The blueprint to scaling AI for business transformation

Transitioning from Pilot to Production

Capgemini

Foreword

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The strategic importance of AI, particularly generative AI, cannot be overstated. It has moved beyond the realm of experimentation and is now integral to enterprise strategies across sectors. The findings from Capgemini's recent research, *Harnessing the value of generative AI: 2nd Edition*, underscore this shift. Our research reveals that 80% of organizations have increased their investment in generative AI over the past year, with nearly one-quarter integrating this technology into their operations. This surge in adoption is driven by the tangible benefits generative AI offers, including a 7.8% improvement in productivity and a 6.7% enhancement in customer engagement and satisfaction.

The journey from pilot to production is fraught with challenges, but the rewards are substantial. Organizations that successfully scale their AI initiatives report significant gains in operational efficiency, cost savings, and innovation. For instance, generative AI has enabled companies like Eneco eMobility, BMW, and ABN AMRO to achieve remarkable improvements in productivity and customer service. These success stories highlight the transformative potential of AI when integrated into core business functions.

However, scaling AI requires a holistic approach that encompasses strategic alignment, robust governance frameworks, a strong data foundation, and continuous talent development. All these aspects are intricately linked and interdependent.

Moreover, it is essential to align Gen AI initiatives with the broader business value chain, establishing clear KPIs while embedding responsible AI practices throughout the AI lifecycle to ensure ethical and secure deployment.

As we look to the near future, the rise of AI agents promises to further transform the way businesses operate by offering several key benefits such as sales growth – organizations have seen a 4.4% increase in sales, attributed to the AI agents' ability to provide personalized recommendations and optimize sales operations. Building and managing multi-agent systems is no easy feat, but the key to success lies in continuously monitoring and evaluating their performance.

In conclusion, the insights and recommendations presented in this paper provide a valuable guide for organizations seeking to scale their AI initiatives. It outlines strategies and a comprehensive roadmap for successful transition to full-scale production.

Everest Group®

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The Blueprint to Scaling AI for Business Transformation

Transitioning from Pilot to Production

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Introduction

AI, including generative AI, has moved beyond being an emerging technology confined to experimentation and is now becoming integral to enterprise strategies. Across industries, organizations are experiencing measurable gains from pilot projects – ranging from improved productivity to enhanced customer experiences. The next logical step is to scale these initiatives from pilot stages to full-scale production to unlock their transformative potential.

However, transitioning from pilot to production is a complex journey that demands addressing various challenges and success factors. Enterprises must tackle essential aspects such as defining an enterprise-wide AI strategy, prioritizing AI use cases, establishing an effective AI operating model, ensuring data readiness, building AI talent, implementing a scalable AI technology stack, and integrating responsible AI practices. Success in scaling AI depends on clearly understanding these factors, avoiding common pitfalls, and adopting best practices.

This viewpoint delves into the essential aspects of scaling AI, providing insights into:

- Key business drivers behind AI adoption
- The current state of AI and generative AI adoption
- Success factors for scaling AI from pilot to production
- Common pitfalls to avoid while scaling AI initiatives
- Future trends and outlook in AI

This viewpoint provides enterprises with insights into successfully scaling AI from pilot to production. By exploring key success factors and avoiding potential pitfalls, it aims to help organizations navigate the complex journey of operationalizing AI and unlocking its transformative potential. Furthermore, it serves as a guide for businesses looking to move beyond experimental stages and achieve tangible, enterprise-wide impact with AI.

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Strategic importance of AI and generative AI

Economic volatility, evolving customer expectations, regulatory pressures, and rising competition are causing the business landscape to fundamentally shift. Traditional transformation approaches have often fallen short, struggling to deliver agility, resilience, and sustained growth. As a result, organizations are rethinking their strategies – not just for digital transformation but for holistic business transformation that reshapes operational models, decision-making, and customer engagement.

Over the past decade, enterprises have invested in modernizing IT systems, cloud adoption, automation, and data-driven decision-making. While these efforts have laid a strong foundation, they have often remained siloed within functions, processes, and systems, limiting their ability to deliver enterprise-wide impact. Now, AI is acting as the true catalyst, elevating digital transformation into business transformation – one that is AI-first, data-driven, and outcome-oriented.

This shift requires organizations to break free from fragmented automation and disjointed AI initiatives. AI, particularly generative AI, presents a unique opportunity to bridge these gaps, enabling enterprises to move beyond isolated use cases toward scalable, interconnected, and intelligence-driven transformation. Whether enhancing customer interactions, optimizing supply chains, or accelerating product innovation, generative AI is not just enhancing processes but reshaping core business functions.

Enterprises are now transitioning from AI experimentation to AI at scale. The focus is shifting from pilots to production, with organizations establishing robust governance frameworks, data ecosystems, and AI-driven decisioning models to ensure enterprise-wide adoption and measurable impact. The next section explores the key business imperatives driving this shift.

> “It will be unthinkable not to have intelligence integrated into every product and service.”
>
> – Sam Altman, CEO, OpenAI

Key business drivers behind AI adoption

Adopting AI and generative AI is reshaping business priorities across industries. Organizations increasingly view these technologies as vital to stay competitive, improve operational efficiency, and drive business outcomes. Below are the key business drivers steering AI / generative AI adoption:

- **Enhancing operational efficiency and reducing turnaround time:** AI transforms operations by automating repetitive tasks and streamlining decision-making. These technologies enable enterprises to optimize workflows, minimize errors, and accelerate operations, thereby increasing efficiency and reducing time-to-market for products and services. For example, AI-driven supply chain optimization through demand forecasting can significantly improve inventory management accuracy. Additionally, AI can speed up creative design cycles, prototyping, and reporting processes, allowing businesses to quickly respond to market demands
- **Delivering superior customer experiences:** Improving customer experience is a top priority for businesses, and AI-driven personalization is a game changer. Generative AI can tailor customer interactions through personalized recommendations, intelligent chatbots, and content that resonates with target audiences. These capabilities help businesses foster stronger customer relationships, increase satisfaction, and drive loyalty
- **Increasing employee productivity:** AI goes beyond automation, amplifying employee capabilities through tools such as AI-powered copilots. These copilots draft content and offer intelligent recommendations, enabling employees to focus on complex, high-value tasks. For example, coding copilots help developers debug and code faster, driving productivity across teams
- **Maximizing cost savings:** AI solutions are instrumental in achieving long-term cost optimization. From automating product design and optimizing supply chains to reducing research and development costs, AI technologies help businesses unlock efficiencies while maintaining high output standards. These cost-saving opportunities are crucial for reinvesting in innovation and sustainably scaling operations
- **Technological maturity:** The growing maturity of enabling technologies, such as robust data and AI infrastructure, scalable cloud solutions, and advanced language models, has played a key role in AI and generative AI's widespread adoption. These technology advances have now made it possible for enterprises to harness the full potential of these transformative tools, unlocking a wide range of business benefits
- **Driving innovation and increasing relevance:** AI and generative AI are gaining prominence as businesses recognize their ability to drive innovation and maintain competitive relevance. By leveraging these technologies to enhance their products, services, and processes, organizations can stay ahead, expand market share, and strengthen their position in an increasingly dynamic, technology-driven landscape

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Current state of enterprise AI adoption

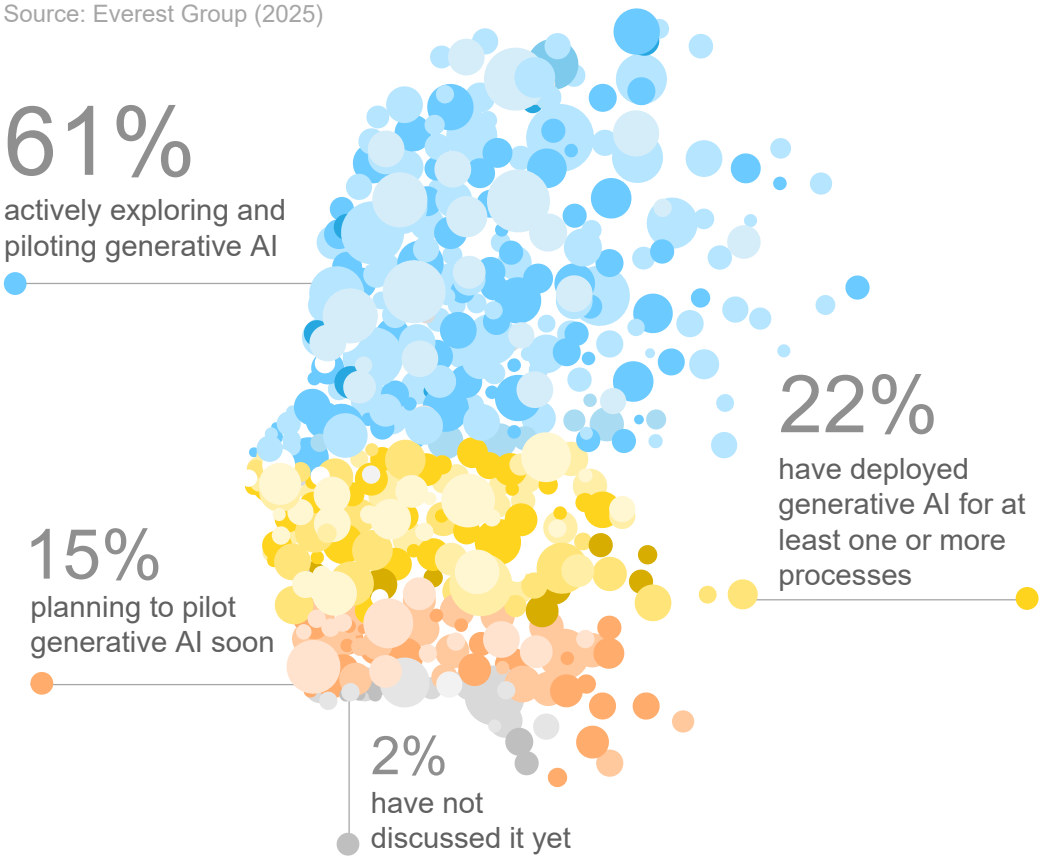
As we enter 2025, AI continues to cement its promise as a transformative technology in the modern business landscape. Based on Everest Group's enterprise buyer survey conducted in Q2 2024, more than 30% of enterprises plan to increase their spend on AI services by 10-20% or more in the coming year, while more than 50% have increased spend by 5-10%, demonstrating a strong commitment to AI investments.

This broader AI momentum has set the stage for generative AI. As we reflect on 2024, a year dominated by generative AI-related conversations, several questions have emerged: Is generative AI here to stay, or is it merely a passing trend? Has it moved beyond curiosity to meaningful enterprise adoption?

One thing is clear – generative AI has been at the center of strategic discussions in boardrooms globally. According to Everest Group's Q1 2024 enterprise leaders' response survey, 83% of organizations worldwide are either actively piloting generative AI initiatives or have already implemented it in production-grade use cases.

Exhibit 1: Enterprise adoption of generative AI

Source: Everest Group (2025)



Beyond generative AI, enterprises are now exploring the next AI evolution: agentic AI. Agentic AI systems combine Large Language Model (LLM) capabilities with code, data sources, and user interfaces to autonomously perform complex tasks and workflows. This progression signifies a deepening AI integration into enterprise operations, setting the stage for transformative changes across various industries and business functions.

Generative AI adoption across industries

Enterprises have recognized AI's transformative potential and are increasingly embedding generative AI into their operations to achieve competitive differentiation and tangible business value. While 2023 marked generative AI's introduction to businesses, 2024 saw organizations move toward practical implementation. Organizations are reporting tangible benefits from deploying generative AI. For example, based on public disclosures, Eneco eMobility enhanced customer service agent productivity, reducing average wrap-up time by 50%. Similarly, BMW achieved a 30-40% increase in productivity and improved stakeholder experience.

While generative AI has the potential to impact every industry, different industries are adopting it at a different pace. In a fast-moving technology landscape such as this, enterprise consumption patterns and adoption phases are rapidly evolving, influenced by continuous advances and emerging use cases. Exhibit 2 shows generative AI adoption patterns across different industries, based on Everest Group’s survey of ~600 enterprise respondents conducted in Q1 2024.

As per Exhibit 2 on page 8, certain industries such as BFSI and hi-tech and technology are already extensively using and experimenting with generative AI, compared to other sectors. A sizable number of enterprises are still experimenting with generative AI to evaluate these systems’ reliability before amplifying investments.

This industry-specific variation in adopting generative AI can be attributed to several factors such as current data availability, technical readiness, cost implications, regulatory and compliance considerations, and generative AI capability requirements. For example, BFSI and RCPG organizations often have well-structured data repositories and customer interactions that lend themselves more readily to generative AI-powered automation and personalization. Conversely, the HLS sector may face more complex challenges such as data privacy and security concerns and limited training data access that require a more cautious, phased approach to generative AI adoption.

Irrespective of the industry, the most successful enterprises are those that identify high-impact, strategic generative AI use cases and establish frameworks to seamlessly scale these pilots into production-ready solutions.

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Exhibit 2: Generative AI adoption across industries

Source: Everest Group (2025)

	Waiting for generative AI maturity	Not planning to use	Investigating possibilities	Experimenting but not amplifying investments	Extensively using	Experimenting and amplifying investments
BFSI	1%	<1%	13%	1%	39%	46%
HLS	2%	2%	26%	6%	24%	40%
RCPG	1%	4%	21%	5%	32%	38%
Automative	4%	<1%	15%	13%	20%	48%
Electronics, hi-tech, and technology	<1%	3%	8%	1%	41%	46%
Media and entertainment	<1%	<1%	22%	6%	33%	39%
Airline, travel, and transport	3%	3%	25%	10%	13%	48%
Energy and utilities	2%	2%	19%	2%	17%	58%
Others	<1%	5%	20%	5%	16%	53%

Key business transformation areas where AI is transitioning from pilot to production

Enterprises are leveraging AI and generative AI across a wide spectrum of transformation areas to drive efficiency and enhance stakeholder experiences.

In the front office, AI is transforming customer experience and sales and marketing. By automating tasks such as summarizing complaints, retrieving data, and crafting personalized responses to queries, it improves agent productivity and customer experience. Generative AI optimizes sales campaigns and customer targeting by creating tailored content and experiences for individual personas, making front office operations more efficient, streamlined, and customer-focused.

In the middle office, AI is revolutionizing risk management, performance analysis, and data management. Risk management benefits from automated regulatory compliance reporting, fraud detection, and tax reporting, reducing manual effort and improving accuracy. In performance analysis, AI enhances decision-making through predictive and prescriptive insights, conversational analytics, and dynamic reporting, enabling teams to uncover trends and make informed decisions. In data management, generative AI accelerates data-related operations such as schema generation, data migration, and synthetic data generation.

In the back office, AI is driving transformation across finance and accounting, HR, IT operations and software development, and supply chain management:

- In finance and accounting, AI enhances intelligent document processing by automating tasks such as generating and summarizing financial reports and extracting key details from financial documents, significantly improving accuracy and efficiency

- In HR, generative AI streamlines recruitment, Learning and Development (L&D), and talent management by automating screening resumes, generating job descriptions, creating personalized training content, and providing tailored responses to employee queries
- In supply chain management, AI enhances warehouse operations and inventory management through near real-time analytics, enabling improved decision-making, optimized logistics, and increased operational efficiency
- In IT operations and software development, AI automates detecting and resolving incidents, monitoring systems, assisting code, and generating test cases, minimizing downtime and improving efficiency

Exhibit 3 highlights key transformation areas in various functional domains within enterprises.

Exhibit 3: Key transformation areas across functional domains

Source: Everest Group (2025)

[NOT EXHAUSTIVE]

Customer experience	Customer support	Agent assistance	Knowledge management
Sales and marketing	Campaign management	Content creation and personalization	Sales enablement and customer insights and analytics
Risk management	Regulatory compliance and reporting	Fraud detection	Knowledge management
Finance and accounting	Financial reporting	Financial document processing	Budgeting and cash flow forecasting
HR	Employee engagement and communication	Personalized L&D	Talent acquisition and recruitment
IT operations and software development	Application development	IT help desk and support	Incident and data management
Supply chain management	Procurement	Supply chain planning	Transportation management

Across these transformation areas, factors such as the varying degrees of complexity, data availability, abundance of potential applications, and need for automation are shaping the pace and scale of AI adoption. For example, customer experience and sales and marketing are witnessing the highest AI adoption due to their wide range of use cases and relatively lower complexity.

Exhibit 4 illustrates some of the enterprises that have successfully transitioned AI solutions from pilot to production across different transformation areas.

Exhibit 4: Success stories across transformation areas

Source: Everest Group (2025)

Customer support and content creation

Deployed generative AI solutions for **shopping assistance** and AI-driven product descriptions

Carrefour

Financial document processing

Launched DocLLM, an AI solution to process complex enterprise documents (e.g., forms, invoices)

J. P. Morgan

Application development

Implemented a generative AI **coding assistant** to support developers in coding tasks

Goldman Sachs

Knowledge management

Implemented a generative AI **assistant to support financial advisors** and staff in performing research tasks

Morgan Stanley

Success factors for AI and generative AI transition from pilot to production

Enterprises across certain domains and industries are successfully transitioning AI use cases from pilot to production. Successful organizations have scaled these initiatives by addressing critical factors. Exhibit 5 outlines some of the key success factors to scale AI from pilot to production.

> "The most important thing we need to do is ensure that AI aligns with the business' broader goals and is solving real problems for customers."
>
> – Satya Nadella, CEO, Microsoft

Exhibit 5: Success factors to scale AI from pilot to production

Source: Everest Group (2025)

[NOT EXHAUSTIVE]



Success factor	Enterprise-wide AI strategy	Operating model for AI	Responsible AI
Activities	Align AI strategy with business objectives Identify and prioritize AI use cases Define measurable goals and KPIs Build strong AI leadership Define budgeting and funding processes	Select the right operating model Embrace agile delivery models	Establish a robust AI governance framework Mitigate risks proactively across AI life cycle Empower employees with AI risk awareness



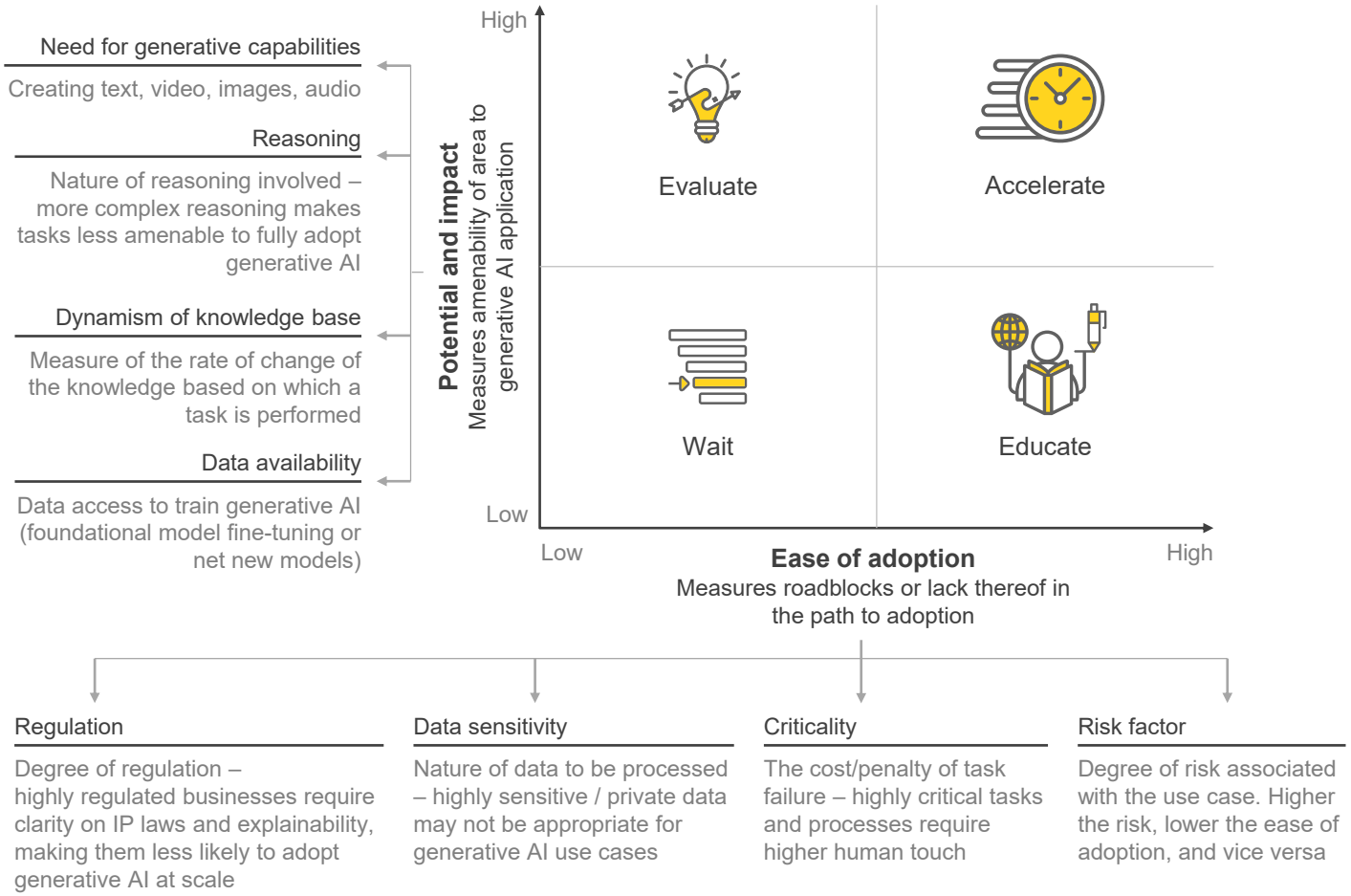
Success factor	AI talent	Data foundation	AI tech stack
Activities	Assess the roles and skills required for AI Provide tailored L&D programs Acquire and retain top AI talent	Ensure high-quality annotated data availability Improve data quality practices Implement a modern data platform	Select a suitable generative AI sourcing strategy Decide on open-source vs. proprietary models Contextualize AI models Enable reusability across AI solutions

Enterprise-wide AI strategy

- **Align AI strategy with business objectives:** An AI strategy must integrate with the organization's overall business strategy and objectives to ensure AI investments and initiatives deliver value. Engage senior leadership to secure buy-in and a top-down mandate. Leaders must understand how AI creates business value and remain committed to its integration and success
- **Identify and prioritize use cases:** Strategically identify and prioritize use cases once a transformation area has been selected (as highlighted in Exhibit 3). Assess potential use cases based on business value, feasibility, and risk to ensure effective prioritization. Eliminate non-performing pilots and scale high-impact initiatives, minimizing risks and driving sustainable AI transformation. The x-axis in Exhibit 6 represents the ease of adopting generative AI, influenced by factors such as regulation, data sensitivity, task criticality, and associated risk, while the y-axis indicates how valuable generative AI is for a task, based on reasoning complexity, need for generative capabilities, among others. Enterprises should start with use cases in the Accelerate quadrant and then continue with others as they mature

Exhibit 6: Framework to identify and prioritize use cases

Source: Everest Group (2025) [NOT EXHAUSTIVE]



- **Define measurable goals and KPIs:** Establish clear KPIs aligned with business objectives to track RoI of AI investments. For instance, in customer service, track metrics such as average handling time and customer satisfaction scores, while in sales and marketing, monitor campaign RoI and conversion rates. Continuously monitor the set KPIs and communicate progress to sustain leadership support and alignment
- **Build strong AI leadership:** Appoint an expert with cross-functional influence to oversee the organization's AI initiatives. Establish a steering committee to provide strategic direction, coordinate AI efforts, and ensure alignment across the enterprise. Together, these leaders and teams are accountable for achieving AI-driven business objectives
- **Define budgeting and funding:** Establish clear budgeting and funding processes to sustain AI initiatives. Proposals for AI investments must demonstrate measurable business value to secure board approval. Ensure funding allocations remain agile to adapt to changing business needs and evolving AI demands

Operating model for AI

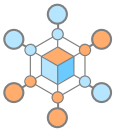
- **Select the right operating model:** The operating model defines how people, processes, and technology are deployed to achieve AI / generative AI goals, directly impacting AI initiatives' scalability and effectiveness. Enterprises typically adopt one of three approaches – centralized, decentralized, or hybrid (federated). Each model offers unique advantages and challenges, making it essential to align the selection with organization's current AI maturity, risk tolerance, governance requirements, and the need for speed and customization

Exhibit 7: Various AI / generative AI operating models

Source: Everest Group (2025)

[NOT EXHAUSTIVE]





	Centralized	Decentralized	Federated
Description	Generative AI capabilities centralized under CoE	Generative AI fully owned and managed by individual BUs	Combines centralized oversight with BU-driven generative AI development
When to adopt	Early stages of adoption and in highly regulated industries	When BUs have strong generative AI expertise and require customization to address BU-specific needs	When BUs have some generative AI expertise but still need central team support
Benefits	Consistent enterprise-wide deployment, robust risk management	Faster customized generative AI development, fosters innovation within individual BUs	Balances central control with individual BUs' agility
Challenges	Limited adaptability to specific BU needs, scalability challenges as demand grows	Inconsistent governance and security and compliance, risk of duplicating efforts across BUs	Coordination complexities between the central team and BUs, potential inefficiencies if responsibilities are not well-defined

- **Embrace agile delivery models:** Generative AI's dynamic nature calls for agile delivery methods that enable iterative development, rapid experimentation, and continuous improvement. Key aspects include adopting Continuous Integration and Deployment (CI/CD) practices, incorporating feedback loops, and monitoring performance to make timely adjustments

Responsible AI

- **Establish a robust AI governance framework:** To responsibly deploy and scale generative AI, establish a comprehensive AI governance and risk management framework. Form an AI ethics council, a cross-functional team responsible to identify AI risks, shape policies, and drive risk mitigation strategies. For example, Sony Group established the AI Ethics Committee to provide expertise across all its business units. On top of that, clearly define roles and ownership across the AI life cycle to ensure accountability and informed decision-making. The framework should remain adaptable to evolving regulations, such as the EU AI Act, to ensure compliance while accommodating new guidelines
- **Mitigate risks proactively across AI life cycle:** Integrating risk mitigation measures across the entire generative AI life cycle is essential for responsible and sustainable deployment. During the development stage, teams need to establish clear processes to address key risks such as data privacy, security, algorithmic biases, trust and performance, and ethical concerns. Techniques such as Reinforcement Learning from Human Feedback (RLHF) and data grounding can enhance trust and performance by improving model reliability and accuracy. Differential privacy and federated learning approaches can mitigate privacy and security risks, while bias auditing and data fairness tools help address algorithmic biases and ensure ethical outcomes. Red teaming plays a key role in identifying vulnerabilities and providing a robust defense against potential threats
- **Empower employees with AI risk awareness:** Fostering an AI risk awareness culture is essential for responsible generative AI development. Employees, from engineers to business users, must receive training on potential risks and mitigation strategies. This empowers them to identify and escalate concerns, ensuring proactive risk management throughout the AI life cycle

> "We need to have a better system of checks and balances to test AI for bias and fairness."
>
> – Timnit Gebru, Founder, The Distributed AI Research Institute

AI talent

- **Assess the roles and skills AI requires:** As organizations strive to scale AI, they must define the roles and specialized skills required across the AI life cycle. Successful AI implementation requires investing in specific talent personas and skill sets. The skills mapping in the exhibit below showcases some of the roles / talent personas and skills growing in demand due to generative AI. However, these roles do not need to form entirely new categories; rather, they represent a skill and expertise evolution within the current workforce, enabling smooth and secure generative AI adoption

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Exhibit 8: Top roles and skills for AI / generative AI development

Source: Everest Group (2025) [NOT EXHAUSTIVE]

	Role	Skills
Generative AI-specific	Generative AI developers or AI/ML engineers	LLM development, LLM fine-tuning, API integration
	LLMOps specialists	Model monitoring, benchmarking, automating pipelines, CI/CD for AI
	Prompt engineers	Prompt engineering, prompt debugging
	Model validators/annotators	Data annotation, labeling, response scoring, response validation
D&A and AI	Responsible AI and explainability specialists	AI audit and risk assessments, compliance knowledge
	Data scientists	Statistical modeling, machine learning, data wrangling, feature engineering
	Data and AI architects	Data modeling, data governance, cloud platforms
	Data engineers	ETL, data warehousing, big data, SQL
Consultants	Industry and domain experts, AI consultants	Industry expertise, data and AI strategy development

- **Provide tailored L&D programs:** Building quality AI talent requires investing in tailored L&D initiatives. This includes creating AI literacy programs and role-specific trainings to ensure targeted upskilling. Hands-on activities, such as hackathons, can empower employees to experiment with AI and build competencies in AI / generative AI applications
- **Acquire and retain top AI talent:** To address skill gaps, enterprises can combine upskilling current employees with recruiting new talent. Targeted hiring through campus recruitment, lateral hiring, or strategic acquisition brings in external expertise. Retention is equally important – by fostering a culture of innovation, providing continuous learning opportunities, and recognizing employee contributions, organizations can effectively nurture and retain top generative AI talent

Data foundation

- **Ensure high-quality annotated data availability:** Implementing robust data annotation processes is vital to create high-quality, unbiased training data for AI models. This involves implementing robust QA/QC processes such as multi-level reviews and advanced algorithms to detect and mitigate biases. Augmenting datasets with synthetic data can help create more diverse training data, improving model accuracy and fairness
- **Improve data quality practices:** Implement robust data quality management processes to assess data accuracy, completeness, and consistency. This includes data profiling, validation, and cleansing techniques. Establish clear data quality standards and SLAs to proactively address data quality issues. Automate data quality checks and monitoring, using tools that can detect anomalies, outliers, and

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other quality issues in real time. Invest in data observability capabilities to gain end-to-end visibility into data pipelines' health

- **Implement a modern data platform:** Deploy a modern, cloud-based data platform to support scalable AI/ML workloads. Adopt a modular, cloud-native data architecture to integrate diverse data sources and effectively process structured and unstructured data. To better support generative AI use cases, explore technologies such as vector databases to manage embeddings. Leverage cloud-based data management services, such as data lakes, warehouses, and lakehouses, to establish a unified, well-governed data foundation. Empower data and AI teams with self-service access through intuitive, user-friendly data discovery and cataloging capabilities

"If you do not have a strong data foundation, you are really going to struggle to be able to do anything beyond well clever parlor tricks with generative AI."

– Tom Godden, Enterprise Strategist, CXO Advisor, AWS

AI tech stack

- **Select a suitable AI sourcing strategy (build versus buy versus partner approach):** Enterprises are broadly exploring the build, buy, and partner approaches to develop their AI capabilities. Exhibit 9 outlines these approaches.

Exhibit 9: Overview of AI sourcing strategies

Source: Everest Group (2025)

[NOT EXHAUSTIVE]

AI development approach	Build	Buy	Partner
	Developing AI capabilities entirely in-house, including models, using internal resources	Involves adopting generative AI through existing enterprise applications or native solutions	Engaging external tech/service providers to develop generative AI capabilities
Ideal scenario to use	Enterprises aiming to develop customized AI products	Enterprises seeking quick benefits with low data and AI maturity	Enterprises with limited expertise requiring tailored generative AI solutions
Challenges	High costs, requires expert in-house AI talent	Limited competitive differentiation and customization	Data privacy and security concerns, integration complexities, external dependencies

In the partner approach, selecting the right external provider is a vital step. Enterprises must follow structured processes to source, evaluate, and contract partners to align with their needs. By understanding each approach's strengths and limitations, enterprises can choose the most suitable AI implementation strategy that balances speed, control, and customization for successful outcomes.

- **Decide on open-source versus proprietary (closed-source) models:** Enterprises must carefully evaluate the pros and cons of open-source and proprietary models when building their AI technology stack. Open-source models, such as GPT-J and LLaMA, are highly customizable and cost-efficient. However, they require significant in-house expertise for tasks such as pre-processing data and tuning models. Proprietary models from providers such as OpenAI and Google offer better performance and reduce Time-To-Value (TTV), but come at higher costs and potential vendor lock-in risks. Enterprises must consider factors such as model accuracy, data privacy, compliance, and total cost of ownership when choosing between open-source and proprietary models. The ideal choice depends on an enterprise's goals, resources, and technical capabilities. Open-source models may suit organizations with strong data science teams and customization needs, while proprietary models may be better suited for enterprises seeking faster TTV and reliable performance
- **Contextualize AI models:** Enterprises can extract maximum value from AI models by contextualizing them to their specific requirements. Techniques such as retrieval-augmented generation, prompt engineering, RLHF, and model fine-tuning significantly help in this context and enhance model relevance and accuracy. Integrating LLMOps frameworks ensures continuous model performance monitoring and validation, enabling ongoing adjustments to align with evolving business objectives and adapt to new data. This approach helps create AI solutions that are not only accurate but also agile and responsive to business changes
- **Enable reusability across AI solutions:** Enterprises can accelerate generative AI implementation by focusing on developing reusable and modular capabilities. By analyzing high-priority use cases and identifying common functions, organizations can build interoperable components that serve multiple needs. To further enhance reusability, enterprises can also leverage pre-built templates and frameworks available from AI providers or specialized marketplaces. This modular approach allows enterprises to mix and match pre-built assets, reducing the need to reinvent core functionalities for each new AI initiative. Embedding this reusability into the AI foundation helps create a flexible AI technology stack that supports faster innovation and improved RoI

"High-performing organizations are nearly three times as likely to build an AI foundation that enables reuse across solutions, driving speed and scalability."

– Walter L, Director, Strategic Planning and Innovation, Microsoft

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Common pitfalls to avoid when scaling AI

While success factors lay the groundwork for a strong AI implementation, organizations need to be mindful of potential challenges that can hinder progress:

- **Risk of drifting away from strategic business goals:** Organizations risk misaligning AI projects with strategic objectives by prioritizing low-hanging fruits or quick wins over broader business transformation. While quick wins deliver immediate value, an over reliance on them can lead to fragmented AI efforts that fail to address long-term business objectives. Companies must establish a governance framework linking AI initiatives to measurable outcomes and balance short-term gains with long-term strategic priorities. By treating AI as a strategic enabler, organizations can drive meaningful business transformation and generate tangible business impact
- **Uncontrolled costs:** AI projects often see costs spiraling out of control due to extensive data usage and model interactions. The actual cost structure is multilayered, with model development representing only a small fraction of the total investment, while change management, operational costs, and continuous optimization consume significantly more resources. Organizations often overlook these ongoing expenses, focusing primarily on initial development costs. Effectively managing these costs is essential to scale AI programs. A holistic financial framework is essential, along with KPIs to systematically track and manage cost drivers
- **Challenges pertaining to AI integration:** Integrating AI into existing IT infrastructures is challenging, particularly when dealing with legacy systems. Organizations often underestimate the effort required to align AI technologies with the existing systems, leading to inefficiencies and delays. To mitigate integration risks, enterprises can adopt a phased approach, starting with smaller projects for real-world testing to identify and address these issues early. The key is to view AI integration as an iterative, adaptive process rather than a one-time technical implementation
- **Neglecting continuous monitoring and evaluation:** Enterprises may underestimate AI's evolving nature, treating it as a one-time solution instead of an ongoing process. With rapid technology advances and changing business needs, AI systems must be continuously refined and aligned with organizational goals. Organizations must foster a culture of continuous learning and improvement, establish regular performance reviews, and create flexible feedback loops for adjustments and system optimizations
- **Inability to balance innovation with ethical considerations:** As organizations push AI innovation, they often struggle to balance cutting-edge capabilities with ethical considerations. The drive to use LLMs can overshadow concerns such as fairness, transparency, accountability, and unexpected outputs. To mitigate these risks, organizations must integrate ethical frameworks into the AI development process from the outset. This integration includes implementing safeguards such as toxicity and bias detection, sensitive data masking, transparency in AI decision-making, and regular ethical audits. By balancing innovation with strong oversight, enterprises can ensure their AI systems remain ethical and trustworthy

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ABN AMRO case study

Context: ABN AMRO offers services in commercial, retail, and private banking, serving over 350,000 commercial clients and 5 million retail clients. Recognizing the importance of seamless customer experiences, ABN AMRO's customer interactions department launched a chatbot as part of its first AI-driven transformation. Initially leveraging a rules-based engine and basic NLP models, the bank automated customer interactions but faced limitations as responses were scripted and did not meet evolving customer expectations adequately.

Over time, as the need for more context aware and personalized solutions grew, the bank wanted to build on this foundation by incorporating generative AI into its strategy to enhance both customer support and internal operations.

Challenge: Despite management and stakeholders recognizing generative AI as a key industry trend and impact area, ABN AMRO had to prioritize strict adherence to internal policies, regulatory requirements, and compliance standards in its first generative AI deployment toward clients. Given the complexities of full-scale production, the bank undertook a multi-month evaluation to reinforce confidence among key decision-makers.

Unlike traditional chatbots that relied on intent recognition and scripted dialogues, the major challenge with generative AI was ensuring that AI-generated responses were aligned with the bank's policies, factually accurate, and communicated in the right tone. While regulatory compliance, AI governance, and bias mitigation were standard considerations, the need to control AI-driven conversations to prevent misinformation or policy misalignment required additional safeguards.

Approach: ABN AMRO initially deployed its chatbot in 2018. In 2023, with a focus on enhancing client interactions and leveraging generative AI, the bank reevaluated its technology landscape. As a result, it transitioned to a combination of Microsoft Copilot and Azure services. This shift was driven as ABN AMRO identified generative AI as an opportunity to boost customer experience and make digital interactions feel more like one-on-one personal conversations. To facilitate seamless migration and implementation, ABN AMRO partnered with Capgemini, leveraging its expertise in AI deployment and transformation.

To ensure successful deployment, business and IT teams aligned to secure funding and establish a structured implementation roadmap. Adopting a phased approach, the bank introduced a generative AI-powered chatbot and a summarization tool to enhance AI-driven client assistance.

Given generative AI's inherent challenges, ABN AMRO took a cautious approach, moving beyond traditional AI risk management measures to focus on conversation control and AI-generated response validation. This reinforced the need for robust AI governance frameworks to continuously monitor chatbot outputs, advanced validation mechanisms to fact-check AI responses against internal knowledge bases, and stress-testing initiatives such as

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breakathons to evaluate AI-generated conversations under various scenarios and identify potential failures before production deployment.

ABN AMRO partnered with Capgemini to define the generative AI strategy for the customer interactions department. Together, they established key governance elements, including AI guardrails, to set explicit boundaries for responses and iterative feedback loops to enhance AI accuracy and alignment. Additionally, ABN AMRO continues to leverage Capgemini's AI talent pool to scale AI initiatives and build internal capabilities through targeted L&D sessions.

Business outcomes: Prior to generative AI implementation, ABN AMRO's chatbots automated over 2 million conversations annually, ensuring that no more than 30% required human intervention. With generative AI integration, the impact is expected to be even greater:

- **Improved first-time resolution:** The percentage of conversations requiring human support is projected to decrease from 30% to 23%
- **Enhanced summarization:** The new AI-powered summarization tool is expected to generate summaries for 800-900 advisors, producing over 40,000 summaries each month, improving efficiency, and expanding access to essential information

The bank anticipates high client satisfaction post-production, driven by personalized and human-like conversations facilitated by the enhanced chatbot capabilities. Additionally, by automating routine tasks, human advisors can now focus on higher-value activities such as tailored client advisory and strategic decision-making, leading to improved service quality and operational efficiency.

Future outlook: ABN AMRO aims to further expand its AI initiatives by integrating generative AI capabilities to automate responses and execute tasks, enhancing customer personalization and engagement.

The bank envisions a future where every customer has access to a digital personal banker, enabling real-time insights, proactive financial guidance, and seamless banking experiences. At the same time, every employee or human agent benefits from an AI-powered knowledge search and other AI-driven assistance.

To achieve these goals and scale at an accelerated pace, ABN AMRO looks forward to strengthening its partnership with Capgemini, leveraging its expertise in AI transformation and advanced automation technologies.

"Having the right technology services partner and leveraging its expertise is essential to successfully transition a PoC into full-scale production."

– Bobby van Groningen, IT Engineering Lead, ABN AMRO

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Conclusion and future outlook

As enterprises navigate the complex journey of scaling AI from pilot to production, success demands a comprehensive and strategic approach that transcends implementation. Organizations must weave together multiple key elements: strategic alignment that ties AI initiatives directly to business objectives, robust governance frameworks that ensure deploying responsible and ethical AI, continuous talent development that empowers employees with emerging skills, and innovation that remains adaptive to rapid market changes. Organizations that effectively address these factors while avoiding common pitfalls are well-positioned to unlock significant value and gain a competitive edge.

AI's future is rapidly evolving, with new advances reshaping how businesses operate. Smaller, more efficient language models are making AI more accessible and affordable, with companies and start-ups proving that powerful AI does not need huge infrastructure. Additionally, new AI models are being introduced and existing ones are being enhanced to provider better reasoning capabilities.

One of the most notable shifts is the rise of agentic AI, which goes beyond traditional automation by enabling systems to make independent decisions, adapt in real time, and execute complex workflows with minimal human intervention. Unlike conventional rules-based automation, agentic AI leverages multi-agent collaboration, self-learning mechanisms, and generative AI models to drive end-to-end process automation. This shift is set to transform industries and functions – revolutionizing risk assessment, compliance, customer service, and enterprise operations. As organizations move away from fragmented tools toward intelligent automation platforms, agentic AI emerges as the key to unlocking autonomous, goal-driven execution. Its ability to self-optimize and handle dynamic business environments makes it not just an evolution but the next frontier of AI-driven transformation.

With these advances, AI adoption is set to rapidly grow across different industries and business functions. It will transform the nature of work by automating repetitive tasks, enhancing workflows, and enabling better decision-making. Business functions will see streamlined operations, reduced costs, and a shift toward higher-value activities, redefining how enterprises approach work.

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