NTT DATA

Designed with the power of **GenAI**

Reimagining GenAI's role in banking

Bridging the gap between hype and reality

In this guide, we present NTT DATA's GenAI adoption framework, designed to empower banking organizations to keep pace and yield enterprise-wide benefits in this fast-moving, groundbreaking field.

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Executive summary

GenAI is set to transform the future of banking

Hype aside, some transformational GenAI innovations are starting to emerge. To realize the benefits of this technology, banks must be flexible and open to reinventing their operations as they manage new technologies and changing regulations.

AI in banking is not new, but it is changing

For a while now, artificial intelligence (AI) hasn't ceased to surprise, with GenAI (GenAI) playing a starring role since early 2023.

Banking leaders have hopped on board, launching numerous pilot projects throughout the year. Initially, banks have (rightly) focused on enhancing productivity with their GenAI pilots. However, this technology also has the potential to significantly transform job functions and customer interactions, potentially leading to entirely new business models.

GenAI brings new opportunities but also new risks. Risk management for GenAI is still in the early stages for financial institutions, and it's complicated by the uncertain future of legal obligations, which vary across geographies. Sooner rather than later, banks will need to get ahead of impending legal changes. Banking institutions must understand their legal responsibilities and redesign their AI risk, governance frameworks and controls accordingly. Those that balance innovation and risk management appropriately will have a competitive advantage in the industry – they will be meeting the expectations of investors, regulators and other stakeholders, and building trust.

Without losing focus on distinguishing between hype and genuine value-adding innovation, the pressing questions for banking institutions now are not only how and where to use GenAI most effectively but also how to adopt and scale GenAI applications throughout their organizations. They will need to take a strategic and methodical approach to integrating GenAI into the institution. This involves transforming the operating model and customer experience, fostering an engaged and curious workforce, securing data and implementing proper guardrails.

Balancing hype, risks and regulatory realities

GenAI demystified: its role in banking

The banking industry stands to be affected most by GenAI, which could contribute to a substantial portion of its revenues.

Banking institutions are increasingly recognizing the vast benefits of GenAI across the entire value chain. This technology has the potential to deliver an additional $200 billion to $340 billion annually, equivalent to 9% to 15% of operating profits, largely from increased productivity.1

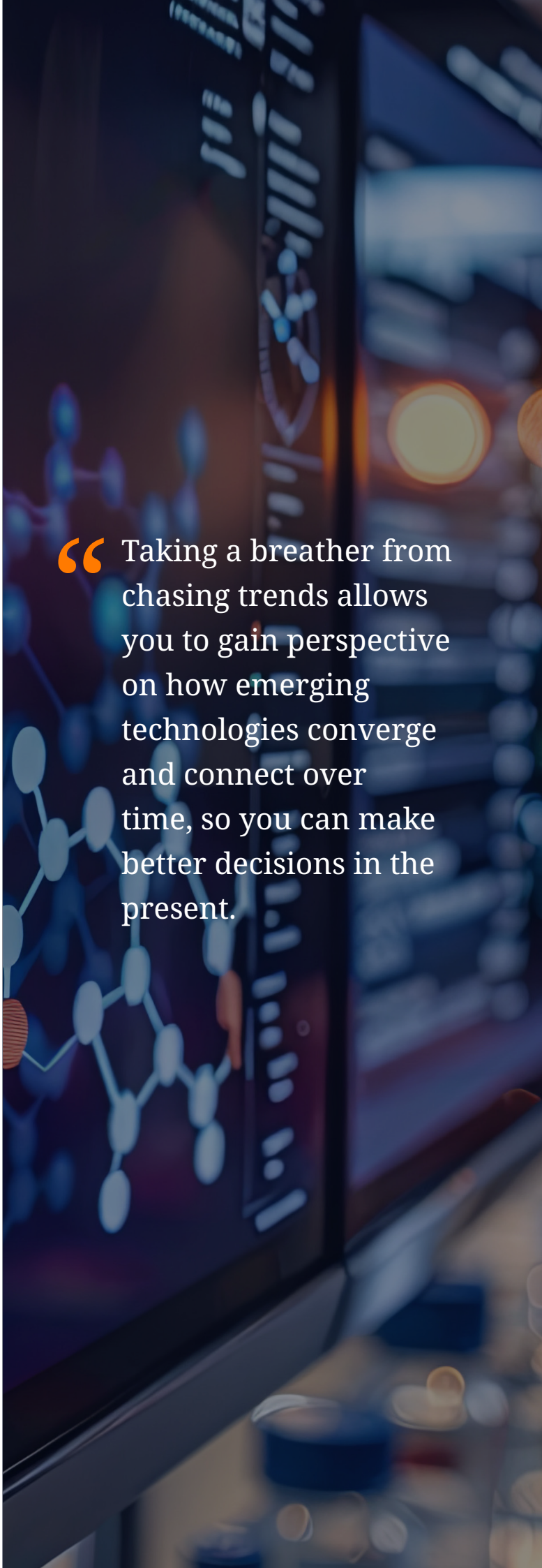
The pressing questions for banking institutions have shifted from how and where to use GenAI most effectively, to how to ensure these applications are fully adopted and scaled within their organizations. Rarely has the pace of evolution of a new technology been so rapid. This has inevitably ignited a sense of urgency within organizations to develop this type of AI.

Cut through the noise, get to the facts

Implementing GenAI in banking institutions is a complex undertaking that involves many tasks. A comprehensive, methodical approach to implementation is therefore essential. Exaggerating the capabilities of GenAI, believing the hype or succumbing to "FOMO" (fear of missing out) pose significant risks to the business.

GenAI does have transformative potential, but it is not the only solution to every banker's problem.

It's essential to pause amid the hype and thoroughly grasp the capabilities of GenAI, as well as the risks and opportunities it presents. Drawing on their experiences with other innovative technologies, banks should evaluate whether GenAI, existing technologies or a blend of both is the most suitable solution for tackling specific challenges and capitalizing on opportunities.



> "Taking a breather from chasing trends allows you to gain perspective on how emerging technologies converge and connect over time, so you can make better decisions in the present.

Risks in AI adoption: proceed with caution

GenAI can revolutionize efficiency in banks and enhance digital banking experiences for accountholders. However, the integration of GenAI poses a dual challenge for banks: the need to stay innovative while remaining risk-averse.

A wrong move now can have costly consequences

Organizations that do not mitigate the risks of GenAI could face fines of up to 7% of their annual global revenues, as proposed by the European Union's (EU) AI Regulation.

Failure to handle AI prudently can result in legal and financial damages and reputational harm. As negative perceptions of AI become more prevalent, public concerns regarding its ethical implications and potential risks are heightened. Addressing these regulatory and ethical concerns is imperative to establish trust and reliability.

Key considerations

Data

AI is only as good as the data it is trained on.

As AI algorithms grow more sophisticated, they require vast data sets, which raises ethical and privacy concerns. Chief among these is bias: models trained on biased data will produce biased outcomes, such as in insurance pricing.

Model

AI often functions as a "black box", generating decisions that are not always auditable or explainable.

This is particularly evident in areas such as fraud detection. Transactions may be flagged as fraudulent without clear justification, thus requiring robust auditing mechanisms and explainability tools.

Governance

AI can exhibit algorithmic bias due to imperfect training data or engineering decisions.

This is often exacerbated by unsupervised autonomous decision-making without human oversight. This highlights the need for strong governance to define clear roles and responsibilities and address skill and expertise gaps, ensuring fairness and accountability in AI deployment.

Intellectual property pitfalls

Training data and model outputs can pose significant intellectual property risks, potentially infringing on copyrighted, trademarked, patented and other legally protected materials.

ESG fallout

Training and operating large AI models, such as GenAI LLMs, requires substantial energy consumption and can result in significant carbon emissions, which may surpass environmental, social, and governance (ESG) commitments [3]. It is paramount for banks to strike a balance between innovation and sustainability, ensuring that their AI initiatives remain aligned with their ESG objectives.

Security: a double-edged sword

While advanced technology can enhance the detection and prediction of cyberattacks, it also introduces new attack vectors with enterprise adoption, raising security concerns.

Navigating the regulatory maze: a compliance journey in AI

Implementing AI in banking operations presents many legal challenges, particularly concerning data management and the regulation of AI-generated content. Given the highly regulated nature of the sector, it is important for firms to understand their obligations in the context of AI regulations.

AI is advancing rapidly, and regulators are under pressure to keep up. The challenge is to understand and control the safety of the technology while preserving its potential benefits.

Specific AI regulations in banking are still evolving. As governments and regulators work to define the appropriate control environment, developing approaches are often fragmented and misaligned. This creates substantial uncertainty about compliance requirements and the liability risks for banks.

Global AI regulation varies by country. The EU has implemented broad AI regulations that are bolstered by existing data protection and cybersecurity laws. The U.S. relies on sector-specific laws and general principles or guidelines. Integrating AI into banking operations requires careful consideration of these evolving regulatory factors.

Global leaders in AI regulation[3]

01 United Kingdom

The UK government's policy paper, "A pro-innovation approach to AI regulation", outlines a cross-sector framework for AI regulation based on five principles: safety, transparency, fairness, accountability and contestability. It balances innovation support with existing sector-specific laws. In April 2024, the Financial Conduct Authority (FCA), Prudential Regulation Authority (PRA) and the Bank of England published their AI regulatory strategies in response to the paper.

02 European Union

The EU AI Act, the first risk-based regulation for all AI systems that are developed, distributed and imported in the EU market, will have a two-year grace period after its adoption in June 2024. Alongside the AI Act, other important legislation in the realm of AI is in the pipeline. The EU's data strategy, which includes the Data Act and Data Governance Act, also shapes the AI landscape in the European insurance sector.

03 United States

The US has developed legislation for specific AI use cases, with various federal guidelines. There are also some insurance-sector-specific regulations per state (e.g. Colorado). In 2022, the White House released a nonbinding AI Bill of Rights to guide AI system design and deployment. The 2023 Executive Order on the Safe, Secure and Trustworthy Development and Use of Artificial Intelligence directs agencies to develop specific AI regulations and interventions. Major players in U.S. AI standards include the National Institute of Standards and Technology (NIST) and the Federal Trade Commission (FTC).

04 China

Since 2022 China has enforced three key measures that have influenced global standards: the Internet Information Service Algorithmic Recommendation Management Provisions (2021), the Internet Information Service Deep Synthesis Management Provisions (2022) and the Measures for the Management of Generative Artificial Intelligence Services (2023)

05 Singapore

Singapore focuses on AI principles rather than specific regulations for insurance. The Monetary Authority of Singapore (MAS) created the FEAT principles (fairness, ethics, accountability and transparency) in 2018 to guide responsible AI use. The Veritas consortium, formed by MAS, helps to implement these principles and develops tools to assess AI fairness. The insurance industry has adopted FEAT well, showing effective collaboration with regulators. MAS also aims for international cooperation on AI guidelines for consistent compliance. Building on this, in May 2024 the Singapore government released an expanded framework that incorporates emerging principles, concerns and technological developments in GenAI.

Acknowledging common ground

Although different jurisdictions adopt regulatory strategies aligned with their cultural and legislative frameworks, there are patterns and common areas that help us understand AI regulation.

Core principles

AI regulations align with the core principles for AI as defined by the Organisation for Economic Co-operation and Development (OECD) and endorsed by the G202. These principles include: sustainable development; human-centered values and fairness; transparency; accountability; robustness; security and risk management.

Sector-specific

Because of the diversity of AI use cases, some jurisdictions are emphasizing the need for sector-specific rules to complement general AI regulations. National competent authorities (NCAs) must ensure that financial institutions comply with requirements and standards relating to AI governance and risk management.

Private sector collaboration

AI regulatory sandboxes are pivotal in the ongoing discussions about AI regulation. These sandboxes enable the private sector to collaborate with policymakers to develop rules that promote safe and ethical AI. They also provide a framework to consider the implications of higher-risk AI innovations, where closer oversight is necessary.

International collaboration

Countries are increasingly joining forces scale to address the safety and security risks posed by AI systems. Through multinational alliances, joint research initiatives and coordinated policy efforts, nations are working together to create a unified approach to AI regulation that promotes ethical standards, transparency and accountability

Chasing a moving target

Analyze and monitor in-house and external activities

Organizations need to broaden their focus beyond individual regulatory efforts and examine overarching trends affecting the financial sector. For instance, banks prioritize data privacy, security, accuracy and reliability when integrating GenAI, driven by concerns about hallucination and bias in LLMs and the abundance of sensitive banking data. At the same time, many organizations underestimate the variety of systems affected by diverse regulations.

Maintaining a comprehensive AI inventory is critical to ensuring full compliance and risk management.

Understand and act accordingly

Companies must grasp their legal obligations, establish compliance policies and address emerging ethical concerns. In finance, where AI is prevalent, supervisors must assess rule adequacy. For example, under the EU AI Act, strict requirements apply to high-risk systems like AI-based credit assessments and anti-money-laundering (AML) procedures. There are also new requirements for general-purpose AI systems, including GenAI applications.

Strong AI risk management, with clear governance and controls from the board to operations, is crucial. Investing in AI governance today can save significant effort on regulatory corrections in the future.

Establish a responsible AI ecosystem

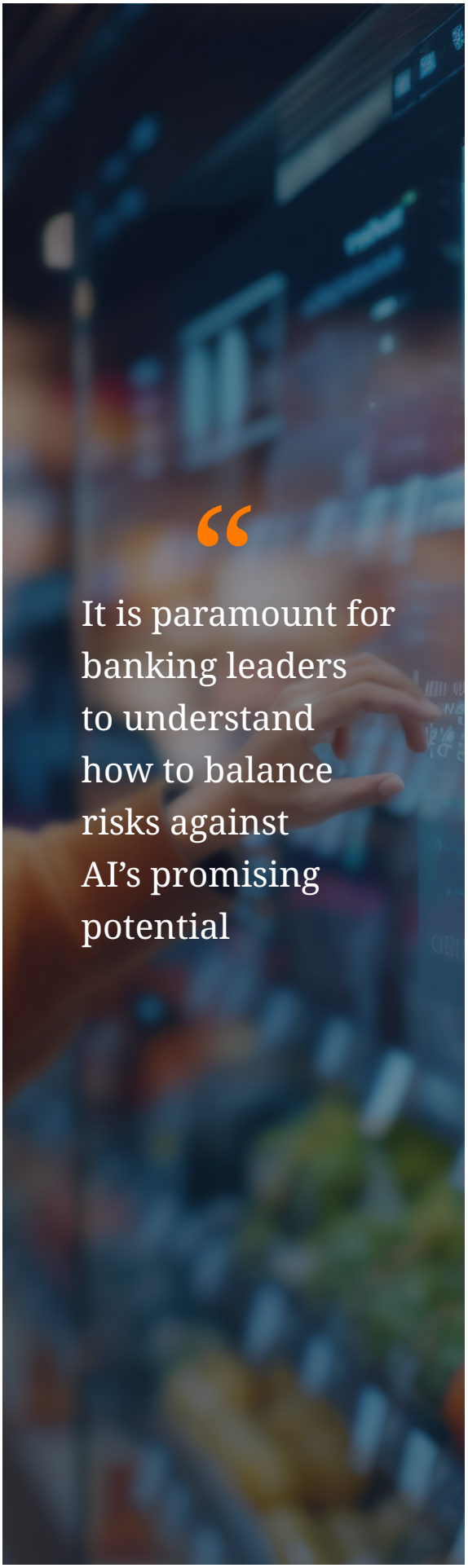
Recognizing that legality does not always align with ethics underscores the importance of prioritizing ethical considerations in AI.

To create a culture of responsible AI use, organizations should consider:

- Establishing an ethics board to provide guidance
- Assigning clear accountability for managing AI risks
- Integrating ethical considerations into the lifecycle of products and services
- Implementing comprehensive training and awareness programs for employees

Embrace simplicity

The path to responsible AI often becomes complex – but it doesn't have to be. While embracing simplicity may seem paradoxical, it can result in AI systems that are more transparent and therefore easier to understand and govern. This approach ensures alignment with ethical standards and societal values. It also facilitates identifying and rectifying errors and biases, which enhances accountability.



From POC to enterprise-wide AI implementation

Throughout 2023, nearly every banking firm focused on identifying use cases and conducting proofs of concept (POCs). In 2024, they should transition from experimenting to systematically pursuing value across the entire enterprise.

Unlocking the full value of GenAI requires more than just increased investment. Banks, insurers and capital markets firms must fundamentally reexamine their business operations and define a clear strategy for integrating GenAI into their processes. They need to determine whether GenAI will fundamentally transform their core business areas or if it will serve mainly as a tool for boosting revenue and enhancing productivity.

A holistic approach scaling of GenAI

Systematic strategy

Implementing GenAI to transform operating models, customer experiences and workforces requires a systematic strategy that permeates the entire value chain, and a multiyear program fostering ongoing reinvention.

Banks need to evaluate the value and risk of use cases to develop a long-term roadmap. Upgrading their digital core is essential. They must also rethink the nature and execution of work, and the implications this has for skills, roles and organizational structure.

Framework for developing use cases

By reviewing lessons learned from previous implementations of innovative technology, and taking into account the organization's data management capabilities and talent, banks can create a robust framework for use case development.

This can be coordinated by an operating model that translates strategy into action. Establishing enterprise governance and controls for both the internal and external use of GenAI, along with a comprehensive monitoring and oversight approach, will be crucial for assessing the value generated by use cases while effectively managing associated risks.

Reusable framework

Reusable frameworks are like sturdy pillars. Once a foundational structure of reusable frameworks has been established, the crucial question is whether it can be deployed across different departments, enabling horizontal integration throughout the organization where it proves beneficial.

Achieving sustained value beyond initial POCs requires strong capabilities across several dimensions: **people, technology and data**. An **operational model** is essential to align all efforts to common goals and ensure seamless integration across the organization. And all these efforts must be guided by a comprehensive **risk management and regulatory oversight framework.**

By addressing these dimensions holistically, organizations can move beyond initial successes to realize sustainable, long-term value from their AI investments.

1 To stay competitive, banks must bring their employees along on the AI journey.

Many employees view GenAI with apprehension., and leaders must address their concerns directly. By prioritizing transparency, they can change perceptions and encourage the thoughtful incorporation of AI into the business.

AI literacy pathways help to create an engaged and informed workforce, while comprehensive resource allocation approaches and upskilling programs help to answer key questions about the impact of GenAI on the talent model and workforce planning.

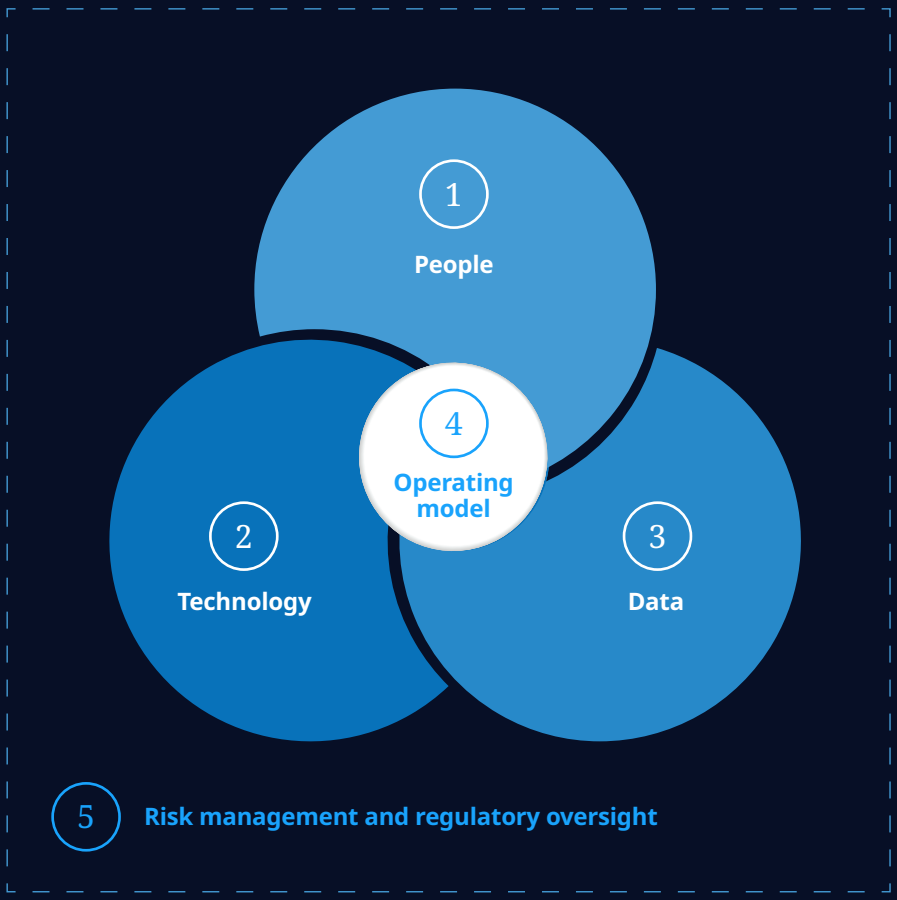
2 A crucial part of this strategy involves selecting from a growing array of increasingly sophisticated and specialized AI models.

A **"model garden"** approach allows organizations to experiment with and capitalize on various models for different purposes, fostering a composable ecosystem. Upgrading the digital core is essential, as AI technology cannot perform optimally without a flexible IT architecture based on the cloud and a modern data foundation.

At the same time, understanding the vital role of the cloud and its associated costs is key: this includes having the necessary compute power and making data securely accessible to preferred models.

3 One of the most common missteps in AI implementation is neglecting data management.

The unstructured nature and the size of many data sets add complexity to AI integration. Banks therefore need to adapt their data strategies and architectures to address quality issues and uncover insights (such as built-in vector databases and data processing pipelines).



4 An operating model is at the heart of AI implementation. Essentially, it's a blueprint for how a business puts strategy into action, taking into account its:

- Structure (roles and responsibilities, governance and decision-making)
- Processes (performance management, systems and technology)
- People (skills, culture and informal networks)

Banking institutions that use GenAI successfully AI have made a concerted effort to produce a tailored operating model that accounts for the technology's nuances and risks, rather than trying to incorporate GenAI into an existing operating model.

In the banking services industry, institutions employing a centrally led GenAI operating model are achieving the greatest benefits.

5 A risk management strategy is critical, and the responsible use of GenAI must be integrated into the scale-up roadmap from the beginning.

Developing and deploying AI systems ethically requires a nuanced approach that combines robust management practices with an understanding of both technological and human factors.

Introducing subject matter experts into the process is key to mitigating risks such as GenAI hallucinations, where models produce illogical or inaccurate outputs.

Realizing value from GenAI implementation

The ongoing assessment and monitoring of the value and costs associated with GenAI adoption are essential for reaping anticipated benefits and managing potential risks.

A well-defined GenAI strategy has the potential to profoundly influence shareholder value by opening new and transformative opportunities aligned with enterprise objectives. These include revenue growth, enhanced customer engagement, operational cost reduction and increased productivity.

Charting success metrics for AI

Determining how to measure the success of AI initiatives remains a significant challenge for many organizations. While traditional metrics such as project volume and completed tasks provide valuable insights, they often fall short in capturing the true impact of AI on business outcomes. Organizations that have adopted AI successfully have taken a different approach, prioritizing business metrics over financial ones and employing tailored measures aligned with specific use cases.4

Business metrics include those focused on:

- Business growth
- Customer success
- Cost efficiency
- Revenue growth
- Time to market
- SLA compliance

Identifying these metrics early is essential to the success of AI initiatives. By defining clear objectives and success criteria up-front, organizations can track progress and make timely adjustments to achieve desired outcomes.

In addition to traditional success metrics, benchmarking both internally and externally can provide valuable insights into the effectiveness of AI initiatives and identify areas for improvement.

> "Organizations where the AI team is involved in defining success metrics are 50% more likely to strategically leverage AI compared to those where the team is not involved.[4]

An adoption framework for scaling GenAI in banking

Key considerations for scaling GenAI in the banking industry

Regulatory compliance and ethical responsibility

- Ensuring integrity and compliance with AI regulatory standards.
- Developing transparent AI decision-making systems to guarantee credibility and trust among various stakeholders.
- Ensuring the transparency and interpretability of AI-driven-process.
- Regularly updating solutions to comply with evolving AI regulations.

Culture and workforce

- Securing up-front senior leadership sponsorship and accountability for AI adoption.
- Fostering a culture that encourages employees to embrace and trust the changes brought by GenAI.
- Aligning leadership, business and non-business units to the use cases and problems addressed by GenAI, setting clear targets.
- Addressing skills gaps by recognizing the scarcity of highly skilled professionals, both in the market and in the organization, who possess knowledge of data, AI and GenAI technologies.
- \Prioritizing the education of the workforce and their ongoing training on AI and GenAI technologies.

Integrating AI into strategy

- Embedding the "seed" of AI into the core of banking across key areas such as operations, business, technical, product and service innovation, as well as culture and people.
- Aligning business problems with the areas that GenAI aims to solve.
- Investing in key enablers like code and operational assets to deploy AI across business functions.

Transformation and operating model

- Beyond initial POCs, scaling GenAI within an organization requires building strong capabilities across many dimensions of banking operations. This affects numerous areas, including the workforce and key stakeholders.
- Achieving sustainable value requires creating a transformation model with governance and robust change management. This model should include clear metrics for the scaling process and technology adoption, including monitoring by strategic areas.

Infrastructure, data governance and security

- Seamlessly integrating GenAI with existing IT infrastructure is easier said than done. GenAI requires a robust infrastructure and, often, substantial computational resources to support a complex and time-consuming process to process the data.
- GenAI systems often require large amounts of data, including sensitive customer information, necessitating a high level of data privacy and security.
- Data governance and security measures must be enhanced to effectively train, test and refine AI models.

All these challenges are interconnected and require alignment across the enterprise for the successful implementation and scaling of GenAI in banking.

In addition to addressing these general challenges, banks must navigate unique hurdles within specific operational verticals, each of which presents distinct challenges that require tailored strategies and solutions.

Addressing financial crime challenges in banking with GenAI

Financial institutions are required to meticulously monitor and manage the entire money lifecycle to detect, mitigate, control and report on potential financial crime incidents.

Investment in cybersecurity has become paramount for operational risk management, particularly given the rising sophistication and frequency of cyberthreats.

Financial crimes such as money laundering, fraud, tax evasion, corruption and identity theft pose significant risks, leading to substantial losses in the financial system.5 To thwart cyberattacks and secure their data, banks have increased investments in new technologies and solutions significantly.

GenAI can boost cybersecurity by swiftly identifying breaches and enhancing efficiency in preventing financial crimes. However, the implementation and scaling of GenAI to combat financial crimes pose several challenges.

These include:

- **Linking data quality and security to data storage and access:** Many banks still contend with vast amounts of unstructured data, which complicates data -source management, permissions and security classifications. In the event of a cyberattack, identifying and understanding the data impacts and closing security breaches is an arduous task. This complexity increases the risk of leaving some breaches unaddressed, resulting in a significant level of uncertainty in data security management.
- **Transparency and regulation:** GenAI models, characterized by their layers of abstraction, often lack transparency – a critical issue in the highly regulated banking sector. As banks adopt GenAI, they must ensure regulatory rules are clearly decoupled from these abstract layers to avoid challenges in code maintenance and compliance.
- **Accuracy of information:** GenAI systems rely on data sources and training models, which can sometimes produce inaccurate information, leading to misguided decisions.

> "More than 60% of consumers are reported to be uninformed of the underlying information security concerns involved in banking operations and transactions, according to data gathered from studies. Additionally, about 55% of consumers are unable to exercise extra caution when using online banking services.[6]

- **Intellectual property and bias:** There is a risk that GenAI systems could infringe upon intellectual property rights or exhibit inherent biases, impacting on fairness and compliance.
- **Cybersecurity risks:** The integration of chatbots and other AI-driven assistants can introduce new vulnerabilities for cybercriminals to exploit.

Addressing these challenges is crucial for financial institutions aiming to leverage GenAI effectively while maintaining robust security and compliance standards. The journey to use GenAI to combat financial crimes requires meticulous planning, strategic investment, and a clear understanding of the associated risks and opportunities.

Navigating payment ecosystems: challenges in scaling GenAI

Banks specializing in payment services face several challenges in scaling their business, including:

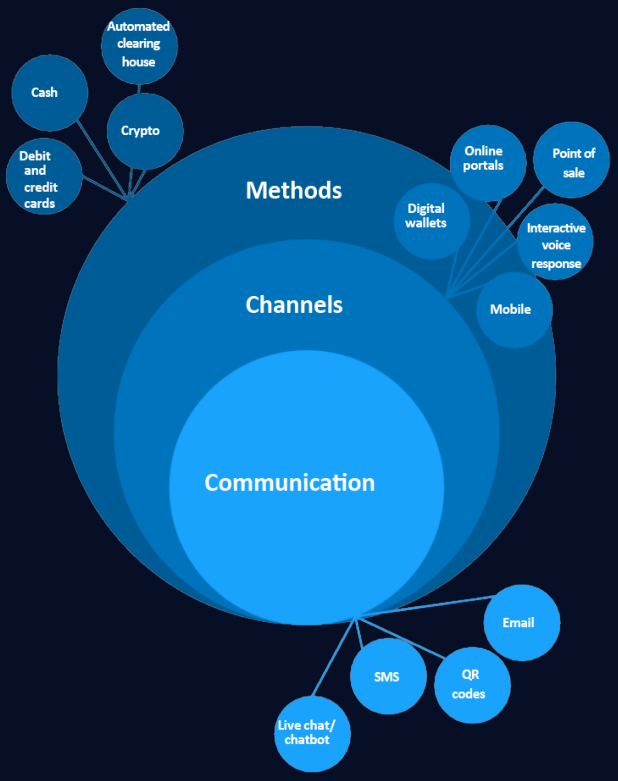
- Seeking new, more disruptive solutions for payment methods which can positively impact their customers
- Working with multiple platforms to support cross-border transactions and integrating with their solutions
- Finding alternatives to expand their market by partnering with other businesses, such as integrating their platform with the payment systems of retail partners

Many of these platforms and solutions have been developed and are evolving using different technologies, architectures, databases and languages. These solutions also vary in levels of data governance and maturity, each with its own roadmap aligned with different business strategies. The complexity of influencing the adoption of any new technology or concept increases because most banks do not own these solutions; they are partners.

For payment banks, navigating these complex ecosystems poses a formidable challenge in implementing GenAI at scale. The multitude of platforms and technologies involved makes it even more difficult to implement GenAI in a structured manner.

Because it's mostly external partners that own these solutions, payment banks face limitations in defining the adoption of GenAI within these frameworks. The inherent complexities of these collaborative ecosystems underscores the need for a strategic approach that aligns GenAI initiatives with overarching business strategies.

Payments ecosystem



Modernization frontier: confronting hurdles in scaling GenAI

Scaling GenAI technology in banking organizations presents several hurdles. These involve adapting the technology and managing the complexities intrinsic to different workflows, sectors and regions.

Examples of these challenges include:

- **Technology integration and adapting legacy systems:** The use of GenAI is intricately linked with the ongoing challenge of managing legacy systems and the imperative to integrate modern solutions.
- **Adapting legacy systems:** Many banks still rely heavily on legacy systems. These would have to be adapted to process large volumes of data efficiently and ensure compatibility, scalability and seamless integration. The scaling of GenAI is contingent on the willingness of banks to modernize their legacy solutions.

- **Optimizing make-or-buy decisions for AI and GenAI solutions:** The dilemma of whether to build or buy solutions is heightened when considering how to integrate of GenAI technology into banking modernization efforts. This challenge is compounded by inherent limitations in knowledge, capabilities and the complexity of system integration.
- **Scalable AI infrastructure:** As the adoption of GenAI expands internally, banks will need infrastructure and data capabilities that enable high compute capacity, efficient data analysis and fast processing, among others. Evaluating these infrastructure requirements accurately, without overestimating, and charting a clear path for investment is a formidable challenge for banks.
- **Scalable platforms:** Effective data governance coupled with robust machine learning operations (MLOps) architectures are indispensable for managing the complexity that arises as AI applications proliferate across banking systems. Banks must be equipped to design, evolve and support AI systems with intricate software dependencies, encompassing libraries, frameworks and other critical components.
- **Cost management:** Given the high cost of implementing and maintaining AI and GenAI systems, prudent budget management is vital. This entails strategic resource allocation and planning for future scalability.
- **Embracing innovation:** Recognizing that AI permeates every facet of the business, banks must undergo holistic enterprise transformation. Balancing the drive for innovation with the imperative to maintain operational stability is paramount. Managing this equilibrium effectively is central to success.

By understanding and addressing these challenges, banks can navigate the complexities of scaling GenAI and unlock its full potential for sustainable, data-driven innovation and growth.

A strategic framework for scaling GenAI in banking

GenAI promises to redefine banking operations, aligning innovation with core strategic goals.

Before starting to scale GenAI, banks need a comprehensive understanding of the spectrum of AI and GenAI technologies in enterprise applications.

1

Automation and analytics

Automation **is a way to "unlock" data** so it can be used to make better decisions.

Analytics is more than reports and dashboards: it's a process to **identify insights and diagnose root causes.**

2

Data science

Data science includes a wide variety of mathematical models that can **decompose** problems, **predict** behavior and **prescribe** the next best action to take.

3

Machine learning (ML)

ML is a subset of AI in which algorithms are **trained to improve their performance** as they are exposed to more data. It is particularly effective at **classifying images and speech recognition.**

4

GenAI

GenAI is a class of models that can **create new content** (text, images, music) based on data it has "seen" before in training datasets.

5

Artificial general intelligence (AGI)*

AGI refers to highly autonomous systems that can **comprehend and reason** in a way that is indistinguishable from that of humans.

Addressing critical questions7 will guide a comprehensive understanding of banking needs constraints, and capabilities across several key areas:

Strategic alignment and core competencies

- Consider how GenAI initiatives align with your bank's long-term strategic goals and business objectives.
- Evaluate whether your in-house expertise and existing technologies can support GenAI implementation effectively.

Costs and timeframes

- Examine cost impacts, including the budget for GenAI initiatives and the long-term costs of building or buying solutions.
- Assess the timeframes for deploying GenAI solutions and compare the development time of custom solutions with off-the-shelf implementations.
- Evaluate the integration with existing systems and the potential technical challenges involved, ensuring the chosen approach is scalable and flexible enough to accommodate future growth.

Data privacy and security

- Determine data privacy and security requirements to ensure robust security in GenAI usage.
- Adjust policies to ensure compliance.
- Evaluate whether in-house solutions provide better control over data privacy and security.

* AGI is only a theoretical concept right now.

NTT DATA's GenAI banking framework

Accelerate the adoption and scaling of GenAI in banking

Our comprehensive framework guides and supports banks in reviewing and addressing myriad challenges discussed to ensure the successful integration of GenAI.

The framework focuses on:

Driving transformation

- AI revolutionizes customer relationships and streamlines processes.
- AI solutions create personalized experiences, anticipating customer needs for enhanced satisfaction.

Ensuring data quality and governance

- We place a strategic emphasis on data and AI governance.
- Solutions prioritize the quality and integrity of data and AI outputs.

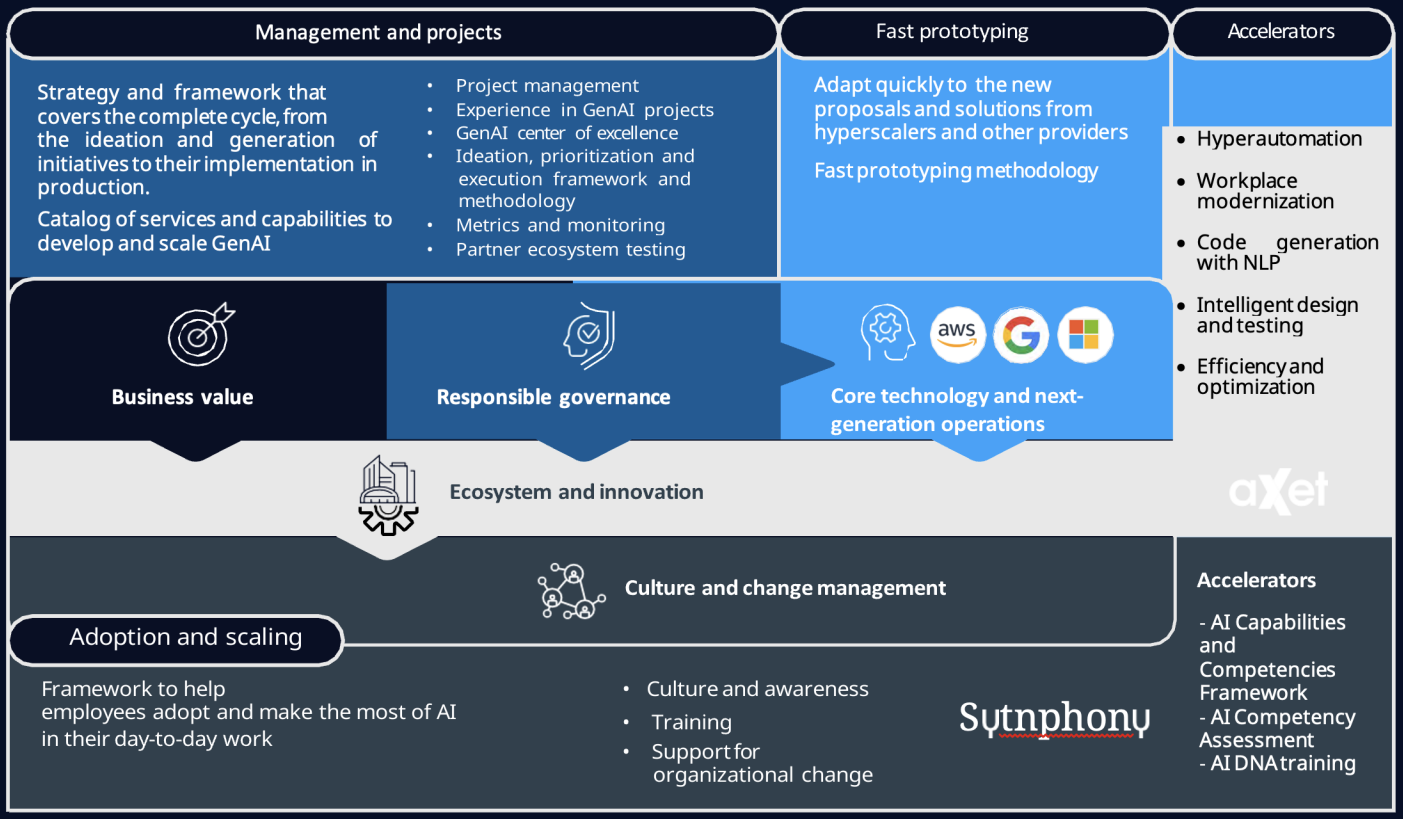
Guaranteeing operational efficiency

- AI enhances operational efficiency, allowing employees to concentrate on high-value tasks.
- Our strategies reinvent workflows, optimize resource allocation and cultivate talent and skills.

Addressing risks

- We acknowledge the risks associated with AI adoption and implement measures to address them.
- Our operations ensure fairness and data-driven results.

Our framework focuses on the bank's business and challenges. It helps the bank to better understand GenAI, and take abstract concepts to **concrete applications, moving from vision to execution with appropriate governance.**



Key components of NTT DATA's GenAI banking framework

Business value

- Develop a comprehensive and responsible strategy and roadmap, identifying value-adding GenAI applications.
- Align initiatives with the business objectives to ensure integrity and compliance with regulations.
- Prioritize initiatives and maximize the value of AI and GenAI technologies.

Core technology and next-generation operations

- Define a reference model and architecture to address AI business opportunities by accelerating AI experimentation, development, deployment and governance across the organization.
- Include prototype and demonstration labs to accelerate POCs and transition successfully from PoC to production.
- Use key assets and technology accelerators.

Culture and change management

- Adopt and use AI and GenAI effectively.
- Apply a change management framework to integrate AI into the bank's culture.
- Raise awareness and ensure all employees understand their role in AI transformation

Through rigorous monitoring and a governance structure that addresses user impact, cultural and technological challenges and aligns with the enterprise strategy, banks can transition from promising solutions to fully realized and impactful implementations.

Responsible governance

- Navigate the inherent complexity of the bank's current expansive landscape with a collaborative approach.
- Implement a robust and adaptable governance model to define and orchestrate all actors, data, AI models and tools.
- Apply common standards, prioritization models, use case metrics and power accelerators to support decision-making and accelerate time to value.

Ecosystem and innovation (GenAI lab)

- Foster a collaborative innovation ecosystem to discover market opportunities and leverage innovative AI-driven products, services and initiatives.
- Maximize AI and GenAI capabilities through collaborative creation and strategic alignment with market insights, crafting a customized AI roadmap that prioritizes key initiatives and identifies precise opportunities for advancement.

Practical use cases beyond POCs

Banks should focus on implementing practical AI and GenAI use cases that go beyond proofs of concept to deliver genuine business value.

Examples include:

- Automating customer service with AI chatbots
- Enhancing credit scoring with machine learning algorithms
- Predictive analytics for financial forecasting

The rise of AI and ML in financial institutions is driving the growth of applications, with cloud infrastructure enabling easy scalability to manage peak loads and accommodate future growth. This accessibility, minimizing up-front investments, is revolutionizing the industry, although challenges such as data privacy and ethical algorithms must be addressed. As technology advances, AI and ML are set to play an even greater role in shaping the future of financial services, as evidenced by their current deployment and benefits in the industry.

> "We partner with banking clients to identify the right strategy, talent and technology to harness the power of GenAI, transforming operations and reimagining future business models.

5 ways financial institutions are already deploying and benefiting from AI and ML

Cost savings

AI can contribute to significant cost savings and operational efficiency product recommendations personalized marketing campaigns, supply chain optimization, customer service automation, fraud detection and demand forecasting, to name a few.

These initiatives result in substantial savings in human capital, which can be redirected to customer-centric product innovation.

AI can also optimize **data center cooling and energy usage** for on-premises data centers, reducing operational costs.

For businesses using cloud infrastructure, leveraging managed services that apply AI and ML-based workload analytics for **compute optimization** can reduce operating costs by 25% to 30%.

JPMorgan Chase[7]

JPMorgan Chase uses machine learning to improve trading strategies and reduce operational costs. The bank has implemented advanced AI systems to analyze vast amounts of data for market insights, optimize trading decisions and manage risk more effectively. This technological integration has led to enhanced efficiency, reduced human error and enabled significant cost reductions in their trading operations.

Risk and compliance

Benefits from AI & ML

To meet stringent regulatory requirements, banks must review and document interactions and correspondence between transaction parties. AI-powered computer vision techniques eliminate human error and automate responses, ensuring compliance with consent orders, matters requiring attention (MRAs) and matters requiring immediate attention (MRIAs).

By analyzing historical data and leveraging ML algorithms, banks can proactively identify and mitigate potential risks.

The cloud's scalability and computing power enable the real-time processing and analysis of vast data volumes, empowering organizations to make informed decisions and maintain regulatory compliance. This not only saves time and resources but also reduces the risk of fines, business disruption and revenue loss due to noncompliance. **Automating the compliance process allows organizations to meet regulatory obligations more effectively and efficiently.**

Data analysis and data quality

Goldman Sachs[8]

Goldman Sachs uses AI for credit risk analysis. They've developed machine learning models that can quickly analyze the creditworthiness of potential borrowers, accelerating the decision-making process and reducing the costs associated with risk assessment.

Machine learning techniques are being used to uncover insights from big data. Techniques like classification, clustering and regression help in the discovery of good and bad data. They can also deploy automatic data-correction techniques. **These emerging use cases stand to be of tremendous value to financial analysts who depend on high-quality data to derive insights.**

Citadel[9]

Citadel uses advanced machine learning algorithms in its quantitative strategies to analyze massive volumes of market data. By employing sophisticated models that can detect subtle patterns and correlations that humans might miss, Citadel enhances the accuracy and quality of its trading strategies. This leads to better risk-adjusted returns and a competitive advantage in high-frequency trading environments.

Personalization and customer experience

AI is boosting personalization and customer experience in the financial services industry. **It enables the design of tailored financial products and advice based on individual customer needs,** such as customized investment strategies and personalized recommendations. Robo-advisers leverage AI to provide automated, data-driven advice on investing and wealth management, predicting customer preferences.

By **optimizing marketing campaigns using AI**, leaders can analyze market conditions and historical data to offer personalized investment strategies. Chatbots and virtual assistants transform customer service by providing real-time, personalized recommendations and financial advice. These AI-powered assistants **analyze customer data such as spending habits and financial goals, using it to streamline the customer service process,** thereby enhancing satisfaction and loyalty. Human intervention is minimized, improving efficiency.

Morgan Stanley[10]

Process automation

Process automation offers banks and other financial institutions the opportunity to enhance productivity and reduce operational costs across various business domains. By automating time-consuming tasks like input data validation, document processing and workflow orchestration, organizations can streamline their operations.

Goldman Sachs[11]

Goldman Sachs has significantly automated its trading processes, particularly in its foreign-exchange and fixed-income markets. By implementing machine learning algorithms, the bank has automated the execution of trades, a task that previously required manual intervention. This automation not only speeds up transaction times but also increases the accuracy and efficiency of trades, reducing slippage and operational costs.

Key takeaways

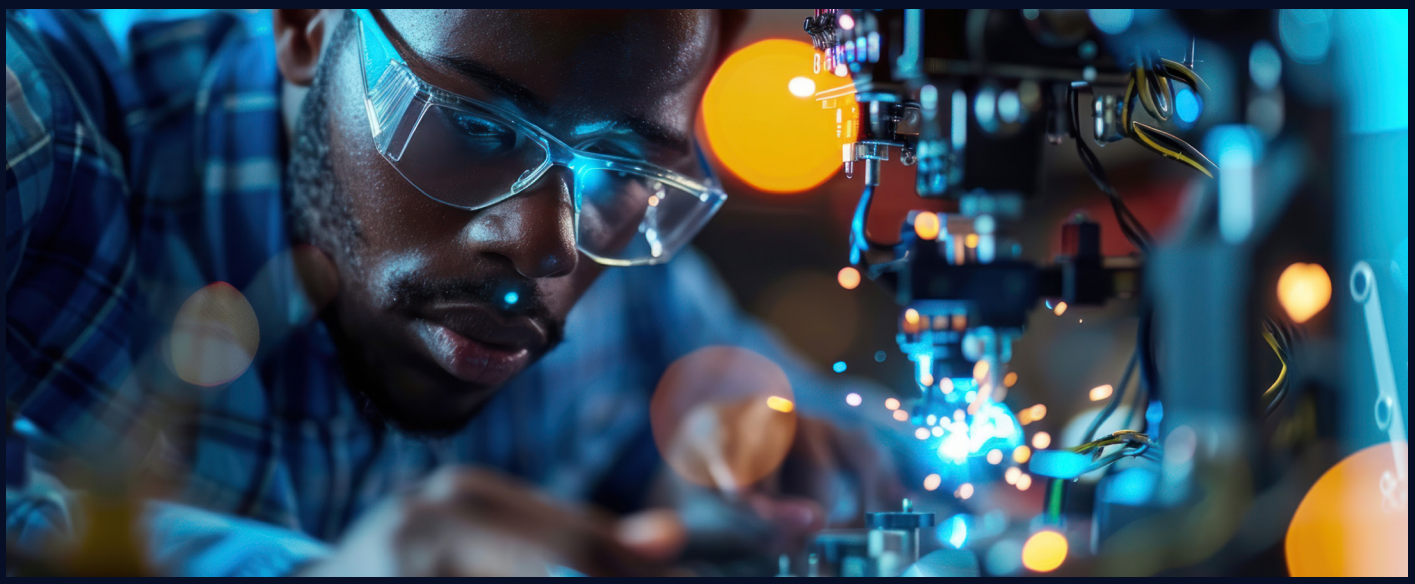
These examples demonstrate how major financial institutions are leveraging AI and automation technologies to transform traditional processes and improve their efficiency, accuracy and ability to scale operations in the capital markets.

As the capital markets industry continues to evolve under the influence of AI, ML and GenAI, the benefits of these technologies are becoming clear: they are driving growth and cost efficiencies, significantly enhancing the quality of data analysis, personalizing customer experiences and automating routine processes. Institutions like JPMorgan Chase, Goldman Sachs and Morgan Stanley are leading examples of how leveraging AI can result in superior risk management, more informed decision-making and increased operational efficiency.

The adoption of AI technologies in capital markets is setting a new standard for how transactions are conducted, risks are managed and clients are served.

Ongoing advancements in AI promise to unlock further potential, making it crucial for industry players to continuously innovate and adapt if they are to meet market demands. In future, AI is likely to be integral to every facet of capital markets, driving a transformation that is both profound and essential for the next era of financial services.

> "45% of banks have already integrated generative AI technologies into their technology stacks, while an additional 30% are exploring its implementation.[12]



Conclusion

Shedding light on GenAI

In 2024, global banking trends are centered on heightened digitalization, the promotion of sustainable and ethical banking practices, strengthened cybersecurity measures, enhanced customer data privacy, regulatory compliance and the refinement of customer-centric financial services.

Integrating these trends with cutting-edge technologies like AI is crucial.

Unlike any other previous technological innovation, GenAI has the potential to transform every aspect of business. However, it is essential to move beyond the hype and critically evaluate what GenAI is, what its capabilities are, and the associated risks and opportunities. It is not the panacea for every banking challenge.

On the lookout for regulation

The responsible use of GenAI must be integrated into the scale-up roadmap from the outset. Banks face distinct regulatory challenges, including model interpretability and unbiased decision-making, which must be thoroughly addressed before scaling any application.

In light of these hurdles, banks must stay informed about evolving regulations and be prepared to adapt their AI strategies accordingly. By prioritizing responsible AI use, banks can mitigate risks, enhance compliance and build trust with regulators and customers alike.

Setting dimensions for strategic scaling

Banks must transition from experimental mode to systematically pursuing value across the enterprise. Here, extensive preparatory work is indispensable.

Achieving sustained value from GenAI implementation demands a multifaceted approach, the right skills and strong capabilities in technology and data. Crucially, this requires establishing an operational model to coordinate efforts effectively and implementing robust risk management and regulatory oversight mechanisms.'

An essential add-on is knowing how to measure the impact and value of AI. By implementing robust metrics and evaluation mechanisms, organizations can identify areas for improvement and maximize the value derived from GenAI initiatives.

Focusing on transformation

It's imperative for banking leaders to recognize GenAI as more than just a cost or productivity enhancer – it is also a catalyst for profound growth and transformation.

Leaders must proactively align AI initiatives with broader business goals, fostering a culture of innovation and agility. By leveraging this technology as a transformative tool, banks can unlock new revenue streams, enhance their competitive advantage and ensure their relevance and resilience well into the future.

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07, 08, 09, 10, 11 The above examples are compiled by the public statements, disclosures and strategies shared by JP Morgan Chase, Goldman Sachs, Morgan Stanely and Citadel respectively which are aggregated by NTT BFS and research team to demonstrate how major financial institutions are leveraging AI and automation technologies to transform traditional processes, enhancing efficiency, accuracy, and the ability to scale operations in the capital markets.

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> "We are still in the early stages of adopting GenAI. This groundbreaking trend has yet to fully take root within organizations, and the truly transformational use cases for the financial industry are just beginning to emerge.
>
> **Carlos Estaca Martínez**, Chief Banking Strategy Officer


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