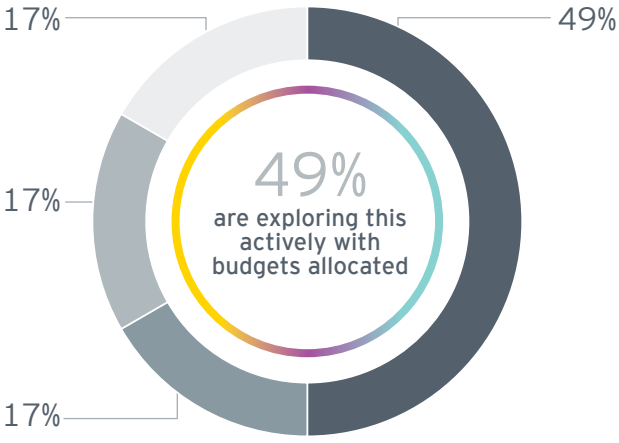
- GenAI running, in production
- POCs completed - successful POCs lined up for production
- POCs completed, but no clear impact realized
- POCs in progress
- No POCs done

No responses for 'GenAI running, in production' and 'POCs completed - successful POCs lined up for production'

Source : EY India C-suite GenAI Survey 2024

Question

What is your organization's overall inclination to invest in GenAI?



- Bullish, investing
- Exploring actively, budgets allocated
- Wait and watch with small experiments
- Exploring, no immediate investment
- No plans to invest

No responses for 'Bullish and already investing'

Source : EY India C-suite GenAI Survey 2024

Energy, power, and utilities

Globally, the energy sector is leveraging advancements like precise forecasting, Advanced Metering Infrastructure (AMI) and integrated management systems (ADMS and DERMS) to enhance efficiency and reliability, with GenAI playing a pivotal role in ensuring data accuracy. In India, energy and power utilities are

increasingly adopting digital and AI technologies through either 'Driver' or 'Driven' models. 'Driver' utilities proactively craft AI strategies with strong enterprise visions, investing in technology, talent and data governance, while 'Driven' utilities focus on using AI for specific operational challenges. GenAI enhances customer engagement through personalized services and chatbots while also being explored for grid optimization and asset maintenance to reduce risks and costs, enabling better energy management and fostering innovation for sustainable energy transitions.

Investment and adoption of AI/ML vary across companies, with mature enterprises typically allocating 0.4% to 0.7% of their revenues to AI/ML initiatives and achieving an ROI of around 2% of annual revenues . These investments have driven value in four primary areas: operational cost reduction through AI/ML-enabled process automation, revenue growth via differentiated pricing strategies, improved management of demand-supply variability through accurate forecasts and personalized consumer engagement to enhance customer experience. Together, these advancements position AI as a critical enabler of efficiency, innovation, and profitability in this sector.

The deployment of GenAI in this sector has enabled significant improvements across various operational and strategic areas:

Thermal plant optimization: GenAI tools enhance combustion efficiency by analyzing operational inputs such as temperature, humidity and gas flow in real time. This optimization leads to reduced fuel costs, improved emissions compliance and a smaller carbon footprint. By integrating real-time monitoring with predictive analytics, companies can ensure that their plants operate at peak efficiency.

Maintenance enhancement: Traditional time-based maintenance often results in either under-maintenance or over-servicing of equipment, leading to operational inefficiencies. GenAI enables condition-based maintenance, using advanced health indices to predict when equipment requires attention. This reduces unplanned downtime, prolongs equipment life and minimizes unnecessary servicing costs.

Renewable energy management: The renewable energy landscape benefits significantly from GenAI. By analyzing weather patterns, grid conditions and market demand, GenAI tools identify optimal generation sites and provide accurate forecasts. For instance, short-term forecasts help maintain grid stability, while long-term predictions assist in purchase planning and cost optimization. These capabilities ensure a seamless integration of renewable energy sources into existing grids.

Carbon management and trading: As companies transition to low-carbon operations, GenAI serves as a strategic advisor for planning decarbonization investments. It also aids energy trading decisions, optimizing production schedules and ensuring compliance with carbon trading regulations.

The adoption of GenAI in energy and utilities is not only addressing operational challenges but also paving the way for sustainable growth and innovation.

Case study: Power demand forecasts

Punjab State Power Corporation Limited (PSPCL) has set up an AI-ML PMU (Project Management Unit) as part of the Government of Punjab's initiative to adopt best practices and develop AI-based solutions for state-wide improvement across sectors, including power and utilities. A key solution developed is an AI-based Load Forecast model, which integrates 2-3 years of historical load data from all districts to provide 24-hour ahead forecasts at 15-minute intervals. With a Mean Average Precision Error (MAPE) of 3% and a self-correcting model, the solution delivers accurate and continuously improving recommendations.

Indian energy organizations are building active AI strategies for technology, talent, and data governance. Some are using AI for specific operational challenges

Oil and Gas

The oil and gas sector, traditionally characterized by complex, capital-intensive operations, is undergoing a significant transformation with the integration of GenAI. From exploration and production to refining and distribution, the sector is leveraging GenAI to streamline operations, enhance safety, and reduce costs. As global markets increasingly emphasize sustainability and energy efficiency, Indian companies are also exploring AI-driven solutions to remain competitive.

GenAI applications in the oil and gas industry cover a wide spectrum of operations:

Exploration and production: Every facet of oil and gas exploration and production lifecycle is seeing GenAI's impact, spanning seismic image enhancement, reservoir simulation, creating optimal drilling plans and in forecast of production profiles for reservoir optimization, among others. AI-driven solutions impact exploration timeline, time to surface, well trajectories, production forecast, asset performance, and hydrocarbon recovery, yielding significant economic gains for operators. Beyond core domains, AI extends its benefits to predictive asset maintenance, document creation, employee training and safety agendas.

Refining and transportation: Refineries are benefiting from AI-driven process optimization. By monitoring performance metrics in real time, GenAI can identify inefficiencies and recommend corrective actions to improve throughput and safety. In transportation, AI-powered tools enhance pipeline monitoring and storage management, minimizing risks such as leaks and ensuring compliance with regulatory standards.

Distribution and retail: GenAI optimizes logistics by providing real-time route planning and tracking. Retail operations benefit from AI-driven demand forecasting, customer segmentation, and pricing strategies, enabling better inventory management and enhanced customer satisfaction.

Sustainability and ESG initiatives: GenAI supports companies in meeting sustainability goals by analyzing ESG risks and improving energy efficiency. For instance, renewable energy forecasting powered by AI helps predict the generation of intermittent sources like wind and solar, enabling better grid integration.

Indian oil and gas companies are leveraging these applications to drive operational excellence. Companies like IOCL and HPCL have adopted GenAI for project analysis, while renewable energy providers like Amplus are using AI to enhance performance monitoring.

Case study: Improving retail sales

A leading oil and gas company is implementing retail AI and advanced analytics solutions to improve sales performance and uplift margins of their retail stores, using advanced product assortment and demand forecasting.
Using AI, the 'Product Assortment' engine recommends the best SKUs by analyzing sales, customer and external data. 'Store Segmentation' clusters stores with similar attributes to optimize marketing campaigns and reduce operational costs. 'Demand Forecasting' incorporates factors like seasonality and weather to provide realistic demand projections, while 'Customer Segmentation' groups customers by purchase history and demographics for tailored marketing strategies. These solutions enable granular demand forecasts, improved sales and profit, enhanced customer satisfaction, and better ROI through reduced waste and targeted engagement.

Question

Across organizations, select functions / departments being prioritized for GenAI implementation *(Mark all that apply)*

Marketing	50%
Procurement	33%
R&D	33%
Finance	33%
Operations	33%

Source : EY India C-suite GenAI Survey 2024

Metals and Mining

In the metals and mining sector, while AI applications have been widely implemented, GenAI has primarily been applied in non-core manufacturing functions to enhance productivity and speed of execution. Its uses include automating supplier and transporter interactions, extracting actionable insights from historical supply chain and operations data, and conducting root cause analysis (RCA) for real-time incidents. The real potential of GenAI lies in amplifying AI's impact on core operations by leveraging extensive structured and unstructured data. Key opportunities include simplifying complex scenario assessments, such as furnace recipe optimization and rapidly validating AI-driven recommendations against historical data, offering companies a competitive edge in operational efficiency and decision-making.

Question

Where has AI been impactful?

(Mark all that apply)

AI has been instrumental in reducing costs

Source : EY India C-suite GenAI Survey 2024

GenAI applications have the capability to transform the metals and mining value chain

Mining

- Geological analysis and exploration optimization
- Remote sensing on geospatial platform
- Mine strip ratio lifecycle simulations
- Mill processing improvements
- Drill blast optimization Lead and haul optimization

RM procurement and consumption

Procurement

- Source mix optimization
- Alternate supplier/sourcing strategy procurement control tower
- Contract evaluation for commodities and maintenance, repair, and operations (MRO)/consumables
- Spares requirement prediction
- Automated vendor negotiations, PO processing and execution

Consumption

- Recipe/blend optimization
- Intelligent Process Optimization/Digital Twin
- Finished goods (FG) and WIP quality predictions
- Fuel consumption optimization
- Performance RCA
- Scenario assessments and simulations

Operational excellence

- Predictive maintenance
- Shopfloor automation
- Energy management systems

Logistics and commercial

Planning and logistics

- Dispatch planning vehicle availability forecasting
- Production campaign scheduling
- Network optimization
- RCA on plan vs actual deviations
- Scenario assessment on integrated planning
- Automated transporter negotiation
- Control tower

Sales and commercial

- Demand forecasting
- Pricing strategy
- Customer service applications
- SO processing and execution

Global enterprises in the metals and mining sector are leveraging AI and GenAI to enhance efficiency, sustainability and cost-effectiveness. In metals, leading players like Alcoa, Nucor and Rusal, for instance, have used AI for predictive maintenance, logistics and distribution optimization and energy optimization, respectively. In mining, while Rio Tinto has deployed digital twins and virtual mine modelling for planning and sustainability efforts, BHP has leveraged AI for supply chain optimization and predictive maintenance of assets. Such solutions could have an impact across the value chain, leading to 3% to 4% reduction in operating costs and up to 10% in throughput, depending on existing maturity levels.

In India, Tata Steel has deployed 150-plus algorithms to support real-time decision making and improve operational efficiency in core blast furnace operations, raw material procurement and asset maintenance through integrated control center. It has also achieved lighthouse recognition with 10x returns realized over these analytics investments.

While companies have progressed on their AI adoption journey, the biggest barriers they face at present are:

- People capability and up-skilling
- Limited affordability and availability of automation technologies
- Low level of data quality, use case adoptions

Case study: Consumption efficiency and cost control

A large Indian steel manufacturer, with an EBITDA of 21% and approximately 10 MTPA production capacity, was facing high fuel costs, increased raw material consumption and costs and variable quality due to people-driven decisions.
Solution: A digital twin was implemented to optimize material consumption, production costs and productivity, using AI-ML algorithms for predictions and prescriptions.

- More than 120 parameters were considered to link material characteristics, consumption and process parameters
- An optimization engine was developed for productivity and cost
- A customized recommendation engine was developed for each process in the value chain

The manufacturer derived tangible benefit of US$ 60 million – US$ 42 million in material consumption, US$ 10 million from productivity improvement and US$ 8 million from operating/ production cost. In addition, GenAI implementation led to improved process visibility and control, single version of truth, increased accountability and ownership and assisted decision making.

Industrials

The industrial sector GenAI is reshaping traditional manufacturing, supply chain, and workforce processes. With leadership increasingly focusing on digital transformation, industrial firms are deploying AI-driven tools to enhance productivity, reduce costs and create new business models.

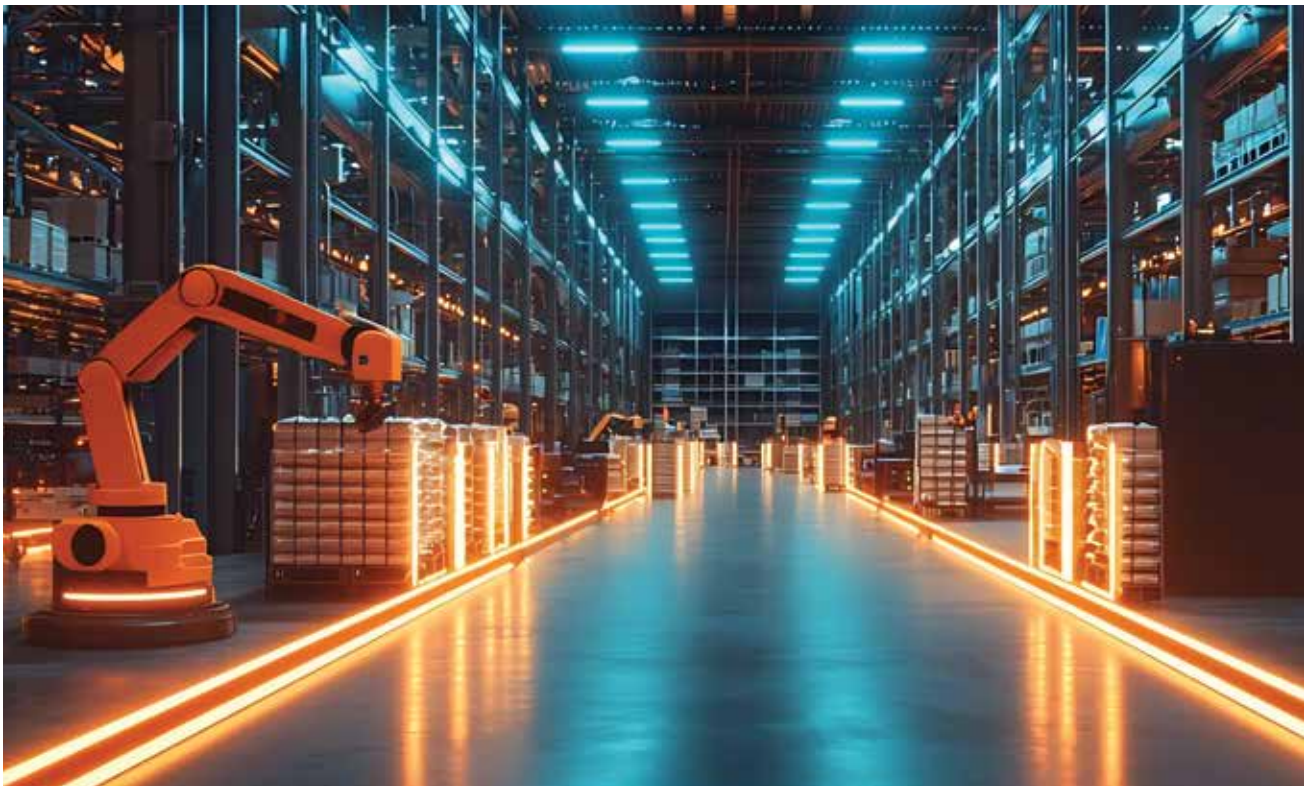
GenAI applications in the industrial sector include:

01 **Manufacturing optimization:** GenAI tools enable predictive maintenance, throughput optimization and generative design. By analyzing machine performance data, these tools can identify potential failures before they occur, minimizing downtime and maximizing operational efficiency. Generative design capabilities allow engineers to explore innovative solutions, accelerating product development cycles.

02 **Sales and marketing:** AI-driven demand forecasting and dealer churn prediction enhance customer targeting and retention. Virtual product demonstrations and customized marketing campaigns improve customer engagement, driving higher conversion rates.

03 **Safety and workplace productivity:** GenAI supports workplace safety through tools that detect compliance with safety gear regulations. Additionally, AI-powered simulations and prototyping streamline design processes, reducing time-to-market and improving product quality.

The use of industrial robots powered by GenAI is further revolutionizing factories. These robots, equipped with advanced object recognition and coordination capabilities, are enabling more adaptive and efficient production environments. This not only reduces operational costs but also enhances forecasting accuracy, enabling companies to better align production with market demand.



Case study: Optimizing sales planning

A leading Indian cement manufacturer is developing a Sales and Logistics Control Tower using AI models to optimize sales planning, order management and logistics. The Monthly Logistics Plan (MLP) model generates destination and material-level dispatch plans, maximizing contribution while detailing costs and dispatch splits. A 4x4 market mapping model supports branding and marketing strategy, classifying markets to guide decisions on maintaining market share or pursuing incremental/aggressive growth. Demand Planning employs a Consensus Planning approach, combining top-down, bottom-up, statistical and macro-analysis forecasts to set precise monthly and annual sales targets across zones and products.

Additional solutions include a Dynamic Journey Planning tool that recommends optimal daily routes, objectives and counters. Pricing strategies for new markets leverage 4x4 market segmentation, providing visibility into wholesale/retail price recommendations based on market position and growth potential. These AI-driven tools deliver improved sales planning, logistics efficiency, strategic branding and tailored market entry strategies, enhancing operational efficiency and profitability.

Challenges and way ahead

India's industrial & energy sectors face GenAI adoption challenges such as poor data quality due to legacy systems, cybersecurity risks, and the limited availability of AI talent for complex use cases. Overcoming these hurdles requires a strategic approach, including modernizing infrastructure, implementing robust data strategies, and fostering collaboration with technology providers. Establishing dedicated AI units with C-suite oversight and leveraging low-code/no-code platforms can democratize GenAI adoption across organizations. By focusing on high-impact use cases and scaling successful pilots, companies can unlock GenAI's transformative potential to drive efficiency, sustainability, and competitive advantage.

VIII

Creativity meets GenAI:

Media and Entertainment

- GenAI is reshaping how content is ideated, produced, and experienced, from personalized ads to immersive live events
- From multilingual localization to AI-driven audience engagement and virtual production, GenAI is transforming media workflows and enhancing user experiences
- With a projected 15% to 20% by 2030 productivity impact on India's media sector, GenAI is boosting customer engagement, streamlining content production and improving monetization strategies
- The industry must address concerns like copyright, deepfakes, and preserving human creativity to maintain trust and authenticity in AI-driven media

GenAI in the media and entertainment industry is marking a transformative moment, and reshaping how content is created, consumed and experienced. The race to develop GenAI models capable of generating video intensified in 2024, with its impact spanning digital media, broadcasting, film, music, sports, and gaming. In October 2024, Meta's AI model, Movie Gen, unveiled clips of a baby hippo swimming in a lagoon, a fire dancer performing on a beach, a dog wearing a red-caped superhero outfit flying through the sky - all created from text prompts. Earlier in 2024, OpenAI introduced Sora, a GenAI tool that allows users to generate photorealistic videos – such as woolly mammoths trotting through snowy meadows – by simply typing a sentence. In May, YouTube launched Veo, a video generation model, and Imagen 3, a text-to-image model aimed at supporting the creative process.

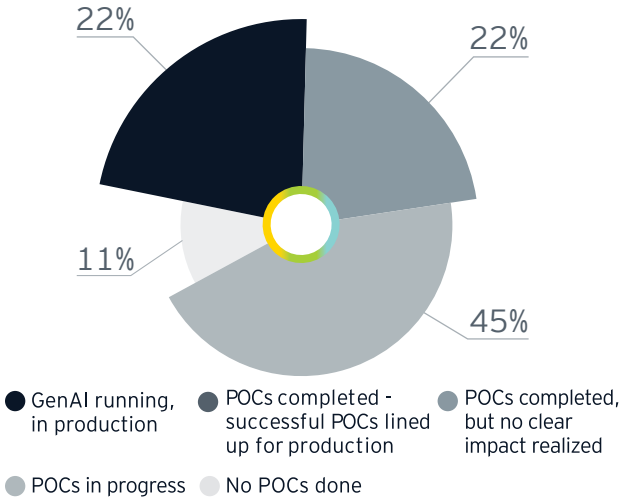
In India, GenAI's impact is at present mostly in advertising along with licensing and distribution, with the potential to redefine traditional production models

In India, GenAI's impact is being realized across advertising, licensing and distribution, with the potential to redefine traditional production models of having creative teams, big production houses and years of planning and execution. Key players, both global and Indian, are exploring GenAI to unlock personalization, efficiency and innovative user experiences. AI-powered immersive experiences are redefining how users engage with media and live events, especially in sports. In gaming, AI is introducing real-time interactivity, allowing for adaptive, personalised experiences.

Question

What has been your experience with GenAI POC engagements?

89% of the respondents have initiated POCs; with 22% running in production

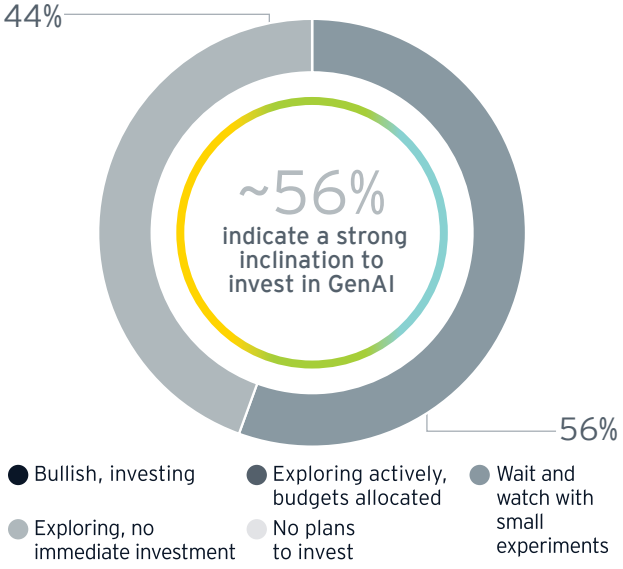


No response for 'POCs completed - successful POCs lined up for production'

Source : EY India C-suite GenAI Survey 2024

Question

What is your organization's overall inclination to invest in GenAI?



No response for 'Bullish and already investing', 'Exploring actively and budgets allocated' and 'No plans to invest'

Source : EY India C-suite GenAI Survey 2024

Question

Across organizations, select functions / departments being prioritized for GenAI implementation *(Mark all that apply)*

Content creation and acquisition	44%
Marketing and promotions	44%
Ad sales and monetization	44%
Customer engagement/ CRM	33%
Content scheduling and distribution	22%

Source : EY India C-suite GenAI Survey 2024

Emerging use cases

GenAI is driving innovation across various applications in the media and entertainment sector, enhancing creativity and automating workflows:

Content personalization and localization: GenAI is driving advancements in multilingual and personalized content, transforming how media is created and delivered. In FAST (Free Ad-Supported Streaming TV) channels, personalized content feeds and efficient reuse of licensed archive material are redefining video streaming. The Tamil-language film Kanguva used AI to recreate the hero's voice in multiple languages for its release. Music composer AR Rahman leveraged AI to revive the voices of legendary singers for a song in Lal Salaam, sparking a nuanced debate about ethical usage.

Audience engagement through AI-powered campaigns: Zee TV collaborated with Bobble AI to engage with 85 million global users during the Sa Re Ga Ma Pa 2024 auditions. AI-driven prompts within chat apps guided users to audition details, resulting in increased conversions and seamless user experiences.

Virtual production and animation: GenAI is enabling real-time effects, immersive narratives and virtual environments for gaming, animation and visual media.

Post-production: AI is revolutionizing post-production workflows by automating tasks such as video editing and visual effects creation in addition to helping re-purpose older films to higher resolutions or even restoring damaged footage.

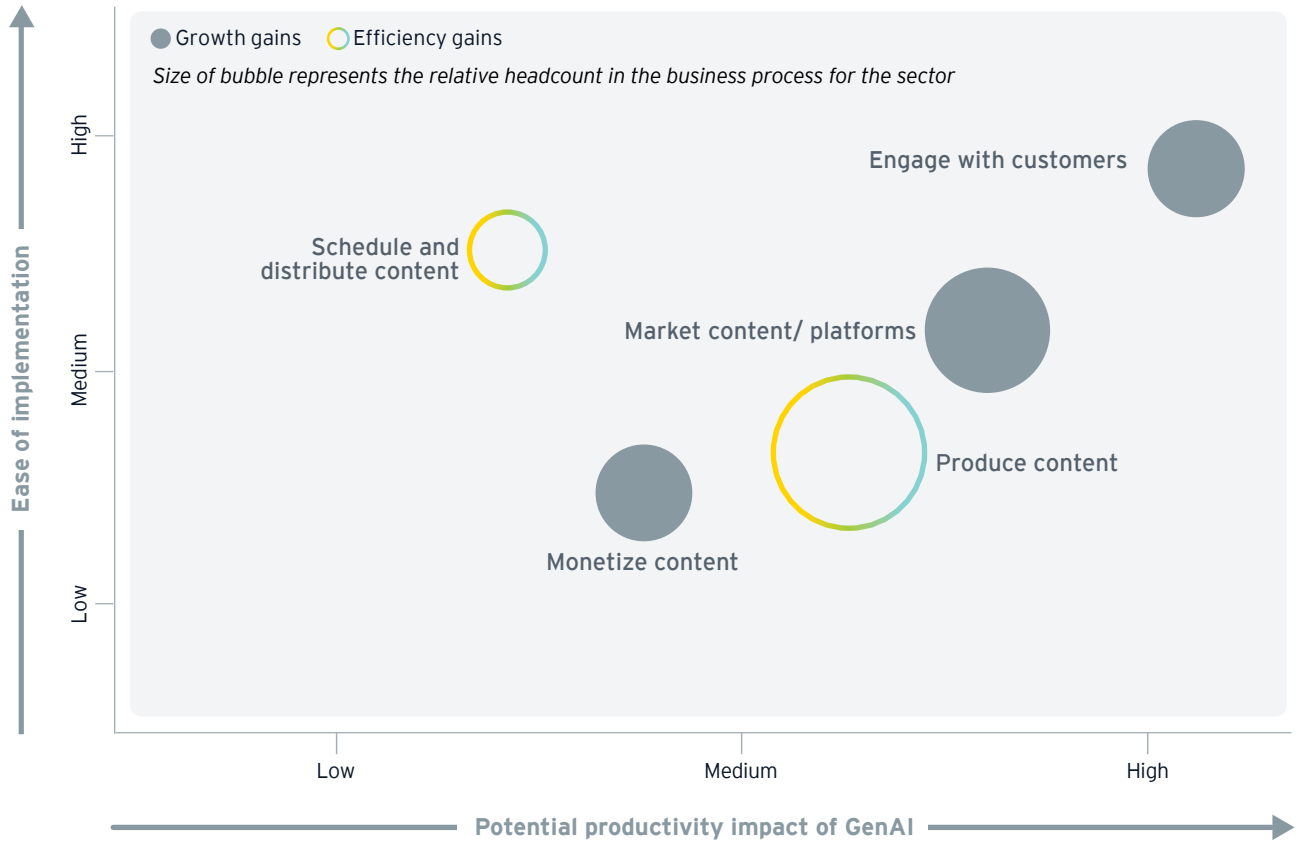
Business intelligence and analytics: GenAI can provide deep insights into audience behaviours, helping companies predict trends and refine strategies. GenAI can significantly enhance Broadcast Research Audience Council's (BARC) data analysis processes, helping broadcasters, advertisers, and content creators make more informed decisions.

Intellectual Property (IP) and Rights management: Automating contracts, syndication deals, and rights tracking are some areas where GenAI can play a role, offering tailored reports for compliance and ensuring better IP management.

The emergence of sector-specific GenAI startups is revolutionizing India's media and entertainment industry, transforming how content is created, managed, localized and monetized. Start-ups like Runway and Udio are pioneering AI-driven video production, while Synesthesia and D-ID focus on realistic digital avatars and interactive content. Platforms like DubDub.ai and Vitra.ai enable multilingual and real-time localization, while Feltiv and Visual Dub AI enhance accessibility and dubbing. Tools like Frammer AI streamline content repurposing, and Myelin Foundry offers AI-powered distribution solutions. These startups are driving efficiency, personalization, and innovation, reshaping workflows and audience engagement across the sector.

Start-ups in the media and entertainment sector are driving efficiency, personalization and innovation as well as reshaping workflows and audience engagement

GenAI impact on productivity across media and entertainment value chain



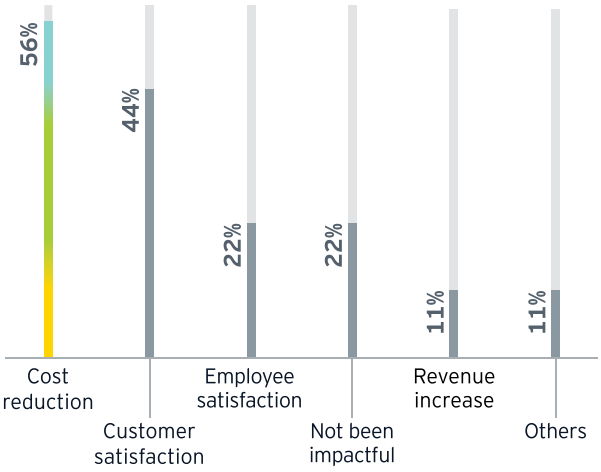
Source: EY India jobs study

Question

Where has AI been impactful?

(Mark all that apply)

AI has been instrumental in reducing costs and driving customer satisfaction



Source : EY India C-suite GenAI Survey 2024

GenAI's impact on productivity

India's media and entertainment sector is experiencing a rapid evolution in consumer offerings and operational efficiencies due to GenAI. Overall, GenAI is likely to have an impact of 15% to 20% across the sector based on the 200-plus roles analysed, with a 'humans + GenAI' approach likely to boost productivity, generate better audio-visual outputs and help improve monetization of products and services.

Customer engagement (~25%), content production and marketing (~22%) can account for 21% to 25% of overall productivity improvement. Content monetization and distribution functions are also expected to see significant productivity improvement.

Challenges and way ahead

The media ecosystem must ensure authenticity and quality of content consumed by users. Critical concerns like misinformation, intellectual property (IP) issues, deepfakes and the role of human creativity demand attention as AI increasingly influences content creation and consumption. Key challenges include:

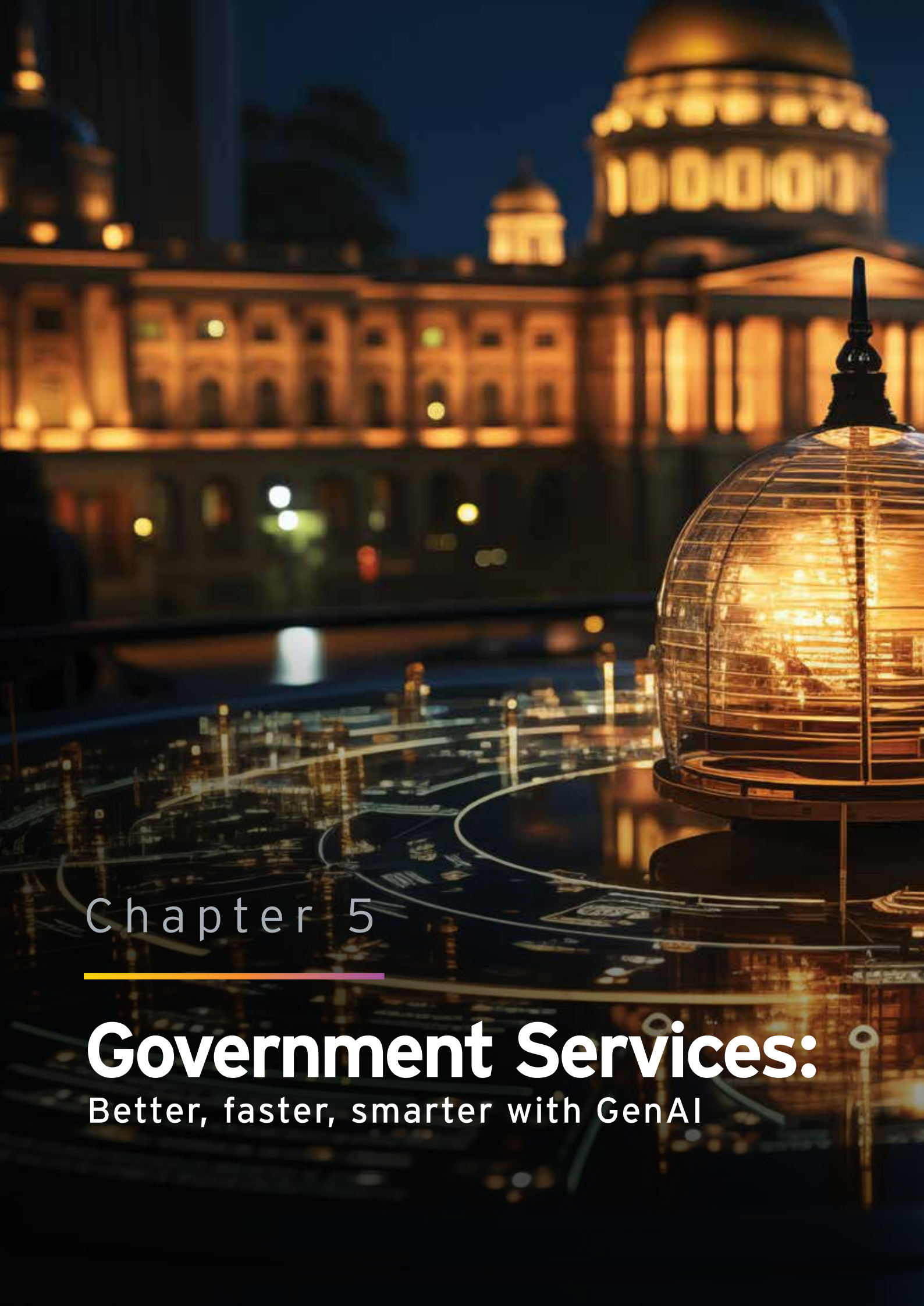
Content origin and rights: Identifying content sources and ownership of AI-generated materials (videos, images, music, scripts, etc.) remains complex. While Blockchain offers potential, its practical adoption is still distant

Copyright issues: AI models often train on copyrighted data, leading to disputes over rights. For instance, Dow Jones (The Wall Street Journal) and New York Post recently sued Perplexity for infringement. Fair compensation for rights holders is essential to address these conflicts

Preserving human creativity: The growing dominance of AI-generated content risks overshadowing human originality. A balance must be maintained to value distinctive human-driven creations, such as live concerts or sports, which may warrant premium pricing

Misuse of visual/audio media: AI's capacity to produce deepfakes challenges content authenticity. To ensure trust, responsible AI practices must embed clear indications of AI involvement. Transparency in distinguishing AI-generated from human-created content will be pivotal

As AI transforms media, the industry faces the dual challenge of meeting consumer demands for genuine, trustworthy content while leveraging AI's potential for innovation. GenAI offers opportunities for hyper-personalized experiences, dynamic monetization, and creative advancements but requires ethical practices, regulatory compliance, and careful oversight to preserve human creativity. By adopting AI responsibly, the media sector can balance technological progress with trust and serve as a testbed for GenAI's broader applications across industries.



Chapter 5

Government Services:

Better, faster, smarter with GenAI

Chapter 5

Government Services:

Better, faster, smarter with GenAI

- Governments around the world are increasingly using GenAI in policy development, resource allocation and public engagement
- The Government of India is using GenAI to improve inclusion, productivity and accessibility, majorly through multilingual services, policy drafting and documentation, and expanding healthcare solutions
- BharatGen, an open source multimodal multilingual LLM, ushers in a plethora of possible solutions in public service delivery

The economic potential and transformative impact of GenAI are prompting governments worldwide to invest in fostering AI innovation. By integrating GenAI with other advanced technologies, governments are revolutionizing public services, accelerating socio-economic development, and enhancing decision-making processes.

International governments harnessing GenAI for citizen services

In the US, government agencies are using GenAI in policy drafting, decision support, and public communication. The National Institute of Standards and Technology (NIST) is integrating AI into governance frameworks to support policy generation and predictive decision-making. In law enforcement, AI-driven models are generating crime reports and analyzing real-time incident data to improve police efficiency. The Federal Emergency Management Agency (FEMA) is leveraging AI for disaster management by simulating potential disaster scenarios, optimizing resource allocation, and enhancing emergency planning, contributing to a proactive approach in managing risks and resources.

Singapore is positioning itself as a global leader in digital and AI integration through its Smart Nation Initiative. GenAI is enabling authorities to simulate future developments in urban planning and visualize the impact of policies on infrastructure, housing, and the environment. This citizen-centric approach is reducing inefficiencies in public services and leading to more effective solutions. AI is also accelerating the policy-making process by generating multiple drafts, allowing authorities

to analyze and make data-driven decisions swiftly. This process is reducing the time required to draft policies by up to 30%, enabling Singapore to respond quickly to emerging national challenges.

In the UK, the National Health Service (NHS) is adopting GenAI to enhance healthcare governance. AI-generated reports are supporting personalized healthcare, managing extensive electronic health record datasets, and predicting patient outcomes based on historical data. These capabilities are helping policymakers align healthcare strategies with population needs. For example, NHS Trusts are deploying GenAI to automate the generation of patient discharge summaries, saving time for healthcare professionals and ensuring that patients receive accurate, timely, and comprehensive information about their treatment plans. This initiative is improving operational efficiency and enhancing the patient experience with personalized, data-driven healthcare solutions. The UK government is also leveraging GenAI in policy drafting and public consultation processes. By generating multiple policy drafts and analyzing insights from citizen feedback, GenAI is enabling more responsive and efficient policymaking.

Estonia, renowned for its pioneering digital governance model, e-Estonia, is integrating GenAI across public services to strengthen its digital infrastructure. The Estonian government is utilizing AI-generated content in areas such as public documentation, tax audits, and welfare policies. By automating processes like license generation and citizen applications, Estonia is reducing administrative burden and processing times, setting a global benchmark for efficient digital governance.

Global examples of GenAI in governance

US

- Policy drafting
- Decision support
- Public communication
- Law enforcement (generate crime reports, analysis of real-time incident data)
- Disaster management (simulations, resource allocation, emergency planning)

UK

- Healthcare
- Personalized healthcare
- Managing electronic health record datasets
- Predicting patient outcomes
- Improved operational efficiency (automating patient discharge summaries)
- Provide personalized, data-driven healthcare solutions
- Policy-making
- Draft policies
- Analysis of citizen feedback

Estonia

- Public documentation, tax audits, and welfare policies
- Reduced administrative workload and processing time (automation of license generation, citizen applications, etc.)

Singapore

- Urban planning (simulations, impact of policies on infrastructure, housing, environment)
- Policy-making
- Data-driven decision-making

India leverages GenAI for smarter governance

The Indian government has recognized AI as a critical enabler for the Digital India initiative and is investing heavily in AI-driven solutions to address governance challenges. In 2024, the country has launched some key initiatives to integrate GenAI into public governance, with a primary focus on accessibility, inclusivity, and promoting Indian languages. The BharatGen initiative, for example, aims to create foundational AI models tailored to Indian languages and cultural contexts, ensuring a more inclusive approach to AI-driven governance.

Policy drafting and documentation

In India's vast and diverse landscape, policy formulation is complex. GenAI is helping streamline the process by automating the drafting of policies, reports, and public documents, significantly reducing the time and effort required. Ministries, such as the Ministry of Electronics and Information Technology (MeitY), use AI tools to generate reports on digital governance, cybersecurity, and e-commerce. GenAI can quickly create drafts of policies, such as on renewable energy, by drawing from existing frameworks and global best practices, speeding up the review and approval process, and enabling faster government responses.

NITI Aayog, India's policy think tank, also uses GenAI to generate comprehensive policy recommendations, simulate outcomes, and compare scenarios, ensuring more agile and responsive decision-making in line with evolving socio-economic conditions.

Healthcare personalization

One of the most prominent examples of GenAI in Indian governance is its use in healthcare personalization. The Ayushman Bharat initiative, one of the world's largest healthcare schemes, is exploring the use of GenAI-driven models to generate health reports, assess patient risks, and provide personalized healthcare solutions. The Ayushman Bharat Digital Mission (ABDM) offers a strong digital foundation to integrate GenAI into healthcare as its infrastructure supports effective data management and interoperability, enhancing GenAI's impact on coordinated and patient-centric care.

By generating localized and personalized content for users, GenAI is making government services more accessible, efficient, and user-friendly. The government plans to further expand this model to cover more languages and integrate AI into additional services like education, agriculture, and social welfare.

BharatGen

Launched on 1 October 2024, BharatGen is India's first government-supported initiative to develop a multimodal LLM. Aimed at improving public service delivery and citizen engagement, BharatGen focuses on creating foundational models in language, speech, and computer vision that produce high-quality text and multimodal content across various Indian languages.

Spearheaded by IIT Bombay under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) of the Department of Science and Technology (DST), BharatGen is designed as a public good. Distinctive features of BharatGen include:

Multilingual and multimodal models: BharatGen's models cover both text and speech, reflecting India's complex linguistic landscape.

Bhartiya dataset development: Unlike models that rely on international data, BharatGen focuses on collecting and curating India-centric data, accurately representing the country's diverse languages, dialects, and cultural contexts.

Open-source platform: BharatGen will be accessible to various sectors, leading to more transparency and collaborative growth.

Support for a national AI ecosystem: BharatGen's open-source nature supports a GenAI research ecosystem, benefiting government, private, educational, and research institutions.

In two years, BharatGen aims to contribute significantly to cultural preservation, inclusive technology, and data sovereignty, strengthening India's control over its digital resources and narrative.

UMANG app and multilingual AI

India's UMANG (Unified Mobile Application for New-age Governance) app serves as a one-stop platform for hundreds of government services, ranging from paying utility bills to accessing health records. With over 50 million users, the app leverages GenAI to offer multilingual support in 13 languages, ensuring accessibility for a linguistically diverse population. The AI backend generates personalized responses, adapts to the user's language preferences, and interacts with citizens in real-time, providing a seamless and user-friendly experience. This case study highlights the role of GenAI in making public services more inclusive and accessible.

Bigger role for GenAI in public governance

The adoption of GenAI in governance brings multiple benefits, enhancing the quality, speed, and efficiency of public services. As governments handle vast volumes of data, AI models can generate insights, documents, and possible solutions that would otherwise take months to develop manually. Furthermore, AI-driven personalization extends to digital governance, where citizens interact with public services through apps, websites, and other platforms. GenAI can generate personalized responses in real-time, improving service delivery and making interactions with government systems more intuitive and user centric.

Cost and resource optimization

Governments, particularly in developing countries, often face resource constraints. GenAI enables cost and resource optimization by automating routine tasks, reducing manual errors, and improving process efficiency. By generating reports, analysing datasets, and predicting outcomes, AI tools allow government employees to focus on more strategic tasks, such as policymaking and public consultation. For example, in India's Smart Cities Mission, AI tools analyse vast amounts of data to generate insights on resource management, such as optimizing water usage, energy consumption, and traffic flow. This not only reduces operational costs but also improves the quality of life for citizens by making cities more sustainable and resilient.

As GenAI adoption increases through a variety of applications and strategies, it is becoming a vital tool in modern governance, enabling governments to better anticipate needs, enhance service delivery, and engage with citizens more effectively. The continued adoption of GenAI in governance promises to result in innovation, drive inclusivity, and reshape public service delivery across the globe.

Chapter 6

Policy agenda for India

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Policy agenda for India

- Globally, policymakers recognize the need to build global consensus across jurisdictions on regulating AI
- Development and deployment of AI applications in key socio-economic sectors, akin to UPI, can drive innovation and private sector participation. Creating scalable applications in sectors such as healthcare, agriculture, and education will foster a vibrant AI ecosystem
- Fast track implementation of enhanced compute infrastructure, including deploying GPUs and empanelling cloud AI service providers. Increased investments can be considered and inspiration taken from jurisdictions like the US and Singapore can help meet the growing demands of the AI ecosystem

AI policy landscape: A global and Indian perspective

AI is advancing rapidly, drawing significant attention from policymakers worldwide. Governments aim to encourage AI adoption in both the economy and public services while ensuring responsible usage. Approaches to AI governance vary across jurisdictions, reflecting different national priorities. This chapter provides a global overview and contextualizes developments for India.

Global overview: Policy and regulatory developments

Policymakers worldwide are focused on balancing innovation with managing risks. Efforts aim to ensure AI systems foster economic growth while addressing potential downsides. Key developments include:

European Union: The EU AI Act

The EU AI Act represents one of the more comprehensive AI-specific regulatory framework to date. Key features include:

- **Risk management**: A preemptive approach with oversight proportional to risk tiers
- **Human oversight:** Mandates for control over high-risk systems.
- **Transparency:** Requirements for traceability and explainability in AI interactions.
- **Safety and robustness:** Measures addressing accuracy, cybersecurity, and proportional safeguards.

The Act's objectives include ensuring AI safety, fostering legal certainty to encourage innovation, enhancing enforcement of fundamental rights, and creating a unified market for trustworthy AI.

United States

The US leads global AI innovation while adopting a cautious regulatory approach. Key developments include:

- **DEFIANCE Act (2024):** Targets misuse of intimate digital forgeries with provisions for damages and privacy safeguards.
- **AI leadership memorandum:** Guides federal AI adoption for national security, emphasizing safety, privacy, and responsible use.
- **California AI laws:** A set of comprehensive regulations that focus on addressing risks like deepfakes, privacy, and education, aiming to balance innovation with risk management. Details presented in Annexure.

China: GenAI safety requirements

China's regulations focus on safety assessments and proportional risk measures for GenAI. Key provisions include:

- **Corpus safety:** Before using a corpus in a training dataset, conduct safety assessments with at least 4000 corpora, ensure licensing agreements for open-source or commercial corpora, and maintain collection records for self-collected datasets.
- **Model safety:** Technical measures should be used implemented to enhance the relevance, reliability, and validity of AI-generated content for its users.
- **Safety requirements:** The necessity, applicability, and safety of GenAI in various fields must be demonstrated, with appropriate protective measures for critical infrastructures, and disclosure of service limitations, model information, and personal data usage for interactive interfaces.
- **Safety assessment requirements:** Safety assessments should be carried out in-house or by an entrusted third-party.

Global cooperation is increasingly prioritized to address AI's cross-border challenges. Initiatives include a network of AI safety institutes and forums like the Partnership for AI, fostering shared research, evaluation, and governance practices.

AI policy in India: IndiaAI Mission and strategic frameworks

India's AI policy landscape includes a mix of strategic initiatives, regulations, and advisories designed to harness AI for economic and societal benefit. Key components include:

- **IndiaAI Mission:** A flagship program focused on positioning India as a global AI leader.
- **Legal frameworks:** The Digital Personal Data Protection Act (2023) and Responsible AI Principles outline ethical AI development.
- **Policy guidelines:** MeiTY advisories and NITI Aayog's recommendations focus on fostering innovation while addressing risks.
- **Supporting ecosystem:** Complementary regulations like IT Rules ensure a holistic approach to AI governance.

India's policies aim to balance innovation with inclusivity and safety, ensuring AI supports national priorities and global leadership aspirations.

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Policy and regulatory environment concerning AI in India

Policy/ regulation	Agenda/ focus
MeitY advisories	In addition to advisories issued in 2023 for intermediaries and platforms, the Ministry issued a fresh advisory on 15 March 2024 for due diligence: ■ Users should not be able to host, display, upload and share unlawful content ■ The AI platform/software should not promote biases ■ The users should be made aware that they are working with an AI software (can be a pop-up mechanism) ■ Synthetic content created using AI should be appropriately labelled as AI generated
IndiaAI Mission	The development and deployment of AI systems depends on the combination of: ■ Compute capacity ■ Foundational models ■ Datasets ■ Application development ■ Future skills ■ Start-up financing ■ Safe and trusted AI This mission-based approach adopted is to develop a strategy to bridge the gaps in the existing AI ecosystem across all identified pillars.

IndiaAI Mission: The way ahead

The Cabinet has approved a specific financial commitment of INR10,371.92 crore in March 2024 to implement the IndiaAI Mission with an overarching aim to "catalyse AI innovation through strategic programs and partnerships across the public and private sectors". There are various initiatives under the Mission's seven mission pillars as below.

IndiaAI Compute Capacity

This pillar focuses on creating a scalable AI computing ecosystem with over 10,000 GPUs through public-private partnerships to meet the demands of India's growing AI start-ups and research community. An AI marketplace will offer AI as a service and pre- trained models, serving as a central hub for essential AI resources.

IndiaAI Innovation Centre

This centre is dedicated to developing and deploying indigenous Large Multimodal Models (LMMs) and domain-specific foundational models in critical sectors.

IndiaAI Datasets Platform

This platform aims to streamline access to high-quality non-personal datasets for AI innovation. A unified data platform will provide seamless access to these datasets for Indian start-ups and researchers.

IndiaAI Application Development Initiative

This initiative promotes AI applications in critical sectors by addressing problem statements from Central Ministries, State Departments, and other institutions. It focuses on developing, scaling, and promoting the adoption of impactful AI solutions with the potential for large-scale socio-economic transformation.

IndiaAI Future Skills

This pillar aims to reduce barriers to entry into AI programs by increasing AI courses at the undergraduate, master's, and Ph.D. levels. Data and AI Labs will be established in Tier 2 and Tier 3 cities to offer foundational courses.

IndiaAI Startup Financing

This pillar supports and accelerates deep-tech AI start-ups by providing streamlined access to funding for innovative AI projects.

Safe and Trusted AI

This pillar focuses on ensuring the responsible development, deployment, and adoption of AI by implementing Responsible AI projects, developing indigenous tools and frameworks, self-assessment checklists for innovators, and other guidelines and governance frameworks.

Policy recommendations for the Indian AI ecosystem

Enhancing access to high-quality datasets

The government is establishing the India Dataset Platform and National Data Management Office to provide sector-specific, organized datasets with standardized metadata and APIs for streamlined access. The platform will also engage with private entities to develop frameworks for contributing data, allowing opportunities for monetizing private datasets.

Recommendation

The India Dataset Platform should be launched as soon as possible, even in a beta version, to enable early feedback from the AI ecosystem for continuous improvement. The platform can be modelled after successful examples like Hugging Face, with datasets tailored to key sectors such as payments, healthcare, education, and agriculture, readily available for AI development. Adopting

a privacy-first approach, the platform should facilitate crowdsourcing for AI data needs, support ecosystem collaboration (similar to ImageNet), and function as a marketplace for private datasets.

Developing and enabling access to compute infrastructure

Efforts are underway to improve access to compute resources for government agencies, start-ups, and public research institutions. Initiatives include deploying at least 10,000 GPUs and empanelling agencies to provide AI services on the cloud, facilitating scalable AI research and development.

Recommendation

The government has initiated the procurement of GPUs. Given the growing demands in the AI ecosystem, it is crucial to fast-track this process. Countries like the United States and Singapore are making substantial investments in AI infrastructure. Singapore, which has a significantly smaller economy, has similarly committed over S$1 billion (approximately US$740 million) over the next five years to develop AI compute infrastructure, talent, and industry development under its National AI Strategy 2.0. To remain competitive and support scalable AI initiatives, current budgetary allocations towards AI infrastructure might have to be reassessed and revised upwards.

Accelerating AI use-case development and R&D

The government is prioritizing AI solutions for key socio-economic sectors such as healthcare, agriculture, and governance. Programs like the India AI Innovation Challenge and IndiaAI Fellowship foster innovation, while a recent allocation of INR990 crore (FY24-FY28) supports three AI Centers of Excellence to develop scalable solutions in the sectors of healthcare, agriculture and urban sustainability solutions.

Recommendation

The government should expedite the deployment of AI use-case development, particularly in sectors like healthcare, agriculture, and education. NPCI, played a pivotal role in popularizing UPI by providing a simple and accessible platform for digital transactions. UPI's success has encouraged numerous private entities to develop their own UPI-based applications, significantly expanding the digital payments ecosystem in India. Similarly, by creating reference AI applications in key sectors, the government can stimulate private sector innovation and participation, leading to a diverse and robust AI ecosystem that addresses various socio-economic challenges.

Promoting responsible and trusted AI

The government recently released a report for public consultation prepared by the Subcommittee on 'AI Governance and Guidelines Development', under its PSA chaired AI Advisory Group. The report presents recommendations to inform the development of an AI ecosystem that is "trustworthy and accountable". The proposed measures include, the development of a co-ordinated approach for the Government; enhancement of governmental technical capabilities; initiatives to monitor and mitigate AI risks; drive voluntary commitments; develop technical standards and tools; and suggestion of measures to strengthen the legal and regulatory frameworks.

Recommendation

Accelerate the establishment of an AI regulatory sandbox, drawing from successful examples like the RBI's regulatory sandbox for financial products. AI sandbox can help mitigate risks such as bias, hallucination, and inaccuracy, while supporting the creation of safety testing protocols and standards in a controlled environment.

Streamlined mechanisms for AI public private partnerships ecosystem

Industry driven research and development efforts for AI systems may be announced to support specific use-cases which have large scale economic implications. The India AI innovation challenge and the India AI fellowship, whereby fellows will be supported for AI research and development, highlights how the public is critical for AI related research. The public at large can also be enablers of access to high volumes as data which is evident through Bhashadaan which was critical for the development of Bhashini. Other initiatives announced by the government include the announcement made by the Government of Andhra Pradesh for the setting up of an AI university under the PPP model.

Developing

indigenous capabilities through investments in local talent, research, and infrastructure can not only have an economic effect but can also further the development of greater sovereign AI capabilities

Recommendation

Develop a standardized framework to streamline public-private AI partnerships. This framework should include clear review processes, standardized SoPs, template agreements, and expedited approvals to formalize collaborations. Additionally, existing facilitation centers, such as BHASKAR under Startup India/DPIIT, could provide specialized support for startups and enterprises contributing to AI deployment in public services.

Focus on sovereign AI capabilities

The development of AI systems (startups, enterprises) in India have traditionally been dependent on core technologies that have been developed in other jurisdictions. As more sensitive applications of AI emerge, there may risks or considerations relating to national security and global supply chains. Developing indigenous capabilities through investments in local talent, research, and infrastructure can not only have an economic effect but can also further the development of greater sovereign AI capabilities.

Recommendation

Sovereign AI capabilities need to be established in sectors of critical national strategic importance such as space, defence, finance, etc. A programmatic approach could be adopted to facilitate the development of indigenous technology, algorithms and models for all critical or sensitive AI applications. Government programs focusing on indigenous manufacturing of critical AI related hardware may also be considered.

Annexures

Annexures

A Methodology of EY jobs study

EY undertook a comprehensive study to evaluate the potential impact of AI, with a particular focus on GenAI, on jobs across industries in India. Our study evaluated more than 10,000 tasks, across core industry operations and support functions. The methodology was underpinned by EY's proprietary tools, frameworks, and sectoral expertise, developed over years of client engagements and research.

The initial step involved mapping the value chain for each industry to identify core processes and support functions. Using EY's proprietary tools and frameworks, these processes were systematically broken down into progressively granular levels—Level 1 (L1), Level 2 (L2), and Level 3 (L3).

Each L3 process was further detailed into a set of tasks, with a level of granularity that ensured consistent time valuation across tasks. By breaking down tasks into granular levels, the study ensures that the time taken for each task is consistently measured and comparable. This standardization allows for accurate analysis, forming a baseline to assess the impact of GenAI or other automation technologies on these tasks.

Each identified task was assessed using a robust framework based on three critical dimensions. First, Exposure, which measured the extent to which a task lends itself to productivity enhancements through automation and Gen AI. Second, Complementarity, which examined the degree of human oversight required, indicating the potential for AI augmentation. Third, Intensity, which analysed the frequency of tasks in granular time units to estimate their volume and associated effort. This multidimensional framework enabled a precise understanding of the AI impact on specific tasks.

The intersection of exposure, complementarity, and intensity for each task produced a productivity percentage, indicating the proportion of time or effort that could be saved through the adoption of GenAI. These productivity percentages were subsequently aggregated at both the business process and industry levels, enabling the analysis to identify commonalities in processes across industries and to compare and contrast the potential impact of GenAI across different sectors.

A time horizon of 3-5 years was adopted to project the impact of GenAI on the identified tasks. The findings were rigorously validated by EY's sector-specific industry experts to ensure analytical robustness and accuracy.

To estimate the broader impact of productivity gains at economy level, the sector-specific productivity impacts were aggregated using the RBI's KLEMS database. The estimated labour productivity gains and labour income share in gross output for RBI KLEMS sectors were used to compute the impact of labour productivity gains on the sectoral outputs. Gross output gains for each KLEMS sector from improved labour productivity were aggregated to arrive upon the overall productivity gains for India's gross output. KLEMS sectoral employment numbers were used to estimate the impact of productivity gains on employees. These steps helped provide valuable insights into AI-driven productivity gains at sectoral as well as at an economy level.

This structured methodology enabled a granular understanding of AI's potential across sectors, laying the foundation for actionable insights into productivity enhancement and workforce transformation.

B Summary of laws passed in the State of California, USA

In September 2024, a series of 18 AI laws was passed by California to "advance safe and responsible AI and protect Californians". These laws are consequential and relevant for all businesses which have plan to operationalize, develop or deploy AI systems. These laws focus on areas like Privacy, AI misuse, Training data, transparency, accountability and AI education which are major considerations for the AI ecosystem at large. Since these laws are passed in California, which is the hub of all major technology players, these laws are significant for all AI players globally. A summary of these laws and their provisions are presented below.

Name of the law	Focus area	Provisions
Artificial Intelligence (AB 2885)	AI definition	Formalizes a uniform definition for AI, or artificial intelligence, in California law.
California Consumer Privacy Act (AB 1008)	Privacy	Recognizes and highlights that personal information under the California Consumer Privacy Act (CCPA) can be stored, transmitted, recreated and shared by AI systems in various formats.
Crimes: child pornography (SB 1381)	AI misuse and deepfakes	Includes content that is created digitally or through AI in the scope of the present child pornography regulations.
Crimes: Child Pornography (AB 1831)	AI misuse and deepfakes	Child pornography content altered or created using AI systems is brought under the scope of existing child pornography statutes.
Use of likeness: digital replica. (AB 1836)	AI misuse and deepfakes	Prohibits the production, distribution and transmission of the digital replica of a deceased personality's voice or likeness in an expressive audiovisual work or sound recording without prior consent, except as provided.
Defending Democracy from Deepfake Deception Act of 2024 (AB 2655)	AI misuse and deepfakes	Provides injunctive relief in cases where deceptive material (altered/created using AI systems) concerning elections is made available by large online platforms with at least one million California users.
Elections: deceptive media in advertisements (AB 2839)	AI misuse and deepfakes	Extends the period during which a committee or similar body is restricted from intentionally disseminating advertisements or electoral materials that include misleading content created or altered by artificial intelligence from 60 days prior to an election to 120 days, among other measures.
Crimes: distribution of intimate images (SB 926)	AI misuse and deepfakes	Establishes a criminal offense for an individual who deliberately creates and disseminates any sexually explicit depiction of an identifiable individual, made in such a way that a reasonable person would assume the image is a genuine portrayal of the person shown, in situations where the distributor is aware or ought to be aware that sharing the image can cause emotional distress for the depicted individual.

Name of the law	Focus area	Provisions
Sexually explicit digital images (SB 981)	AI misuse and deepfakes	Mandates social media platforms to introduce mechanisms for reporting and removing "sexually explicit digital identity theft."
Public schools: artificial intelligence working group (SB 1288)	AI literacy and education	Mandates the Superintendent of Public Instruction (SPI) to set up a working group in order to observe how artificial intelligence (AI) and other forms of similarly advanced technologies are presently being deployed in education.
Pupil instruction: media literacy: artificial intelligence literacy: curriculum frameworks: instructional materials. (AB 2876)	AI literacy and education	Mandates the Instructional Quality Commission (IQC) to potentially include AI literacy programmes in the mathematics, science, and history-social science curriculum frameworks and instructional materials.
Generative artificial intelligence: training data transparency (AB 2013)	Training datasets and transparency	Mandates that AI developers provide relevant information on the data used to train the AI system or service on their websites.
Political Reform Act of 1974: political advertisements: artificial intelligence (AB 2355)	AI use in political advertisements	Mandates committees that create, publish, or distribute a political advertisement that contains any image, audio, or video that is generated or substantially altered using AI to include a disclosure identifying the content as AI-generated.
Health care services: artificial intelligence (AB 3030)	Transparency in AI use	Mandates specified health care professionals to clarify deployment of GenAI if it is used to generate communications to a patient regarding their clinical information.
Contracts against public policy: personal or professional services: digital replicas. (AB 2602)	Transparency in AI use	Stipulates that a contract for the provision of personal or professional services that includes a clause permitting the utilization of a digital imitation of a person's voice or image is not legally binding unless it encompasses a detailed explanation of the planned applications of the imitation and the person is represented by an attorney or a labor union, as detailed.
California AI Transparency Act (SB 942)	Transparency in AI use	Mandates the developers of covered GenAI systems to both incorporate provenance disclosures in the original content generated by them and provide tools to detect GenAI content generated by their systems.
Health care coverage: utilization review (SB 1120)	Fair, responsible and transparent use of AI systems	Sets forth conditions for health plans and insurers regarding their employment of AI in utilization review and management determinations, mandating that AI, algorithms, or any software employed must rely on a patient's medical or clinical history and the specific clinical context provided by the treating provider, and must not replace the decision-making of healthcare providers.
Generative Artificial Intelligence accountability Act. (SB 896)	Accountability in AI use	Mandates CDT to update report for the Governor as called for in Executive Order N-12-23, related to the procurement and deployment of GenAI by the state; requires OES to carry out a risk analysis of potential threats posed by the use of GenAI to California's critical infrastructure (w/high-level summary to Legislature). It also mandates that the use of GenAI for state communications be stated clearly.

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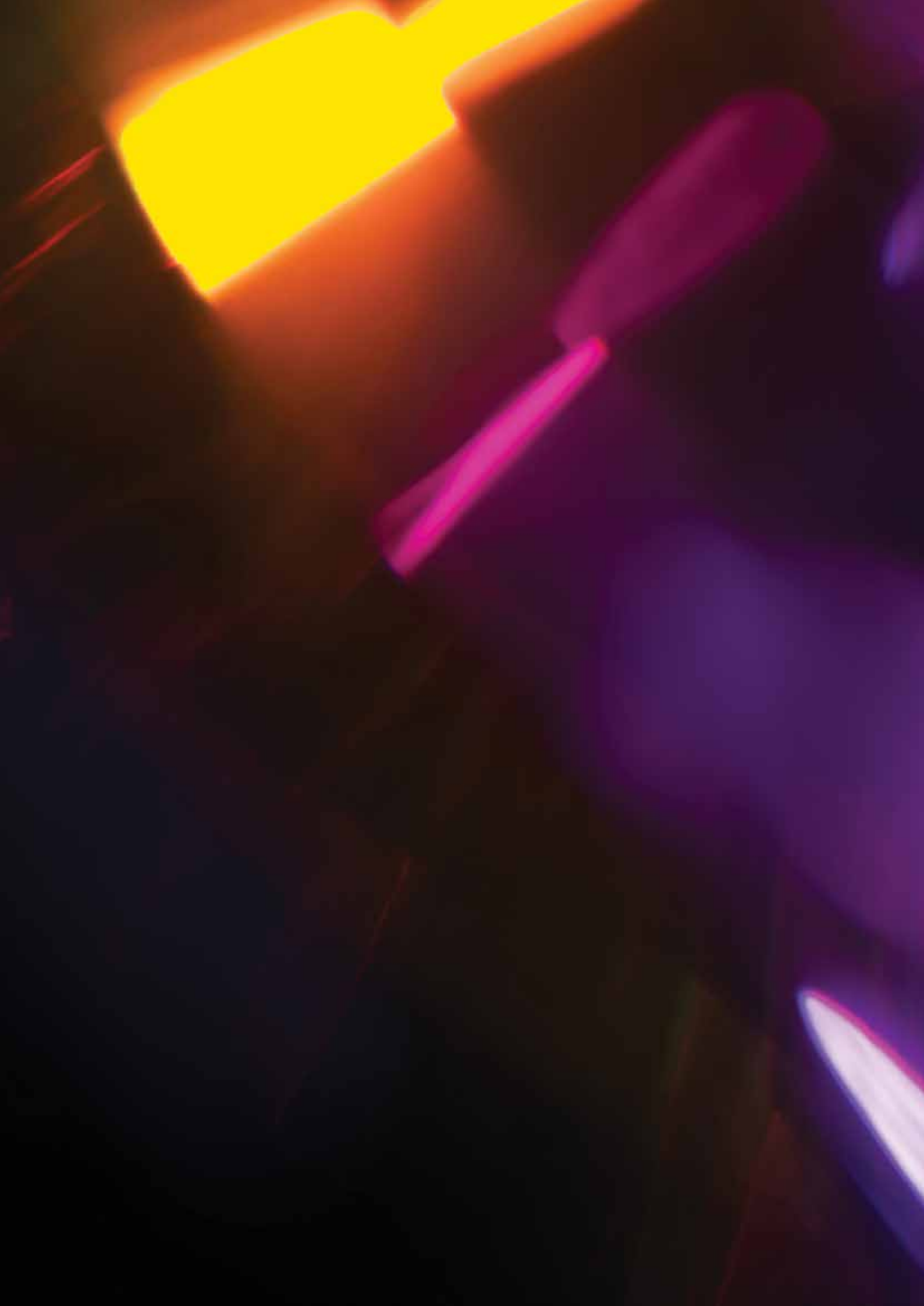

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