



BCG

Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. BCG was the pioneer in business strategy when it was founded in 1963. Today, we work closely with clients to embrace a transformational approach aimed at benefiting all stakeholders—empowering organizations to grow, build sustainable competitive advantage, and drive positive societal impact.

Our diverse, global teams bring deep industry and functional expertise and a range of perspectives that question the status quo and spark change. BCG delivers solutions through leading-edge management consulting, technology and design, and corporate and digital ventures. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, fueled by the goal of helping our clients thrive and enabling them to make the world a better place.

nasscom

NASSCOM represents the voice of the \$250 Bn plus technology industry in India with the vision to establish the nation as the world's leading technology ecosystem. Boasting a diverse and influential community of over 3000 member companies our network spans the entire spectrum of the industry from DeepTech and AI start-ups to multinationals and from products to services, Global Capability Centres to Engineering firms. Guided by our vision, our strategic imperatives are to accelerate skilling at scale for futureready talent, strengthen the innovation quotient across industry verticals, create new market opportunities - both international and domestic, drive policy advocacy to advance innovation and ease of doing business, and build the industry narrative with a focus on Trust, and Innovation. And, in everything we do, we will continue to champion the need for diversity and equal opportunity.

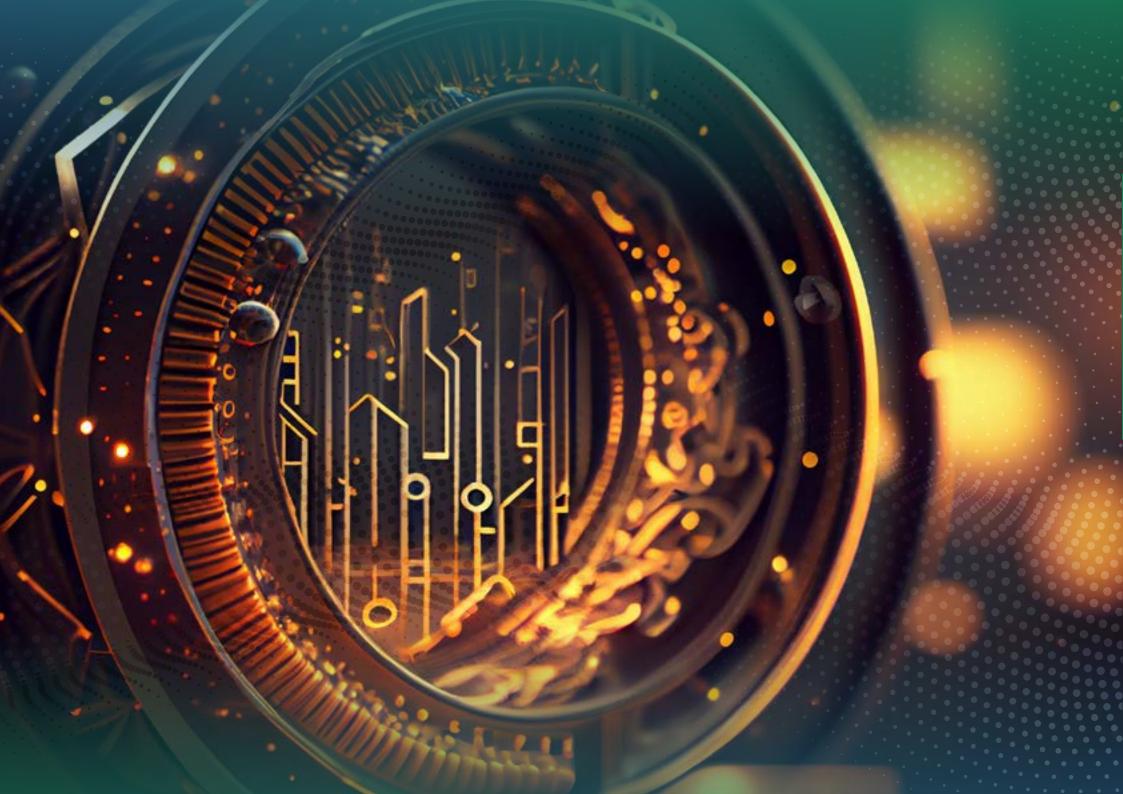


TABLE OF CONTENTS





EDITOR'S NOTE



RAJIV GUPTA
MANAGING DIRECTOR
AND SENIOR PARTNER
BCG



DEBJANI GHOSHPRESIDENT
NASSCOM

We live in an era where Artificial Intelligence (AI) has not only invaded our living rooms but has also ascended to a place of strategic prominence in the global business arena. More importantly, its ascent has been swift as evidenced by the fact that ChatGPT took only 5 days to reach 1 Mn users. In contrast, just a few years back, Instagram and Spotify took 75 days and 150 days, respectively to achieve the same milestone. The AI Software & Services market is already valued at c. \$100 Bn and is expected to reach \$300-320 Bn by 2027. Further, investments in AI are also booming across the globe with a sizeable \$83 Bn invested in 2023. Interestingly, data & analytics and Gen AI emerge as dominant themes with the former attracting investments worth c. \$42 Bn and the latter c. \$23 Bn.

Inarguably, the spotlight is now on **technology service providers**. Amidst this backdrop, Indian tech giants and nimble mid-scaled players, along with BPO and GCC stalwarts, are racing to harness the potential of GenAI, pouring investments into crafting innovative solutions. But the question to ponder upon is, "Are tech services players well equipped to meet the **AI and GenAI needs** of their clients?"

In this collaboration, BCG and NASSCOM delve into this pressing question, employing a comprehensive six-dimensional framework to evaluate the AI maturity landscape across India's tech ecosystem which spotlights:

- Al for clients
- Vision & governance
- Operational model
- People
- Technology
- Data

The report aims to illuminate the path taken by exemplars to serve as learnings for the sector – highlighting their key achievements in AI and defining the strategic actions for the way forward.

Exemplars have developed a wide array of innovative AI-based services and solutions, expanding their offerings beyond traditional IT services. This

includes the development of proprietary AI & GenAI platforms, tools for automation, data & analytics solutions, and bespoke AI applications for specific industry verticals such as healthcare, banking & finance, and retail.

30% of players have also expanded further to offer **GenAl advisory and custom model finetuning services** for domain specific solutions. For instance, an exemplar mid tech player is offering a **GenAl** platform as a service for its clients which enables them to finetune & test models and develop apps for different use cases. This has enabled the firm to deepen market penetration and open new revenue streams.

25% of the companies have been able to build a sizeable 20%+ AI and 5%+ GenAI linked client portfolio. On GenAI specifically, they have been able to scale GenAI use cases to production – exemplars have seen up to 10 use cases in production, vs industry average of 4-5. Some examples of these productionized use cases include customer experience, marketing content generation, GenAI-enabled SDLC, which allow for replicability across sectors as well as sector-specific use cases like claims management & fraud detection. E.g., a BPO player built a claims management platform for an insurance firm by deploying AI+GenAI algos at every decision point of the value chain (adjudication, payment calculation, litigation, and others). Further, 45% companies have significantly enhanced their operational efficiency with 20%+ realized efficiency seen in pilot accounts of Application Development.

There are many success factors on how the exemplars have been able to propel their AI journey:

- Firstly, leading firms have recognized the importance of human capital in the AI journey and accordingly invested heavily in upskilling and reskilling their workforce in AI and related technologies, with some allocating \$1 Bn over the next 3 years to upskilling. There has also been a corresponding increase in the demand for AI skills AI leadership hiring saw a 15% increase while AI engineers' hiring rose by c. 70% in the last year. While ML, Python & SQL continue to dominate current skills requirement in AI, GitHub, PyTorch and Databricks are emerging as important skills as well. The right technical expertise acts as a key differentiator for these players, enabling them to converse with potential & existing clients.
- Secondly, players have established AI Centers of Excellence (CoE) with a dedicated leader for driving AI business for the organization. These CoEs are x-functional and x-sectoral and work seamlessly with BUs, involving representation from technical, business, and legal. They have:
 - Dedicated AI SPOCs working in tandem with BU heads to build commercially driven AI solutions and are responsible for ensuring
 - Holistic viewpoints when building & prioritizing use cases by evaluating business impact x implementation feasibility x ability to replicate and scale x risks.

- ⊙ Thirdly, exemplars today have moved ahead of the pack in terms ⊙ In addition to getting the right technical expertise via a structured of building and adopting a unified GenAl platform with ready integrations with common LLMs and data ingestion & labelling methodologies. This allows them to rapidly build and deploy smaller PoCs - shrinking from a timeline of few months to few weeks based on client needs.
- Fourthly, a common GTM strategy employed is paid soft launches that provide **comfort** and **early results** to clients. These soft launches allow players to ensure the seriousness of intent and foster a co-creation process with clients. This has allowed companies to grow their AI & GenAl client portfolio with approximately 15% firms expected to add 20+ new clients in the next year.
- In addition, tech services firms are forming strategic alliances with not only the tech giants but also with niche startups for specific horizontal (e.g., knowledge management – writer) themes.

This brings us to some key questions - what does this all mean for players in the market and what can the tech services industry in India learn as it looks to further its AI agenda? Here are 3 key imperatives for players to keep in mind as they accelerate their Al journey:

• The biggest gap lies in understanding what clients are willing to **experiment** with vs what they are willing to pay for vs what can generate the highest value at scale. Therefore, it is critical to have an account wise defined GTM strategy with differentiated and customized offerings based on an in-depth understanding of client needs and areas where our ability to serve them is the highest. Ability to create accelerated PoCs for clients via a structured platform/framework is key for tech **services** players.

- people strategy, business acumen applied to AI & GenAI use cases is an important talent imperative. In order to bridge this gap, the focus on upskilling in AI & business acumen should shift from not just the delivery teams to sales & pre-sales as well as internal functions, amongst others. Investing in and inculcating consultative-led selling for Al offers can act as a key differentiator.
- A fundamental **rethink of the Op model structure** is imperative with Al & GenAl use cases leading to new delivery structure design as well as multi-departmental collaboration on GTM motions & solutioning. The internal AI agenda needs to function as a living entity – constantly evolving to fit the rapid changes in the tech landscape with robust prioritization practices in place.





Key highlights of AI & GenAI Market Landscape



The global AI market is expected to grow to \$320-380 Bn by 2027 witnessing a CAGR of 25-35% with software & services segment expected to account for c. 88% of the market.

In 2023, the 'Sandboxing Into Future: Decoding Technology's Biggest Bets' report identified AI/ML as one of the biggest technological disruptors. This report delves into AI/ML's potential to disrupt the tech services industry.

- GenAI is expected to comprise c. 33% of the global AI market by 2027 while ML & Vision will comprise another c. 29%.
- The financial sector will continue to be the highest contributing sector followed by media & entertainment
- In line with this growth trend, IT buyers expect to increase their spend on AI, cloud & analytics in the forthcoming year; Spend on server infrastructure expected to reduce the most
- While India's AI market is likely to grow on par with the global market with a skew towards the financial sector as the main spender, the tech sector is also expected to increase spending in India over the next few years



Al Investments Landscape Investments in AI are booming across the globe with \$83 Bn invested in 2023. Key themes emerging:

- Data & analytics emerges as the dominant theme (\$42 Bn)¹, with GenAI ranking second (\$23 Bn)¹. This suggests the expectation in value creation from serving enterprises in setting their data architecture and training data in place, so they can leverage the full benefits of GenAI
- Tech (\$58 Bn)¹, banking (\$27 Bn)¹ & healthcare (\$23 Bn)¹ emerge as the top 3 sectors to receive AI funding globally
- While data & analytics remains the highest across regions, GenAI investments are largely skewed towards NAMR currently, with
 c. \$30 Bn invested in 2 deals (Nuance, OpenAI). India is seeing players emerge, e.g., Sarvam.ai raised \$40 Mn in Series A
- Disproportionate investments seen in HR/CRM in Europe and in marketing & advertising solutions in India
- c. 55% of investments made by Indian tech products & services investors have been in India itself in the form of strategic bets; Top 3 deals account for c. 58% (Jio investing in Glance, Perfios in Karza, and Infosys in SAFE Life Science) of the investments

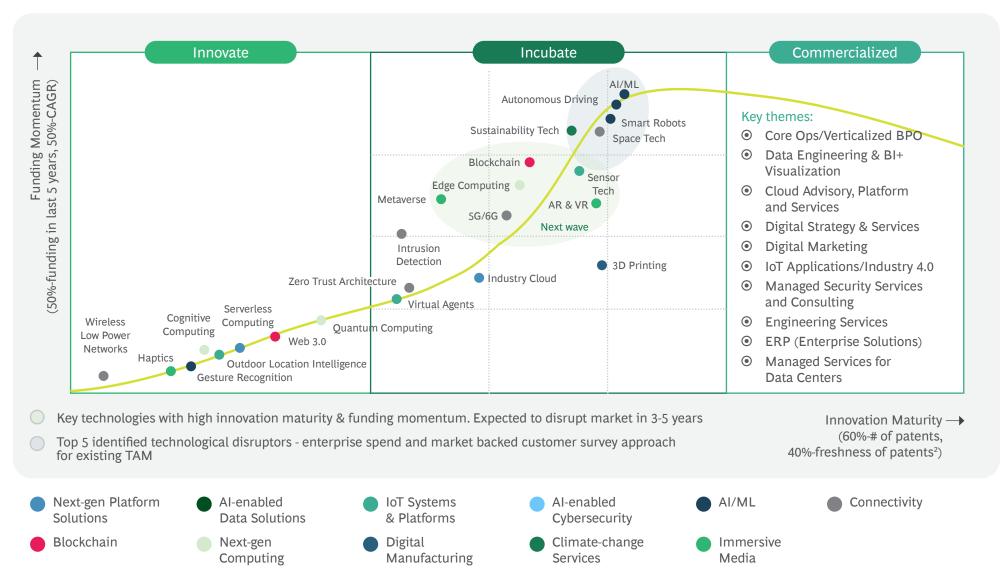


Perspectives on Indian Al Talent

Demand for AI talent growing at c. 15% in India

- India has the highest AI skills penetration with 3x more AI skilled talent than other countries; Over the last 7 years, India has witnessed a 14x growth in individuals skilled with AI
- While demand for talent in India is expected to grow ~15%, the market is expected to grow 25-35%, indicating the need to focus on upskilling existing talent as well as breaking the linearity of growth in revenues and # of FTEs
- Tech services firms have begun to actively hire for AI/ML specific jobs: AI leadership hiring increased by c. 15% while the hiring for AI engineers rose by c. 70% in the last year
- While ML, Python and SQL continue to dominate current skills requirement in AI; GitHub, PyTorch and Databricks are also beginning to emerge as important skills

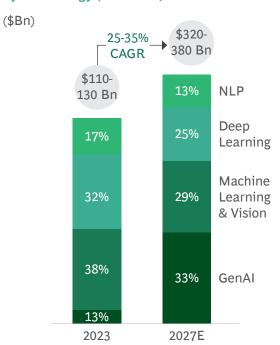
Recap | Our last report identified AI/ML as one of the key Tech disruptors; This report deep dives on AI/ML's potential in disrupting Tech Services



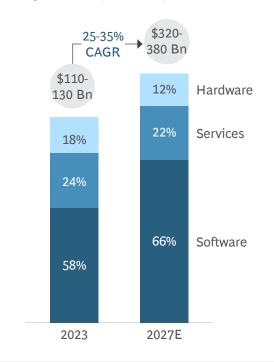
^{1.} Technologies in bottom 30 percentile of funding kept in innovation 2. Freshness-% of patents filed in last 3 years Note: Funding data based on publicly disclosed deals and reflects private investments for applications of a technology Source: BCG Analysis, Sandboxing into the Future: Decoding Technology's Biggest Bets - NASSCOM-BCG Report, Dec'22

Global AI market is expected to reach \$320-380 Bn by 2027 with GenAI expected to contribute ~33% & Financial expected to be the largest sector

Global AI market size forecast by Technology (2023-2027)



Global AI market size forecast by Solution (2023-2027)



Global AI market size forecast by Industry (2023-2027)



Key trends driving market growth



Increasing accuracy:

With better enterprise data engineering practices & use casespecific model training



Computing power optimization:

While hardware OEMs are designing more powerful AI chips & processors, model/ algorithm fine-tuners are optimizing the need for compute power

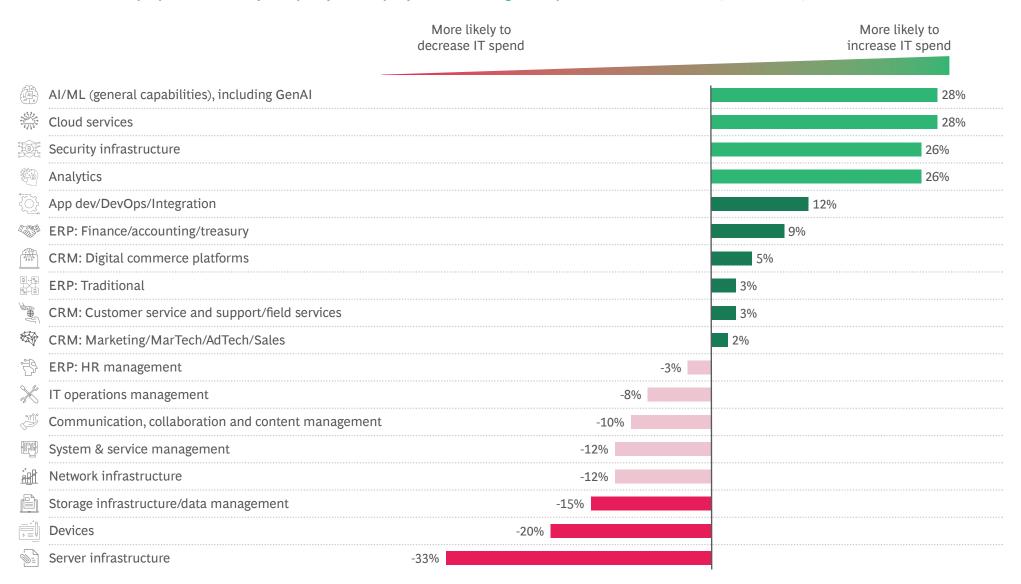


GenAl democratizing Al for all:

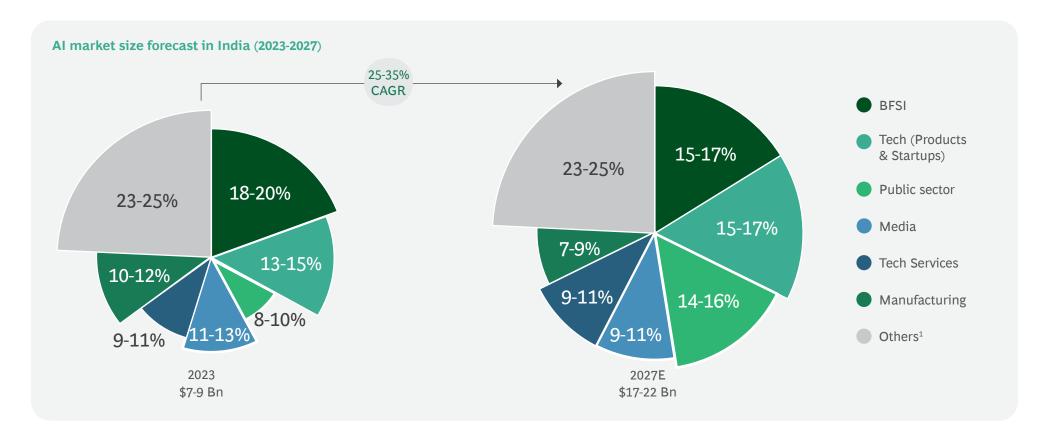
With user-friendly, natural language interface, interaction with complex Data & Analysis backend is within reach of all, paving the way for a future with AI in every product or service

Keeping with the trend, enterprise IT spend on AI/ML capabilities likely to experience significant increase relative to last year

Please select the top 3 products where you expect your company to have the largest IT spend increases/decreases (in terms of %) over the next 12 months.



AI market in India projected to grow at ~25-35% CAGR till 2027, supported by a large AI talent base and high AI investments





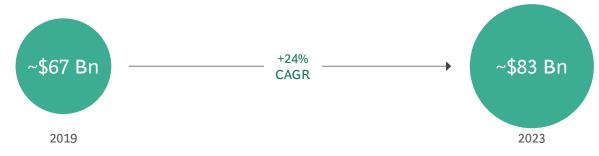
2nd highest installed talent base with ~420K employees working in AI job functions



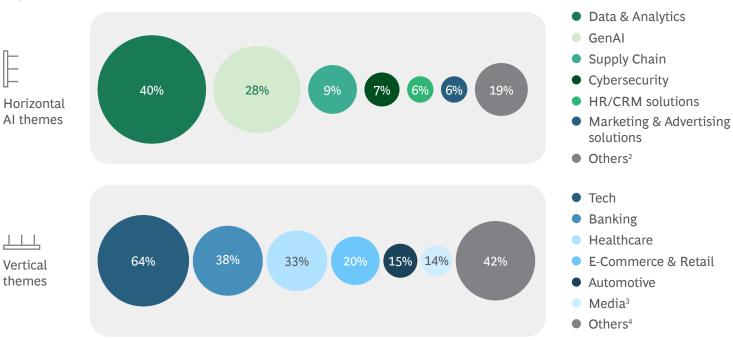
5th highest quantum of Al investments received, amounting to ~\$4 Bn in 2022 & 2023

Global Investments | Investments in AI at \$83 Bn in 2023, growing at ~25% CAGR

Global AI investments (2019-2023)



Top vertical & horizontal themes in AI investments¹ (2022-2023)



Key trends (2022-2023)



Data & Analytics, GenAI, and Supply Chain topped the agenda for investments made in AI



Tech, Banking & Healthcare attract a majority of the Al investments

Source: Quid, BCG Analysis

Note: Analysis based on all M&A, private investment and minority stake investments made in AI from 2019 – 2023; 1. Investments can span across multiple horizontal themes and verticals; 2. Others include Robotics & RPAs, AR/VR Platforms, Contract Management & Legaltech, Digital Content, Semiconductors and Test Automation Software; 3. Media - Gaming & Entertainment; 4. Others include Manufacturing, Energy & Sustainability, Insurance, Defense, Education, Real Estate and Agriculture

Verticals funding | Tech, Banking & Healthcare attract the most funding globally; Data & Analytics and GenAI receive the highest across the three sectors



Tech (64% funding)²



Banking (38% funding)²



Healthcare (33% funding)²

Key AI themes & use cases

- Data & Analytics: Analytics automation
- GenAI: Speech recognition, Prompt text generation

Key deals

Microsoft (Nuance Communications, ~\$20 Bn, Speech recognition), Microsoft (Open AI, ~\$10 Bn, Prompt text generation)

Key AI themes & use cases

- Data & Analytics: Market intelligence, Working capital management platform
- GenAl: Chatbots, Virtual assistants, Fraud detection

Key deals

SAP (Taulia LLC, ~\$780 Mn, Working capital management), Goldman Sachs & Alphabet Inc. (AlphaSense, ~\$325 Mn, Financial market intelligence)

Key AI themes & use cases

- Data & Analytics: Patient health analytics/prediction
- GenAI: Small molecule drug discovery

Key deals

Kairos HQ (Cera Care, ~\$320 Mn, Patient analytics), Andreessen Horowitz & Nvidia Ventures (Genesis therapeutics, ~200 Mn, Drug discovery)



E-Commerce & Retail (20% funding)²



Automotive (15% funding)²



Others

Key AI themes & use cases

- GenAI Personal retail assistance by capturing customer's cues (visual & text)
- Data & Analytics End to end E-Commerce channel optimization & automated analytics

Key deals

MasterCard (Dynamic Yield, ~\$320 Mn, Personal Retail Assistance), Insight Partners & Trinity Ventures (CommercelQ, ~\$115 Mn, E-Commerce channel optimization)

Key AI themes & use cases

- Data & Analytics Location intelligence, Autonomous vehicles
- Supply Chain Integrated global supply chain systems

Key deals

Thoma Bravo (Nearmap, ~\$750 Mn, Location intelligence), Carlyle Group & Robert Bosch (JingChi Inc., ~\$400 Mn, Autonomous vehicle)

Media¹ (14%)²

Data & Analytics, Marketing & Advertising solutions

Manufacturing (14%)²

Data & Analytics, Supply Chain, HR/CRM solutions

Energy & Sustainability (10%)²

Supply Chain & waste management, Data & Analytics

Defense (5%)²

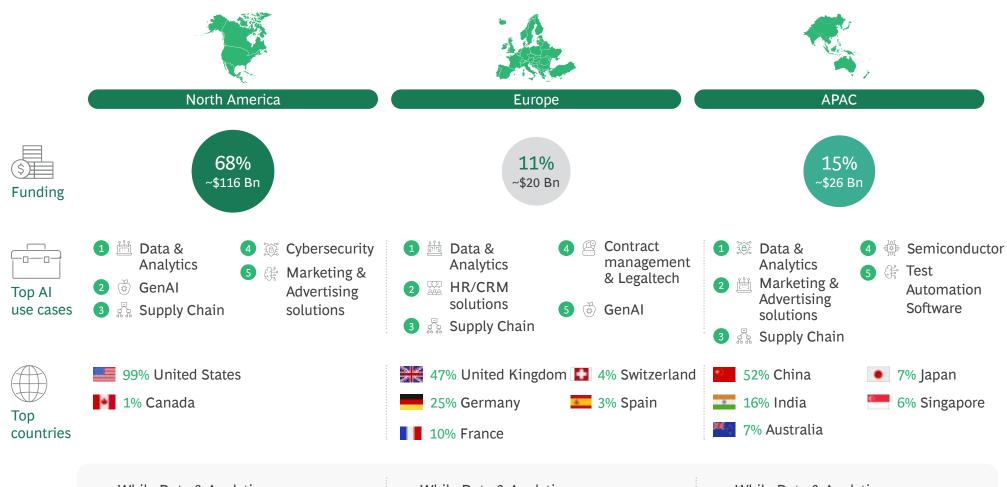
Data & Analytics, Cybersecurity

Source: Quid, BCG Analysis

Note: Key deals: Investor name (Target name, deal size, use case); Analysis based on all M&A, private investment and minority stake investments made in AI from 2022–2023; The list of investors and deals mentioned is not exhaustive.;

1. Media - Gaming & Entertainment; 2. Investments can span across multiple verticals, E.g., OpenAI is a Tech company with use cases in AI for multiple industries like Banking, Healthcare, E-commerce, Media, etc.

Regional funding | North America emerges as the leading investment hub for AI; Data & Analytics receives the most funding across regions





18

While Data & Analytics emerges as the key theme across all regions, GenAI also emerges as a key theme in NAMR

While Data & Analytics emerges as the key theme across all regions, HR/CRM solutions also emerge as a key theme in Europe While Data & Analytics emerges as the key theme across all regions, Marketing & Advertising solutions also emerge as a key theme in APAC

Data & Analytics strong across regions and verticals; GenAl skewed to NAMR; High Marketing traction in India



- Data & Analytics emerges as a key focus area across regions especially in Tech, Banking and Healthcare firms
- 2 GenAI investments heavily skewed to NAMR
 Example: Microsoft –
 Open AI
 India seeing early traction with Sarvam.ai launching enterprise-grade GenAI platforms
- HR/CRM solutions emerge as a Europe-specific bet especially in Tech, Banking & Healthcare firms
 Example: Keyrus offers enterprise performance management services
- Marketing & Advertising solutions emerges as a key focus area in India across verticals

 Example: Rubick.ai offers AI based E-commerce cataloging solutions
- Cybersecurity gains moderate traction across Defense, Tech & Banking verticals

 Example: Al processes large amounts of data for defense & military organizations to detect security threats

Source: Quid, BCG Analysis

Note: Analysis based on all M&A, private investment and minority stake investments made in AI from 2022–2023; Media - Gaming & entertainment, Energy & sustainability

~55% of investments made by Indian Tech Product & Services investors are made in India with focus on Data & Analytics, Digital Content and GenAI

Investments (\$Mn) made by Indian Tech Product & Services investors (2022-2023)



~68% of investments made by Indian Tech investors are done via M&A v/s ~75% for global Tech investors

Major deals

Jio Platforms invested significantly in Glance Digital to enable personalized content via Al on Jio phones' lock screens

Key AI horizontal themes & verticals for investments made by Indian Tech Product & Services¹ investors

Key horizontal AI themes		Key verticals	
Data & Analytics	29%	Tech	55%
Digital Content	27%	Healthcare	15%
GenAI	25%	Banking	11%
Marketing & Advertising solutions	10%	Media ³	10%

Perfios acquired Karza
Technologies to build
a one-stop-shop by
leveraging Karza's
expertise in fraud
prevention through
superior data engineering

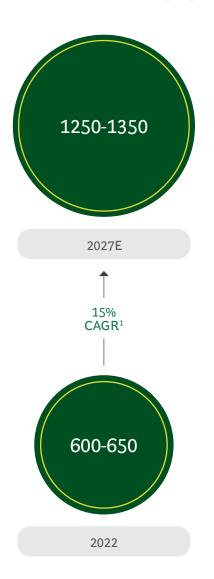
Infosys acquired BASE
Life Science to aid global
pharmaceutical companies
in accurately analyzing data
related to clinical trials,
drug discovery, patient's
health, etc. using AI

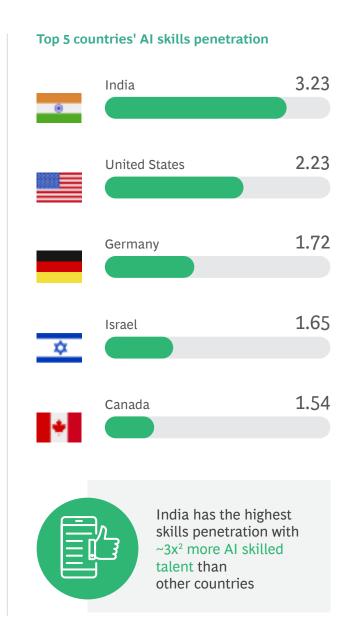
Source: Quid, BCG Analysis

Note: Analysis based on all M&A, private investment and minority stake investments made in AI from 2022–2023; 1. Tech Product & Services firms include Application software, Data processing, Hardware, IT services and consulting firms; 2. \$ value for 2/26 deals undisclosed; Media - Gaming & Entertainment sector

Demand for AI talent in India expected to grow at 15% CAGR till 2027 to serve the AI market

Al talent demand in India (no. of people, '000s)





Growth in #individuals skilled with AI (Top 5 countries)

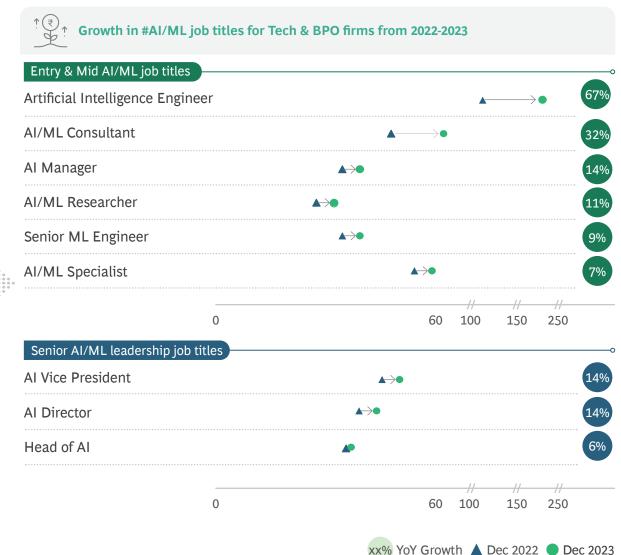




Already seeing 15%+ growth in AI/ML jobs¹ in India in the last 12 months with positions like AI Engineers growing at 70%+ YoY



xx % - 1 year growth rate in #employees



Source: LinkedIn talent insights, BCG Analysis

Note: Analysis done on data captured at end of Dec'23 v/s Dec'22, # Tech companies analyzed=21; 1. Al/ML job titles include Al/ML engineers, consultants, managers, researchers, specialists, directors, VPs 2. Large Tech firms-revenue >\$1 Bn, Mid Tech firms-revenue \$200 Mn - \$1 Bn 3. Offshore jobs - Jobs in India

ML, Python & SQL dominate current skills requirement in AI; While a few GenAI skills gradually emerge





Emerging GenAI skills









Source: LinkedIn talent insights, BCG Analysis

Note: Analysis done on data captured at end of Dec'23 for Tech services & Tech product companies, # Tech comapnies analyzed = 21; 1. Large Tech firms – revenue >\$1 Bn, Mid Tech firms – revenue \$200 Mn - \$1 Bn

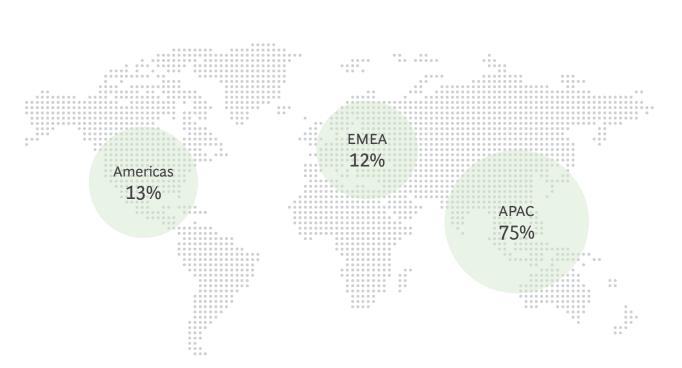
ML, Python & SQL emerge as the top 3 skills across most companies

2 BPOs have a more analytically driven & skilled installed talent than Tech firms

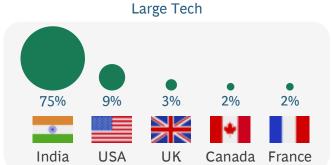
Al employees in Large Tech Services firms starting to pick up skills in Github, PyTorch & Databricks more actively

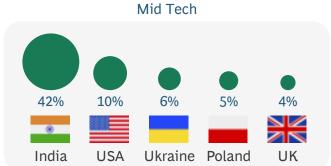
While Large Tech and BPO are hiring heavily offshore, Mid Tech are focusing on offshore + nearshore

Concentration of AI talent by geographies



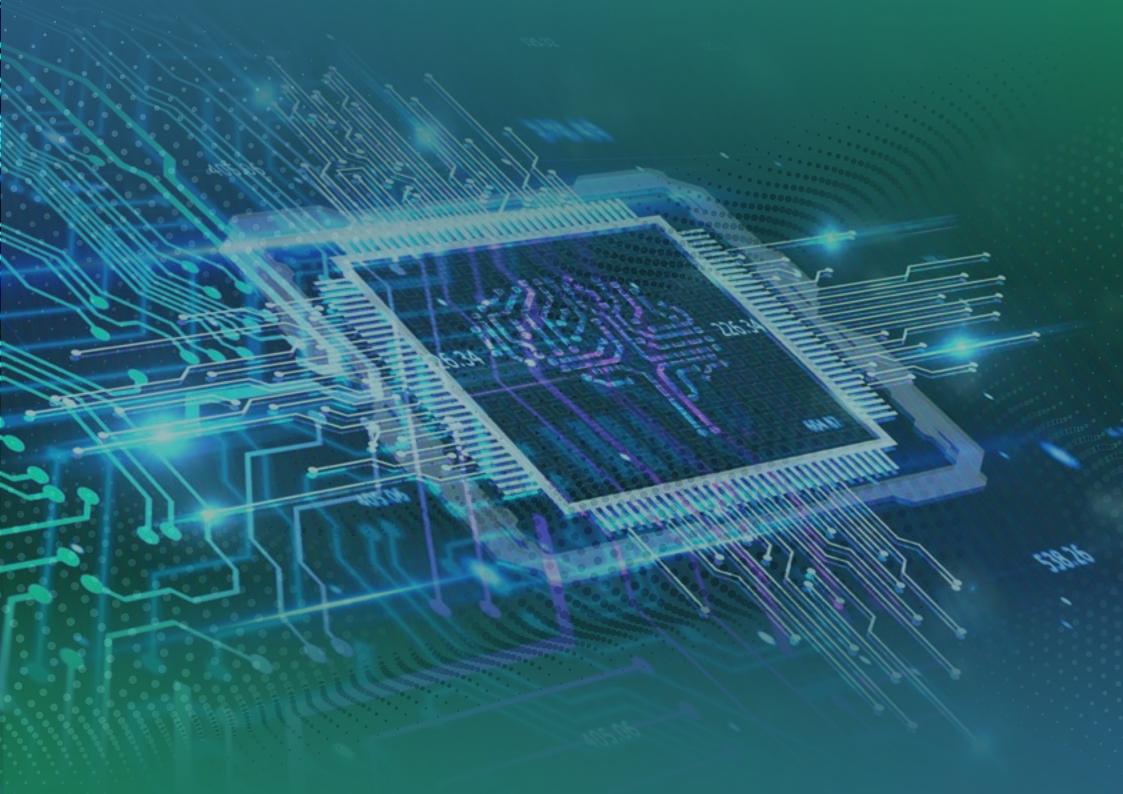
Top 5 countries for AI talent

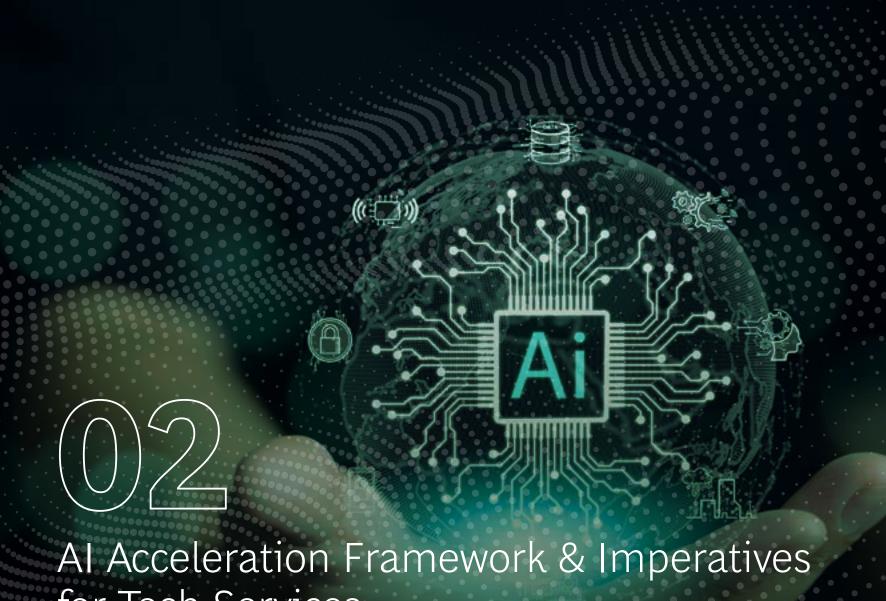






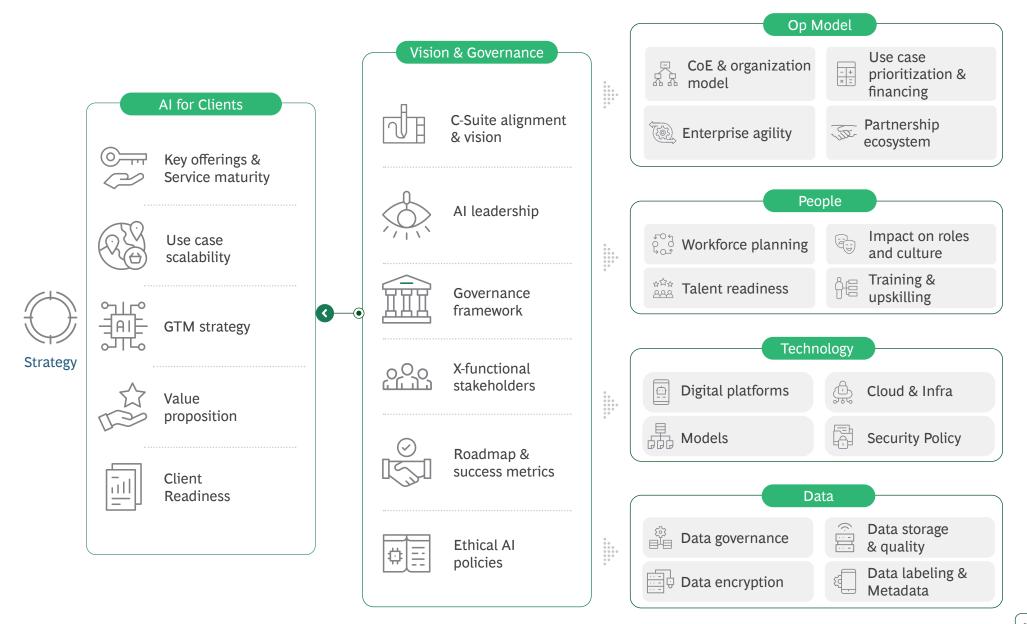
Source: LinkedIn talent insights, BCG Analysis





for Tech Services

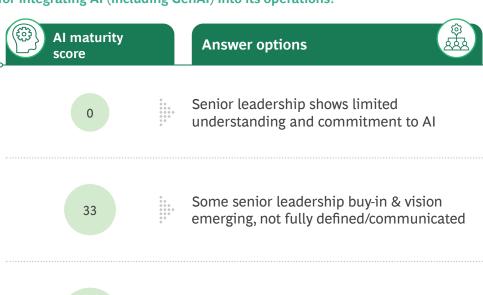
Comprehensive multi-dimensional AI Acceleration Index Framework used to assess AI maturity in the Tech services industry



Approach | AI Survey question example: Leadership buy-in & vision

Overall leadership alignment to the AI & GenAI vision – essential to drive the company's AI agenda as well as establish strong governance practices

How strong is the senior leadership's buy-in for AI (including GenAI) initiatives, and how clear and transformative is the organization's vision for integrating AI (including GenAI) into its operations?

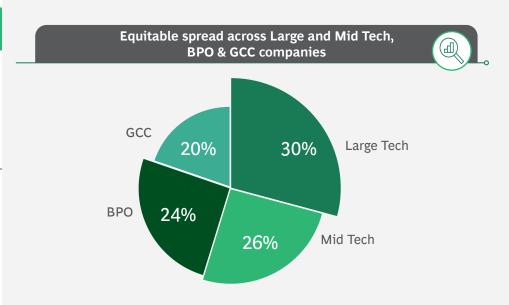


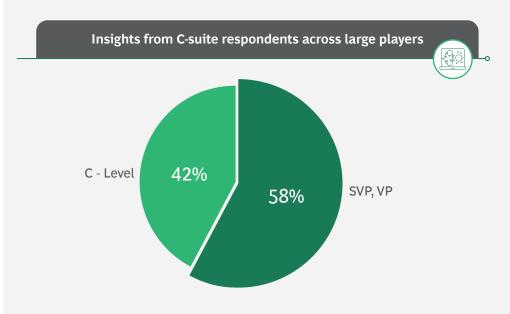
Senior leadership committed to

AI initiatives; Vision aligned



Detailed understanding of 65+ players across the framework





66

Key Highlights across the framework



- 30% of services players have matured to offer advanced AI & GenAI services (e.g., data engineering, AI model finetuning) and are leveraging it to build a growing AI portfolio of business (15% of services firms expect to add 20+ clients in the next year)
- While 60% of those surveyed still use finetuned LLMs for most use cases, others are in the process of developing customized SLMs or LLMs for specific use cases
- Services players have also demonstrated a capability to put client use cases to production; 10% of players have 10+ GenAI use cases in production vs industry average of 4-5
- Services players are using soft launches to gauge & increase client interest; they have been able to leverage unified GenAl platforms to accelerate time to market for newer PoCs from months to weeks

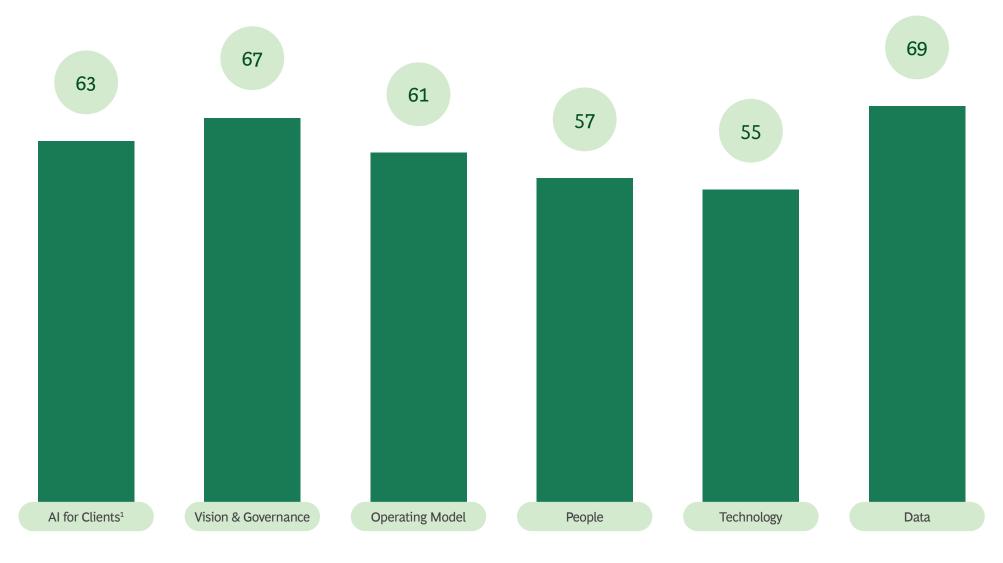


- 70%+ services players already have a dedicated & specialist AI head to drive AI initiatives while 55%+ also have a central CoE with cross-functional governance forums with business, tech & legal participation
- 70% services players have clearly defined metrics to monitor the progress of AI initiatives and have established a well-defined prioritization framework for directing AI efforts across business impact x feasibility x ability to replicate & scale
- Most of the firms have started to think about their ethical AI policies and have a draft in place, but only 18% have comprehensive ethical AI policies with a dedicated senior ethical AI compliance role



- Training & upskilling continue to be the preferential route to attract the right AI talent. However, AI roles & leadership are also seeing accelerated hiring with c. 70% increase in AI engineer and c. 15% increase in key AI leadership roles
- 9 70%+ companies have AI partnerships with CSPs; some are also partnering with niche startups for differentiated capabilities
- Change management across cultural resistance to the adoption of GenAI in delivery as well as the adoption of ethical AI practices remain the key imperatives for most tech services firms

Summary overview of the 6 dimensions





30

AI for Clients | Overview



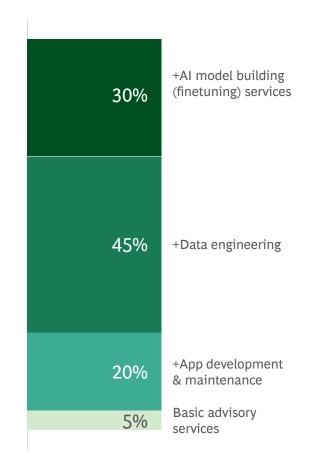
Average score of Large & Mid Technology Players & BPOs

30% of firms surveyed offer full stack of services (advisory to model finetuning) to help build a solid AI portfolio

Al portfolio growth (#clients expected to be onboarded in the next 12 months)

Tech services service maturity & range of offerings





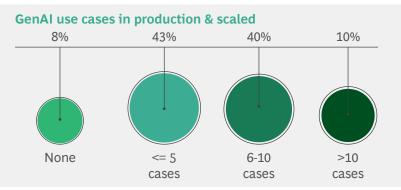


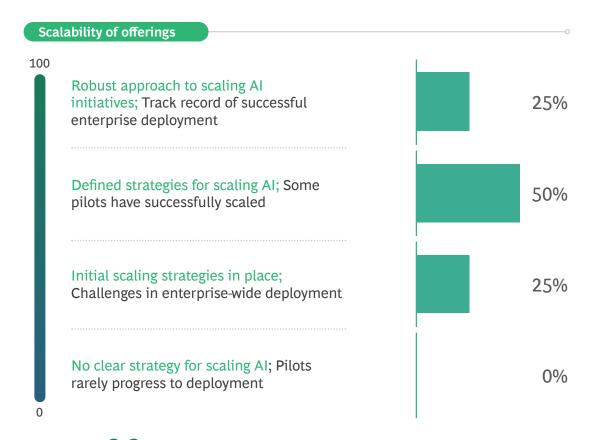
To make sure we have endto-end control on infra costs, we are offering a GenAI platform as a service for our clients which enables them to fine tune & test models, as well as develop apps for different use cases

Mid Tech player

Robust use case prioritization & financing frameworks enable higher % of POCs in production, with track record of successful at scale deployment







We've engaged with two-thirds of our client base on AI & GenAI work, ~30 proposals on-going and have 6+ use cases in production

BPO player

We use internally developed frameworks which evaluate ROI, Productivity improvements, internal CSAT & Scalability amongst other factors before clearing a use case for client

Large Tech player



Case Study | AI & GenAI projects deployed in production



Multiple use cases by BPO

An Exemplar BPO has multiple use cases in production, including:

- Fraud detection for an insurance firm by deploying AI algos at every decision point of the value chain (adjudication, payment calculation, litigation, etc).
 - Used GenAl to classify degree of damage based on the claims submitted via email
- Build accurate responses to customer queries using GenAI to process multiple checkpoints for a travel intermediary



Mid Tech firm

For a hospitality & hotel chain, a Mid Tech player worked on a document rationalization project

- GenAl CoE and incubator created
- Identified 50+ use cases
- Standardized 40K JDs to 120 roles by processing and ensuring task to role mapping using AI



Large Tech firm

Multiple use cases in production, including:

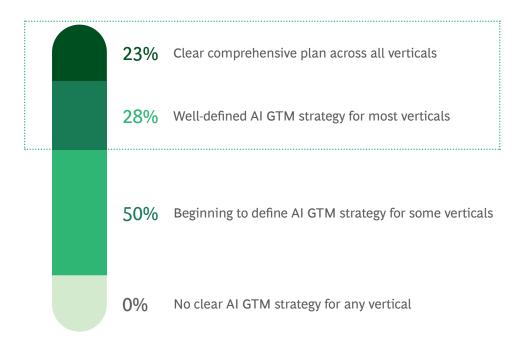
- Real time speech to speech translator
 CoPilot between Japan & US teams for reduced manual translator & efforts for an insurance company
- Angular to React.js code conversion for a Big 4 company
- Customized fraud detection solution for a large insurance player

Source: NASSCOM-BCG Tech Services Industry AI Maturity Assessment Survey, BCG Analysis

Exemplars have holistic x-vertical GTM strategies focused on farming logos; Some sell outcome-based projects

Depth of GTM strategy across verticals

50% companies with GTM defined for 75-100% verticals



GTM strategy for most players:

- Focusing on farming existing logos with AI & GenAI pilots
- Prioritizing easily replicable use cases
- Differentiating themselves via POCs, demonstrating accuracy at scale, data & ethical AI policies, & integration with client environment allowing them to showcase X-functional expertise



We pitch AI/GenAI driven outcome-based projects directly to the BU head instead of an AI head, showcasing our domain expertise & ability to deliver outcomes

BPO player



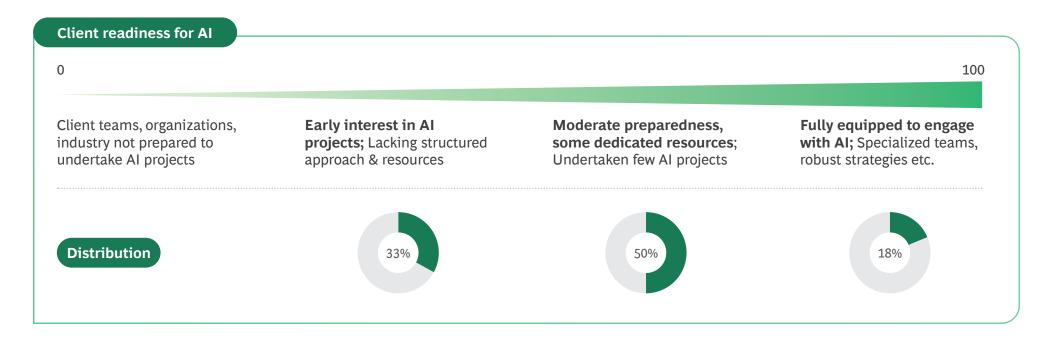
We have a crossfunctional (across BUs and CoE) team to look at GenAI GTM & offering focus. Each BU has thought carefully about which subsector(s) to target for maximum initial traction on GenAI use cases (E.g., P&C Insurance in BFSI) as well as has been given resources & investments to run pilot projects on prioritized offerings

Mid Tech player

Source: NASSCOM-BCG Tech Services Industry AI Maturity Assessment Survey, BCG Analysis

Al for Clients

To address challenges around clients maturity, awareness & ability to invest, Exemplars deploy client initiatives such as co-sponsored hackathons



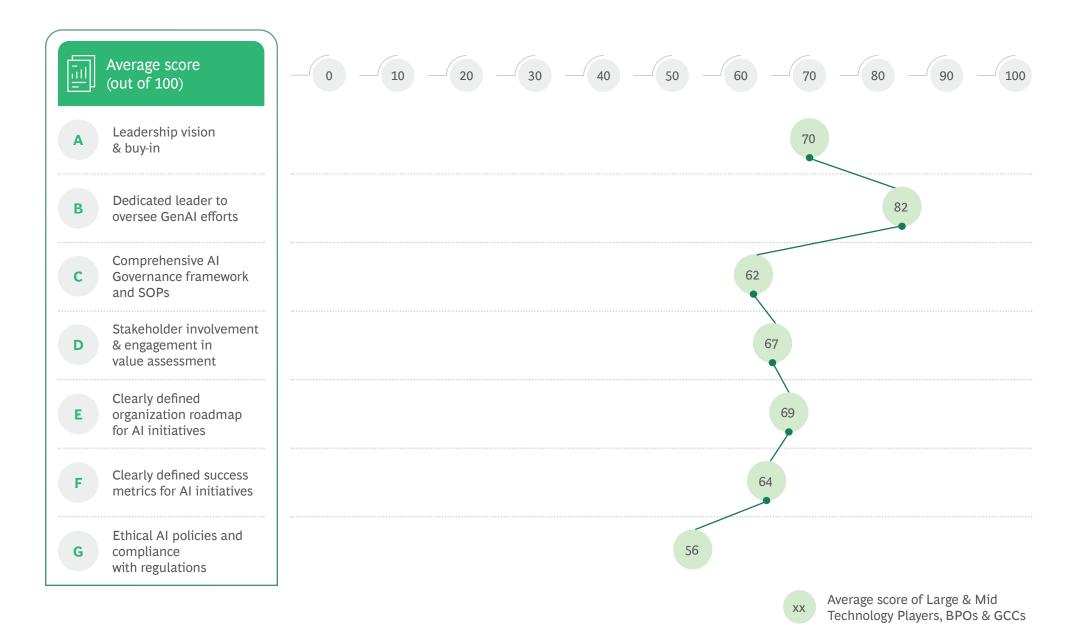
While GenAI has generated large interest across clients, limitations observed in clients':

- Awareness of AI applicability for use cases & ability to invest
- Maturity of Tech infrastructure & data policies
- AI workforce maturity and leadership buy-in

Exemplars have been able to prioritize & pursue after the right set of existing logos who have high willingness & capability to adopt AI E.g., Exemplar Mid Tech ran a survey among top logos to understand & prioritize, basis willingness to adopt GenAI

Exemplars also invest in coaching & raising awareness of AI/GenAI capabilities amongst their clients. E.g., a BPO is building AI literacy amongst clients through co-sponsored hackathons

Vision & Governance | Overview

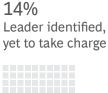


Exemplars have hired dedicated & specialist AI leaders with strong credentials and are driving top-down implementation of the AI vision

Dedicated AI Leadership









identifying a leader

14%



4% No dedicated person

Senior leadership buy-in & clear vision to integrate AI into operations





26% Strong senior leadership buy-in and clear AI vision



58% Senior leadership committed to AI initiatives; vision aligned



16% Some senior leadership buy-in & vision emerging, not fully defined/ communicated



- In the last ~2 years, several dedicated 'AI Head' positions have been recruited externally
- Preference to recruit externally for leadership roles to get a jumpstart on AI capability building
- ~15% growth witnessed in key AI leadership roles across Tech and BPO firms



We are looking to hire specialist AI leaders who not only possess deep understanding of technology but also business acumen & experience to execute the vision. Today, we have also been able to execute against our AI agenda across BU's and clients to drive transformation thanks to the steep ramp up & cultural shift driven by the joint ownership over the AI agenda by our AI & CXO leadership

BPO Exemplar

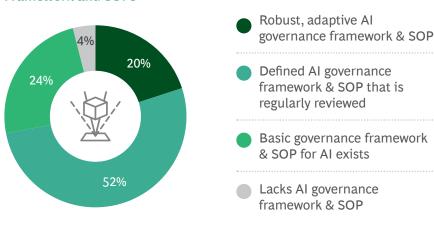


We believe in training the whole organization in AI including our board members and not just domain-specific employees

BPO Exemplar

Bespoke AI governance frameworks with oversight from x-functional stakeholders to ensure holistic prioritization and value





Involvement of x-functional stakeholders in value assessment of AI initiatives



Exemplars have established **dedicated AI steering committees** which convene at frequent intervals on topics regarding:

- Funding & investments
- Security/IP/regulatory compliances
- Result monitoring of Pilot use cases
- Use case prioritization for production across clients
- Assess commercial outcomes of client offerings



We used to have a quarterly steering committee meeting on AI earlier. Now we meet on a bi-weekly basis to discuss learnings & chart out the roadmap

Mid Tech player

Effective committees have a good mix of **technical** (CTOs, AI/GenAI heads etc.), **business** (BU Heads), and **legal expertise**

Exemplars have also created "AI/ML Governance Specialist" roles to enforce data accessibility, quality and regulatory compliance



Involvement of cross-functional stakeholders in value assessment ensures diverse and inclusive perspectives. It's integral to defining and assessing the value of GenAI projects

Large Tech player

Case Study | GCC of a Global Bank has a detailed x-functional AI & GenAI governance model



Oversight by Global ExCo

Chaired by:

Chief Operating Officer

Chief Digital Officer



- Vision: Defines centrally steered vision, goals & ambitions for the AI agenda globally
- Roadmap: Sets quarterly/annual
 5-year roadmap across people,
 data, tech, op model, governance
 client offerings
- Quarterly review of implementation



Governance Forum

All CIOs of the group

All BU heads of the group

All Data Officers of the group

Core activities include defining:

- Frameworks on use case financing & prioritization on GenAl
- Data security, ownership, usage norms, IP norms including guardrails on data usage, storage, etc.
- Compliance/risk & regulatory frameworks
- Ethical AI frameworks & review cadence bi-weekly



Execution & Monitoring

AI CoE



CSO of each BU

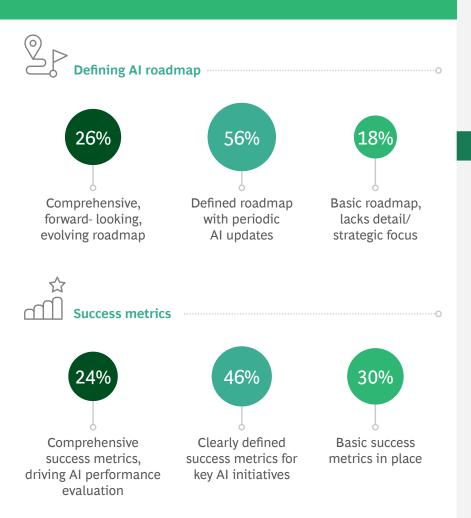
- Core function is to execute against AI vision & roadmap; Implement & regularly track metrics and conduct reviews regularly
- CoE works with the CIOs, BU Heads, Data Officers to experiment – creates a x-BU test bed environment
- CSO monitors compliance of guardrails of the data usage by the CoE



Responsibilities

Clearly defined roadmaps and success metrics to monitor client outcomes for value generation and associated risks

Players are doing well on defining an AI roadmap & success metrics



Exemplars have built comprehensive quarterly & annual roadmaps primarily focused on building both internal & external AI capabilities & infrastructure

As part of the roadmap, Exemplars have also clearly defined AI success metrics/ evaluation frameworks (primarily developed internally) monitored regularly by a dedicated AI team

Exemplar



improvements, E.g., cost or manpower reduction



Effectiveness: Improved agility/responsiveness of processes E.g., TAT reduction



Experience: Measured impact of user experience through NPS CSAT

Bank's GCC

Has built BU wise metrics along the axes of



Business facing

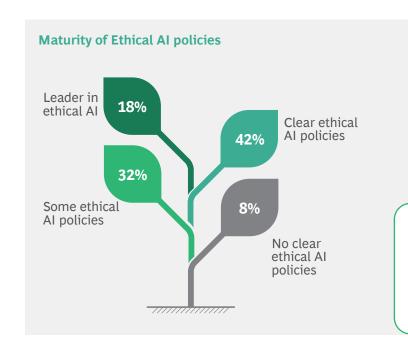
- CSAT
- Bank's revenue
- ROI



Internal

- Risk & regulatory
- Cost outlay

Majority players are early in their Ethical AI journey with focus on basics like bias detection



Ethical AI data practices being applied at 2 stages:

- While creating datasets: leverage analytics to ensure that sufficient diversity is built into the LLM
- While utilizing datasets: LLM parameters are defined to filter out any biases
 E.g., if there's a gender related question creeping in, then you can select / filter out these questions
 - E.g., a BPO player has built guardrails that disallow the identification of demographic characteristics while dealing with job applicants' datasets for its US clients



While Ethical AI is a pre-requisite for all clients, it is especially important while dealing with clients in highly regulated sectors like Banking, Insurance & Healthcare. Also essential to build in geographic regulation specific nuances

Mid Tech player

Exemplar 4-dimensional Responsible AI framework built by a Large Tech player



Individual dimension

Responsible data handling in preparing the right datasets with equality and equity in mind



Social dimension

Al impact assessments on people and communities



Environmental dimension

Data minimization, smart data processing approaches, synthetic data to limit data extraction



Technical dimension

Protection against attacks that undermine privacy, pollute outcomes, lead to unfairness/discrimination

Operating Model | Overview



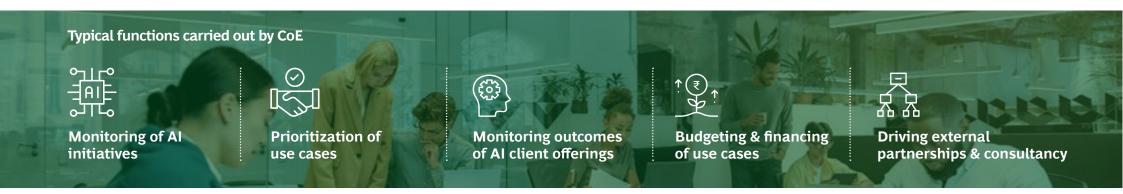
Source: NASSCOM-BCG Tech Services Industry AI Maturity Assessment Survey, BCG Analysis

Technology Players, BPOs & GCCs

Exemplars have set up large AI & GenAI CoEs with seamless ways of working with the BU's; Some have 500+ large CoE constructs

Set-up of CoE

30%	26%	32%	12%
Well-established CoE	Partially established CoE	In-process of establishing a CoE	No CoE for AI efforts



50%+ companies have at least a partially established CoE - which is an important function to take the AI agenda forward

Exemplars have well-established CoEs with dedicated workforce:



We have a 500-600 member CoE focused on AI & GenAI. Over the last 2-3 years we have built 2 stellar offerings that serve several Fortune 500 companies. Additionally, resources from this CoE assist for short stints on AI requirements across multiple organization wide projects

Large Tech player

Another Large Tech exemplar has established a GenAI & LLM CoE with 1.6K professionals with a commitment to invest \$3 Bn in the next 3 years towards its Data and AI practice

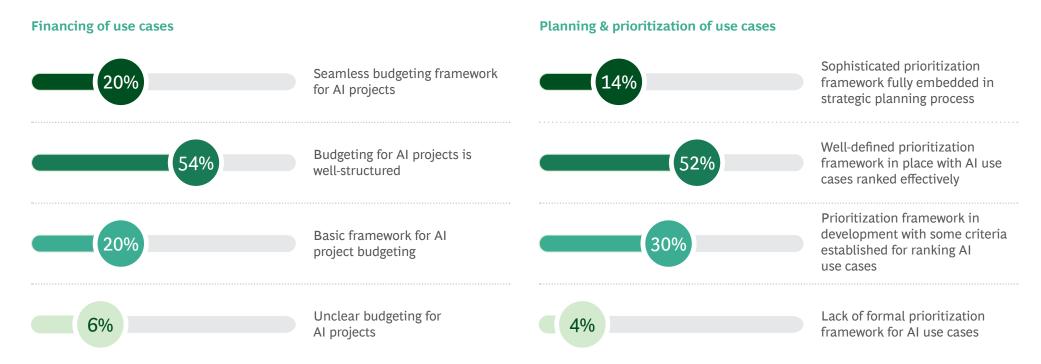
Exemplars also focus on having a well-defined hub & spoke model with dedicated representatives in each BU for well integrated ways of working between the CoE and BU:



Our AI CoE has dedicated SPOCs to liason with each BU to ensure integrated ways of working

Mid Tech player

Exemplars have established frameworks prioritizing use cases based on business impact, implementation feasibility and ability to scale & replicate



Exemplars tend to have a seamless budgeting framework between BU, SL, and Central AI organization, ensuring optimal allocation of resources, clear financial accountability, and efficient fund utilization

Exemplars do exceptionally well on prioritization of use cases by assessing:



Business impact

financial attractiveness, digital adoption, differentiated value proposition



Feasibility

basis current experience, implementation feasibility, and overall risks associated



Other factors

such as replicability, effort to scale, etc.

An Exemplar prioritized pushing a fraud analytics solution for an existing banking client to production as it could then also be used for warranty/coupon management for a new logo in the consumer durables space as a pilot

Case Study | Use cases bucketed into 5 categories based on a firms' in-house business impact x feasibility framework

Clear criteria for prioritizing the long list of productized offerings



- Star performers:

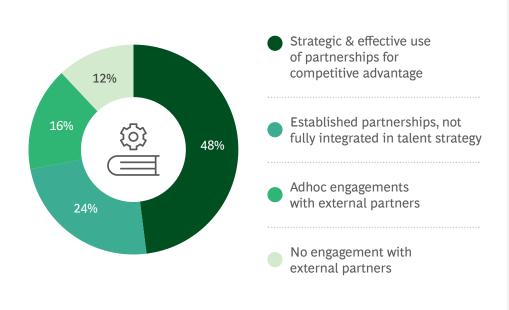
 Invest heavily & develop significant capabilities

 Solid bets:

 Continue to invest and develop capabilities
- New lucrative bets:
 Quickly ramp-up
 capability and
 innovate solutions
- Re-assess:
 Whether the offerings
 make business sense
- De-prioritize:
 Limit further
 investments in lowreturn areas

Players have strong partnerships, showing early success in pilot deployment; Exemplars effectively leverage partnerships to reduce cost & time to market

Leveraging external partnerships



Popular external partnerships across Tech Service players

GitHub Copilot Microsoft Azure

Amazon Code Whisperer Building capabilities from scratch often seen as a barrier. Best in class mid-size players work with partners to get solutions into place quickly

A BPO player has launched an AI platform in collaboration with Google AI, IBM Watson and Microsoft Azure



We have a partnership with Microsoft for Azure, Co-Pilot, etc. For LLMs, we either buy from open market or develop in-house. Even for hardware we have entered into 3rd party partnerships

BPO Exemplar

An Exemplar has observed ~20% productivity increase by leveraging Copilot GenAI solution in pilot - after GitHub Copilot introduction, developers' submissions increased by 44% and implemented an HTTP server in JavaScript, which was 56% faster than baseline

In addition to partnerships with CSPs, firms are partnering with niche firms for domain specific models.

E.g., Large Tech player has partnered with Writer for knowledge enhancement capabilities

People | Overview





Players assessing the impact of GenAI on workflows and expect it to have a positive impact on productivity; Crucial to plan for resistance management

Impact analysis of AI on job roles & workflows

30% In-depth impact analyses and established new roles for Al

Detailed impact analyses and defined some new roles for Al

Initial impact analyses conducted (not comprehensive) Exemplars have found that the expected impact of AI & GenAI has potential to positively impact Software Engineers & Product Managers across:

- Higher productivity across all key roles (E.g., product managers can leverage no-code/low code solutions to unlock time saving)
- Enhanced quality of work through capabilities like task automation, intelligent insights, error identification, etc.
- Accelerated upskilling for junior and newly hired engineers

Resistance management & cultural shifts for AI adoption

14%	48%	36%	2%
Comprehensive strategies to manage & address AI resistance	Established strategies to manage resistance and encourage AI adoption	Few strategies to manage resistance, early-stage awareness for cultural shift	No clear strategy t facilitate cultural shift

Exemplars have run pilots leveraging CoPilot with their Software Engineers – early results have shown a 60-75% increased satisfaction and well-being



AI & GenAI have the potential to demotivate employees & make them fearful for their jobs. Crucial to engage with workforce through discussions, training them on basics of GenAI, hackathons & other investments in their upskilling

Mid Tech player

Exemplars introduce AI specific roles and plan for upskilling of workforce since they recognize human capital's importance in the AI journey

Workforce planning to secure necessary AI skills & support

Well-established, forward-thinking 18% workforce planning strategy including AI upskilling

64%

Pro-active approach to workforce planning; A few long-term support mechanisms are in place

18%

Limited workforce planning efforts for AI; No long-term strategy in place

Illustrative list of new roles



Chief Al Officer

Increased importance of executive oversight due to the incorporation of Al into business operations



Al Architect

Increasing complexity & diversity of AI applications requires expertise to define optimal architecture



AI/ML Governance **Specialist**

As LLMs mature, protection of sensitive information becomes a matter of utmost importance



AI Ethics & **Compliance Officer**

GenAl generates content and makes decisions without human intervention

Many new roles are likely to emerge to expand use of AI responsibly across the organization - the key lies in (i) proactively hiring the right skillset; (ii) investing in developing capabilities that are difficult to hire in-house



We are increasingly seeing the need to redefine roles and responsibilities across the organization to adapt to new needs

Large Tech player



We have created a Data & Al board, made AI governance specific organization changes & introduced new CSO roles

GCC player

Exemplars highlight a need for heavy initial investments in AI training programs; Internal upskilling seen as the primary route to meet talent needs

Training & upskilling employees to work with AI

22%

Comprehensive, stateof-the-art AI training programs integrated into professional development paths

44%

Good range of AI training programs offered; Focus on continuous learning & professional development

32%

Lacks structured training programs for Al

Training programs exist but limited

in scope; Not fully

overall professional

development strategy

integrated into

% delivery workforce trained in AI



A Mid Tech exemplar has trained over 13K employees in AI & GenAI through a common platform which provides access to:



Curated L&D material



Learnings from use cases



Reusable GenAI assets



Outputs for hackathons



Industry best practices on AI/GenAI



What has worked for us is hiring engineers and data scientists – both experienced & freshers and then training them. We have created a 3-4 months citizen data scientist program which 300-400 people have taken over the years

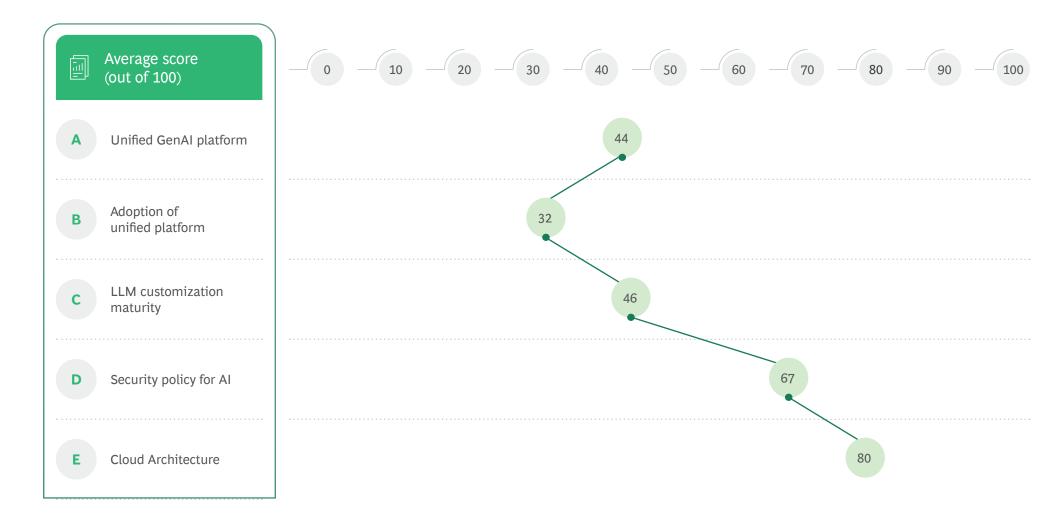
GCC player



There are no real GenAI experts in the market. One can only find data scientists/engineers with coding skills which need to be trained. Hence we have setup an institute for AI/ML education of our employees. This helps us upskill employees and organically develop in-house talent

BPO player

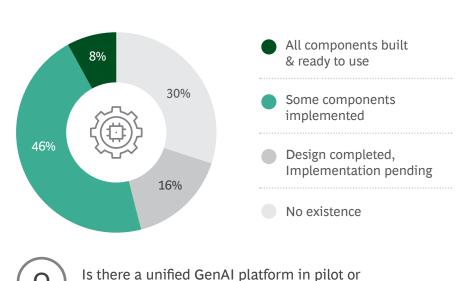
Technology | Overview



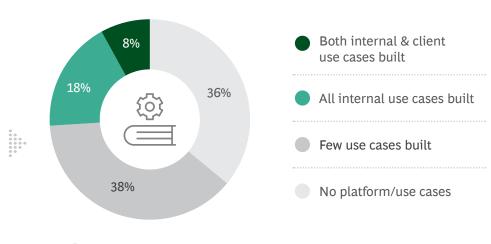
Average score of Large & Mid Technology Players, BPOs & GCCs

Players are building unified GenAI platforms but have seen mixed adoption rates so far





... however, only ~25% of respondents have adopted the platform for internal & client use cases





What is the adoption of the unified GenAl platform across use cases?

Exemplar

A Mid Tech player launched a GenAI platform for clients to accelerate its ideation-tovalue journey by providing:

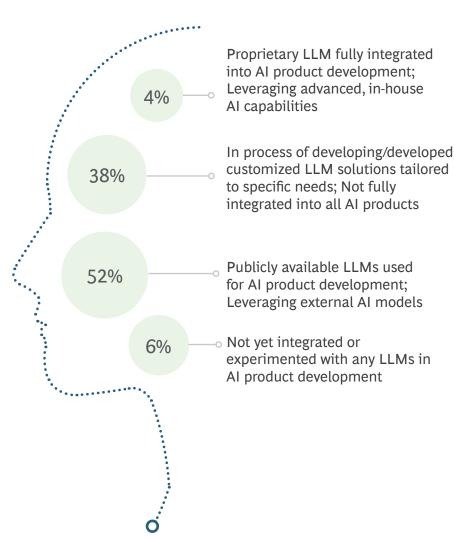
production to develop use cases?



- Access to LLM partnerships & guidance to choose the right model
- Domain specific solutions & product offerings
- Enhanced productivity, secured guardrails & minimized bias
- Accelerated creation of new use cases from months to weeks
- Inbuilt data ingestion methodologies

Higher Focus on finetuning LLMs or leveraging SLMs for client needs; Few in process of developing proprietary LLMs for clients

Types of LLMs being used





Pre-training of models (finetuning, in-context learning, etc.), allowing them to be adapted for specific tasks



Leverage SLMs where needed, E.g., where there's a narrow scope like in HR or Legal

Exemplars



Experimented with training LLMs for different verticals distinctively as they believe narrow LLMs lead to greater accuracy for business cases

Mid Tech Player



Finetuned the available public LLM using QLoRa technique to adapt to client needs

Large Tech Player

~30% service players have a comprehensive security policy for AI; Exemplars are focusing on building the right guardrails, finetuning models & transparency

Security Policy for AI

28%	46%	26%	
Information security policy is fully comprehensive and forward-thinking with robust provisions that anticipate and address the distinct needs of AI applications	Information security policy includes detailed provisions for AI applications, though it may not cover all potential scenarios or emerging threats	The security policy acknowledges AI but lacks comprehensive provisions tailored to its specific risks and operational needs	

Exemplars have incorporated AI specific security measures



Governance & guardrails

- Curating Al privacy guidelines as per regulations (E.g.,GDPR, Al Act)
- Adoption or custom design of AI cyber risk management frameworks (E.g., Google SAIF)



Model training & finetuning

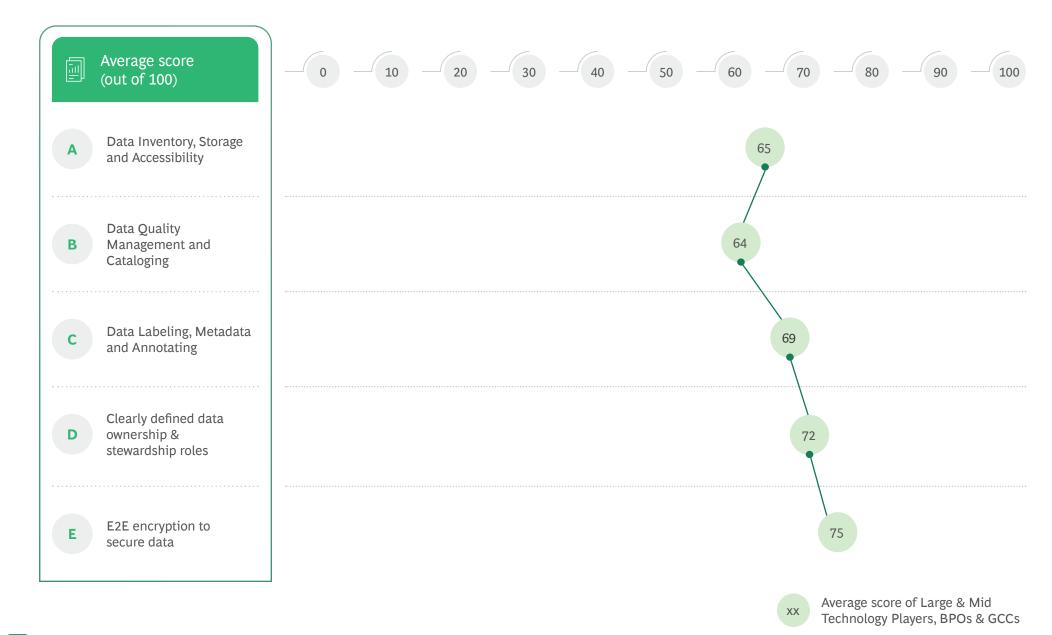
- Sequentially train filtering policies using supervised finetuning, reward modeling techniques
- Solutions are trained on curated or licensed content to detect IP misuse, plagiarism, etc.



Cyber & privacy transparency

- Conduct regular 3rd party assessments for the organization with specific considerations around GenAI, data privacy, etc.
- Input sanitization & prompt rate limiting to be incorporated

Data | Overview

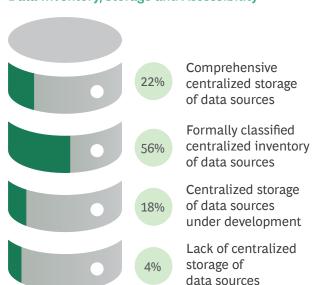




Players have a good foundational base of readiness in terms of data storage & classification, DQM & cataloging, and data labeling



Data Inventory, Storage and Accessibility

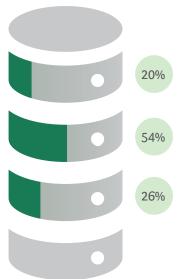




GCC player



Data Quality Management and Cataloging



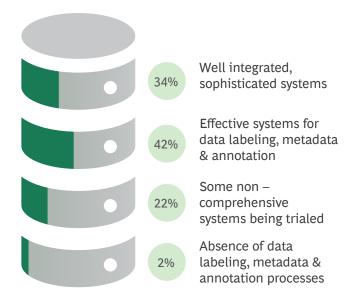
Advanced automated systems deployed for data quality assessment Established systems

for data quality assessment

Basic mechanisms for data quality assessments

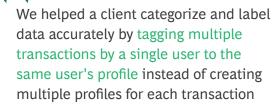


Data Labeling, Metadata and Annotating



We often observe client data is inconsistent & in varied formats. Data standardization & cleanup is a potential revenue generating offering for us

Large Tech player



BPO player



Case Study | Players starting to leverage GenAI to accelerate their Data Transformation journey across multiple use cases

Use case	

Description



	Data labeling & classification	GenAl automates process of assigning tags/categories to unstructured data, such as images, text, or audio for various applications like content filtering, sentiment analysis, & object recognition
0000	Data cleansing automation	Data cleansing with GenAI involves the automated process of identifying and correcting or removing errors, inconsistencies, and inaccuracies in datasets
	Data quality automation	Automatic monitoring of model & output drift utilizing synthetically generated content & results to cross-check mode output & performance
	MDM automation	Auto MDM (Master Data Management) powered by GenAI intelligently identifies and reconciles data, reducing manual effort and improving data quality
	Synthetic data generation	It involves creating artificial data that mimics real-world datasets. The benefits include preserving data privacy by replacing sensitive information, enabling safe and legal data sharing
8=	Data anonymization	Involves transforming personal or sensitive information in a dataset to ensure confidentiality and privacy while preserving the utility and integrity of the dataset, allowing secure analysis and sharing of information while protecting individual privacy
(<u>11</u>)	Augmented	Allows users to analyze and visualize data independently, to gain insights and make informed decisions without the

need for extensive technical expertise or assistance

1010 0101 **E2E** encryption End-to-end encryption is rigorously enforced for all Al data End-to-end encryption 38% enforced for most AI data End-to-end encryption is 18% enforced in some areas

Players have E2E encryption for most AI data; Exemplars have MSAs, in-house encryption tools, etc.

In order to enhance compliance with E2E encryption practices, Exemplars have adopted several measures:



Defining encryption policies, incorporated into contracts if required. E.g., a Mid Tech player is re-writing client MSAs to include data security clauses relevant for AI projects



Building in-house encryption tools for clients, including automation of encryption (if required) E.g., a Large Tech player has developed an in-house data encryption tool to mask data. It even allows differential access rights across the client organization (employee personal data only viewable to HR)



Deploying techniques like SMPC and federated learning to allow for model computations on encrypted data

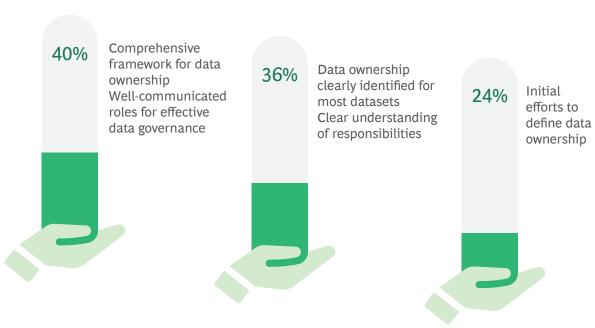


Performing third party audits and validations of encryption measures

MSA: Master Service Agreement, SoW: Statement of Work Source: NASSCOM-BCG Tech Services Industry AI Maturity Assessment Survey, BCG Analysis

Data ownership roles being defined clearly to ensure compliance with data ownership norms; Exemplars enforce via BU level Chief Security Officers

Defined data ownership & stewardship roles



Typical concerns on AI linked data ownership

- Storage & usage of client specific training data (post utilization for AI model training)
- Data usage for co-pilots during inferencing
- Indemnity clauses & liabilities for any data breach
- Multiple geography based regulatory compliance

P-**P**

Clear data ownership & definition of access rights eliminates data misuses not just in Tech partners' ecosystem but also within client's own ecosystem

Large Tech player

Establishing clear data ownership norms helps define the rights, responsibilities, and expectations regarding the data used and generated during the AI project

Key learnings from industry Exemplars:

Governance through BU level CSOs (Chief Security Officers) Define risk mitigation measures early-on to ensure swift response to data breaches Specify data usage norms that explicitly state how the data will be used within the scope of the AI project IP norms to address ownership of AI models, algorithms, and other IP developed during the project Data storage norms outline where the data will be stored, who has access to it, and under what conditions Data retention and deletion norms ensure that data is not retained longer than necessary & compliance with privacy regulations

Articulating the game plan: Key learnings from Exemplars



Building a winning client ecosystem

Developing AI offerings for clients

- AI offerings aimed at what clients are buying, i.e. willing to pay for and offerings that can generate the highest value at scale
- Light touch co-pilots with clients on areas of interest for experimentation

Agility in execution

 Improved TAT from identification to production of use cases, rigorous monitoring & relevant course correction

Targeted GTM strategies

 GTM strategy across prioritized verticals, accounts & use cases based on in-depth understanding of client needs

Fostering AI awareness

 Engage early with clients through training workshops, Art of the Possible demos, etc.



Building an organization for the future

Organization wide commitment to AI

 Dedicated oversight with crossfunctional stakeholder involvement in value assessment

Robust prioritization mechanisms

 Holistic frameworks across ROI, feasibility & replicability to enable robust prioritization of use cases including for financing & production

CoE & ways of working

 Dynamic & evolving Center of Excellence driving the AI agenda across the organization & BUs

Ethical AI policies

 Going beyond bias detection incorporating privacy, security, etc.

Leverage external partnerships

 Identify gaps in capabilities, develop effective partnerships to expedite Al maturity



Grow by growing others

Clarity of vision for workforce

- Identify skillset required to accelerate AI maturity
- Manage discomfort & uncertainties within workforce through active resistance management

Attracting stellar talent

 Hiring the right talent across organization levels with technical expertise & business acumen

Build a future ready workforce

Training curriculums aimed to

- Upskill engineers, data scientists, etc. into AI experts
- Equip sales, pre-sales (other internal) functions with AI expertise

AUTHORS

If you would like to discuss the themes and content of this report, please contact:



RAJIV GUPTA

Managing Director and Senior Partner
BCG



SUDHANSHU CHAWLA
Managing Director and Partner
BCG



SAMBHAV JAIN Partner BCG



TRISHLA SELARKA Project Leader BCG



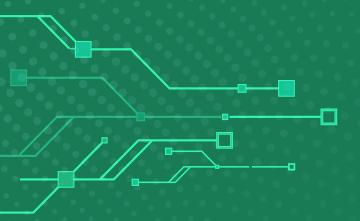
SANGEETA GUPTA
Senior Vice President and Chief Strategy Officer
NASSCOM



ACHYUTA GHOSH
Senior Director and Head of Research
NASSCOM



NAMITA JAIN
Director, NASSCOM Insights
NASSCOM





ACKNOWLEDGEMENTS

The authors thank and acknowledge the support provided by Divya Singhvi (Consultant), Khushi Kedia (Senior Associate) and Mayank Kak (Senior Knowledge Analyst) in preparing this report.

We would like to extend our gratitude to NASSCOM member organizations, industry stalwarts and leaders from the IT & BPM sector for sharing their rich experiences with us and enabling others to learn from their knowledge. Their expertise has been invaluable to this exercise.

A special thanks to India Marketing Team for managing the marketing process and to Saroj Singh, Sujatha Moraes, Vijay Kathiresan, Seshachalam Marella, Soumya Garg, Aliviya Saha, Ratna Soni, and Saanchi Chatwal for their contribution towards design and production of this report.





BCG + nasscom