NTT DATA

Reimagining GenAI's role in banking

Bridging the gap between hype and reality

Contents

Executive summary

Generative AI is pioneering the future of banking

As banks embark on this journey, adaptability and reinvention are paramount to reap the benefits in the ever-evolving terrain of technological innovations and regulatory shifts

AI in banking is not new, but it is changing

For a while now, the realm of Artificial Intelligence (AI) hasn't ceased to surprise, with Generative AI (GenAI) starring the scene since the beginning of 2023. Banking leaders have hopped onboard, launching numerous pilot projects throughout the year. Initially, banks have rightly focused on enhancing productivity with their GenAI pilots. However, this technology has the potential to significantly transform job functions and customer interactions, potentially leading to entirely new business models.

Gen AI brings new opportunities but also entails new risks. Risk management for GenAI is still in the early stages for financial institutions, melded by the uncertain future of legal obligations, which may vary across geographies. Nevertheless, sooner rather than later, banks will need to activate some no-regret moves to get ahead of impending legal changes. Banking institutions must understand their legal responsibilities and accordingly redesign their AI risk, governance frameworks and controls, resulting in a dual approach requiring a delicate balance between innovation and risk management. If handled correctly, it positions organizations at a competitive advantage in the rapidly evolving regulatory landscape. Ultimately, to meet the expectations of investors, regulators, and other stakeholders, equals trust.

Without losing focus on distinguishing between buzzwords or '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 ensure the applications are fully adopted and scaled within their organizations. A methodical and strategic approach is necessary to successfully integrate GenAI into banking institutions. This involves transforming the operating model and customer experience, fostering an engaged and curious workforce, securing data, and implementing proper guardrails. This whitepaper presents NTT DATA proposed GenAI adoption framework, designed to empower banking organizations not only to keep pace but to yield enterprise-wide AI in this fast-moving, groundbreaking field.

Hype aside, some transformational GenAI innovations are starting to emerge.

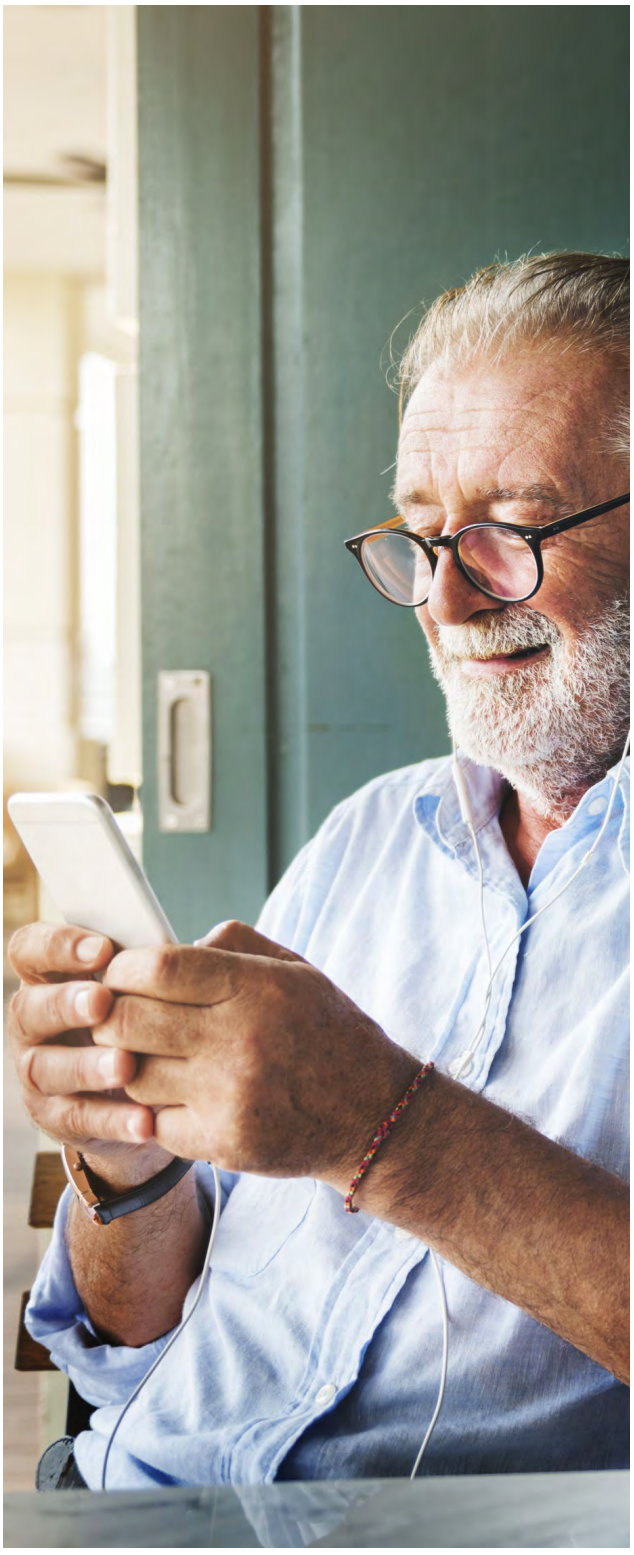
Chapter 1: Balancing hype, risks and regulatory realities

GenAI demystified: a sneak peek at its role in banking

The banking industry stands to experience one of the most significant impacts from generative AI, potentially transforming a substantial percentage 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 percent of operating profits, largely from increased productivity.[1]

The pressing questions for banking institutions have shifted from how and where to use generative AI 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, resulting in a frenzied race to develop this type of AI.



Differencing noise from music

In implementing GenAI into banking institutions, a comprehensive and orderly approach is paramount, considering the complexity and breadth of tasks involved. Correct implementation is intricately linked to avoiding the exaggeration of its capabilities or falling prey to the 'hype' phenomenon, which can pose significant risks to business practices.

To begin, it's essential to dispel the notion of FOMO (Fear of Missing Out) surrounding GenAI. While it holds transformative potential, GenAI is not the silver bullet to every banker's problem. Taking a breather from chasing trends allows for gaining perspective and revealing how emerging technologies converge and connect over time, ultimately fueling better actions in the present.

It's essential to pause amidst the hype and thoroughly grasp the capabilities of GenAI, as well as the risks and opportunities it presents. Drawing from experiences with past innovative technologies, banks should evaluate whether GenAI, existing technologies, or a blend of both are the most suitable solutions to tackle specific challenges and capitalize on opportunities.

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, demand 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 cyber-attacks, it also introduces new attack vectors with enterprise adoption, raising security concerns.

Risks in AI adoption: moving with caution

Generative AI holds immense potential value for banking institutions, promising to revolutionize efficiency and enhance digital banking experiences for account holders. However, navigating the integration of generative AI poses a dual challenge for banks: the need to stay innovative while remaining risk-averse.

Proper guardrails = Trusted provider

A wrong move now can have costly consequences in the immediate future: organizations could face fines of up to 7 percent of annual global revenues, as proposed by the EU's AI Regulation. Failure to handle AI prudently can result not only in legal and financial damages, but also in 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 a foundation for trust and reliability.

Control tower approach: key action lines

Data

AI is only as good as the data it is trained on. As AI algorithms grow more sophisticated, they require vast data sets, raising 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,' with decisions that are not always auditable or explainable. This opacity is particularly evident in areas such as fraud detection, where 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, often exacerbated by unsupervised autonomous decision-making without human oversight. This highlights the need for strong governance to define clear roles and responsibilities, and to address skill and expertise gaps, ensuring fairness and accountability in AI deployment.

Navigating the regulatory maze: a compliance journey in AI

Implementing AI in banking operations presents a myriad of 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 characterized by rapid advancements, placing rule makers under pressure to keep pace. The challenge at hand is to simultaneously understand and control the safety of the technology while preserving its potential benefits. Specific AI regulations in banking are still evolving, and as governments and regulators work to define the appropriate control environment, the developing approaches are often fragmented and misaligned, resulting in substantial uncertainty about compliance requirements and the liability risks banks could face.

Global AI regulation is tackled by countries in varying ways. Some, like the European Union, implement broad AI regulations supported by existing data protection and cybersecurity laws. Others, like the United States, rely on sector-specific laws and general principles or guidelines. Integrating GenAI into banking operations requires careful attention to these evolving regulatory considerations.

Throughout 2023 five global leaders emerged in AI regulation

United kingdom

The UK's AI regulation policy paper 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. On April 2024, the FCA, PRA, and bank of England published their AI regulatory strategies in response to the paper.

European Union

The EU AI act, the first risk-based regulation for all AI systems developed, distributed and imported in the EU market, will have a 2-year grace period after its adoption in June 2024. Alongside the AI act, other important legislations in the realm of AI are in the pipeline. The European data strategy, including the data act and data governance act, also shapes the AI landscape in the European financial sector.

United States

The US has developed vertical legislation for specific AI use cases, with various federal guidelines. In 2022, the White House released a nonbinding AI Bill of Rights to guide AI system design and deployment. The 2023 biden executive Order directed agencies to develop specific AI regulations and interventions. Major players in US AI standards include NIST and the FTC.

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).

Singapore

In January 2024, the Monetary Authority of Singapore (MAS) launched the world's first generative AI risk management framework for banks as part of a new initiative to identify the opportunities and risks of generative AI for the city-state's financial sector. Building on this, in May 2024, the Singapore government released an expanded framework that incorporates emerging principles, concerns, and technological developments in generative AI.

Acknowledging common ground

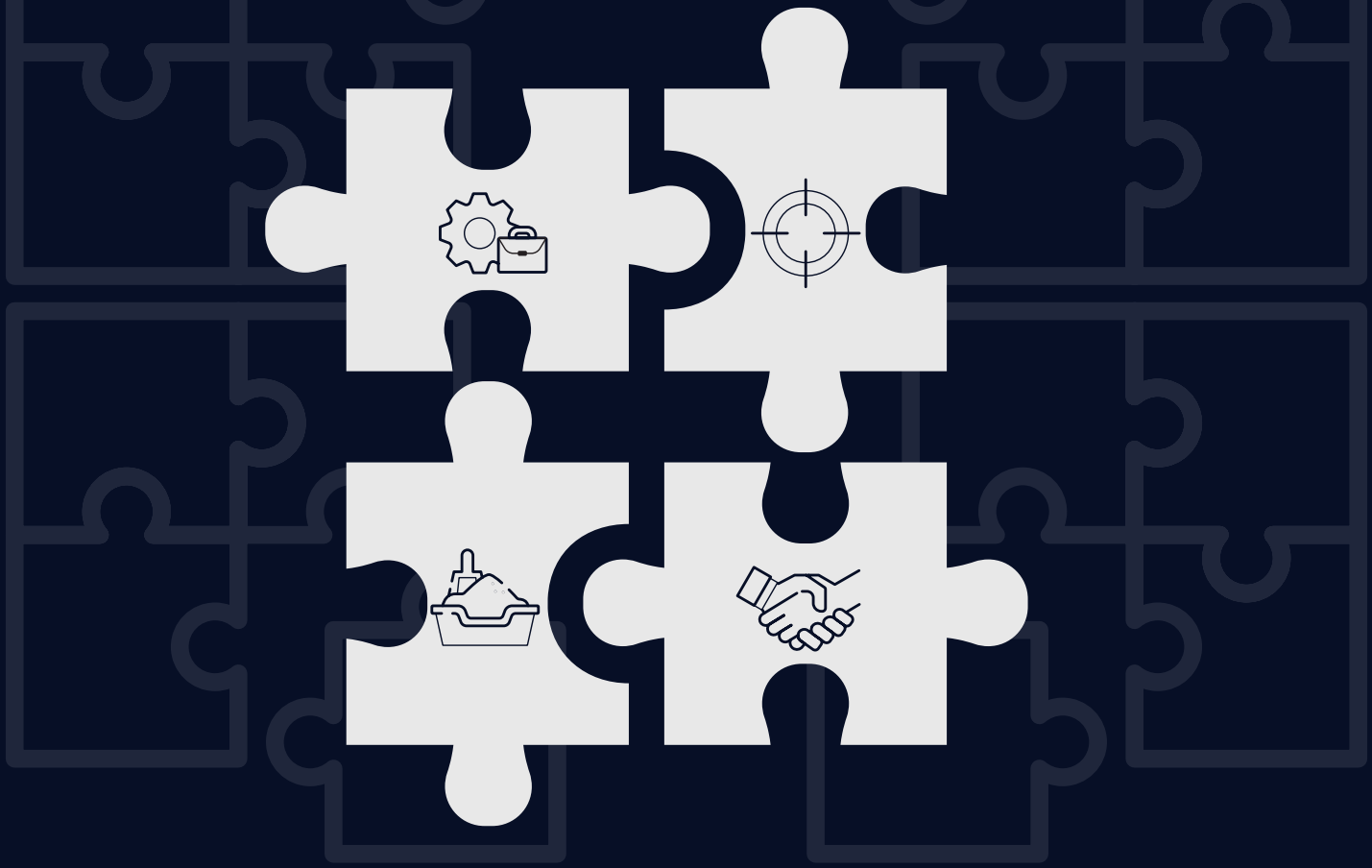
It hold true that diverse jurisdictions adopt unique regulatory strategies aligned with their cultural and legislative frameworks, however, there exist some core areas of convergence that serve as foundational pillars to comprehend regulation:

Core principles:

A pattern emerges in which the AI regulations align with the core principles for AI as defined by the OECD and endorsed by the G20 [2]. These principles include sustainable development, human-centered values and fairness, transparency, accountability, robustness, security, and risk management.

Sector - specific:

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



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 on a global 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

As regulations revolving AI advance, banks need to take proactive steps to prepare for increased scrutiny

Analyze and monitor in-house & external activities

Organizations need to broaden their focus beyond individual regulatory efforts and instead examine overarching trends impacting the financial sector. For instance, banks prioritize data privacy, security, accuracy, and reliability when integrating GenAI, driven by concerns about hallucination and bias in large language models (LLMs) and the abundance of sensitive banking data. Concurrently, many organizations underestimate the variety of systems affected by diverse regulations, underscoring the importance of an AI inventory.

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 AML procedures, and new requirements apply for general-purpose AI systems including generative AI 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. This responsibility involves several key actions: establishing an ethics board to provide guidance, ensuring clear accountability in managing AI risks, integrating ethical considerations throughout the lifecycle of products and services, and implementing comprehensive training and awareness programs for employees. These steps are essential for cultivating a culture of responsible AI use within organizations.

Bonus track: embrace simplicity

The path to responsible AI often turns into a web of complexity. While embracing simplicity may seem paradoxical, it can result in AI systems that are more transparent, thus easier to understand and govern. This approach ensures alignment with ethical standards and societal values, while facilitating the identification and rectification of errors and biases, enhancing accountability.

Chapter 2: 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 experimental phases to systematically pursuing value across the entire enterprise

Unlocking the full value of generative AI 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 generative AI into their processes. They need to determine whether generative AI will fundamentally transform their core business areas or if it will primarily serve as a tool for boosting revenue and enhancing productivity.

A holistic dimensional approach to strategic scaling of GenAI

Implementing generative AI to transform operating models, customer experiences, and workforces requires a **systematic strategy that permeates the entire value chain and a multi-year program fostering continuous reinvention.** Banks need to evaluate the value and risk of use cases to develop a long-term roadmap. Upgrading their digital core is essential, and they must rethink the nature of work, its execution, and the implications for skills, roles, and organizational structure. By reviewing **lessons learned from prior innovative technology implementation, data management capabilities, and talent,** a robust framework can be sculpted for use case development, coordinated by an operating model that translates strategy into action. Establishing enterprise governance and controls for both internal and external use of generative AI, along with a comprehensive monitoring and oversight approach, will be crucial for assessing the value generated by use cases while effectively managing associated risks.

In the realm of GenAI, creating reusable frameworks is akin to building sturdy pillars. Once this foundational structure is established, the crucial question revolves around whether it can be flexibly deployed across different departments, enabling horizontal integration throughout the organization where it proves beneficial.

Achieving sustained value, beyond initial proofs of concept, requires strong capabilities across several dimensions: **people, technology and data.** An **operational model** is essential to orchestrate this strategy, aligning all efforts towards common goals and ensuring seamless integration across the organization. Encapsulating all these efforts is a comprehensive **risk management and regulatory oversight framework.**

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

1. **To stay competitive, banks must bring their employees along on the AI journey.** Many workers view generative AI with apprehension, seeing it as enigmatic and exotic. Leaders must address these concerns directly, prioritizing transparency to change perceptions and encourage thoughtful incorporation of AI. Establishing AI literacy pathways is essential for cultivating an engaged and informed workforce. Comprehensive approaches to resource allocation and upskilling programs are necessary, addressing key questions about the impact of generative AI 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 nurture, 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 ensuring the provision of necessary compute power and making data securely accessible to preferred models.

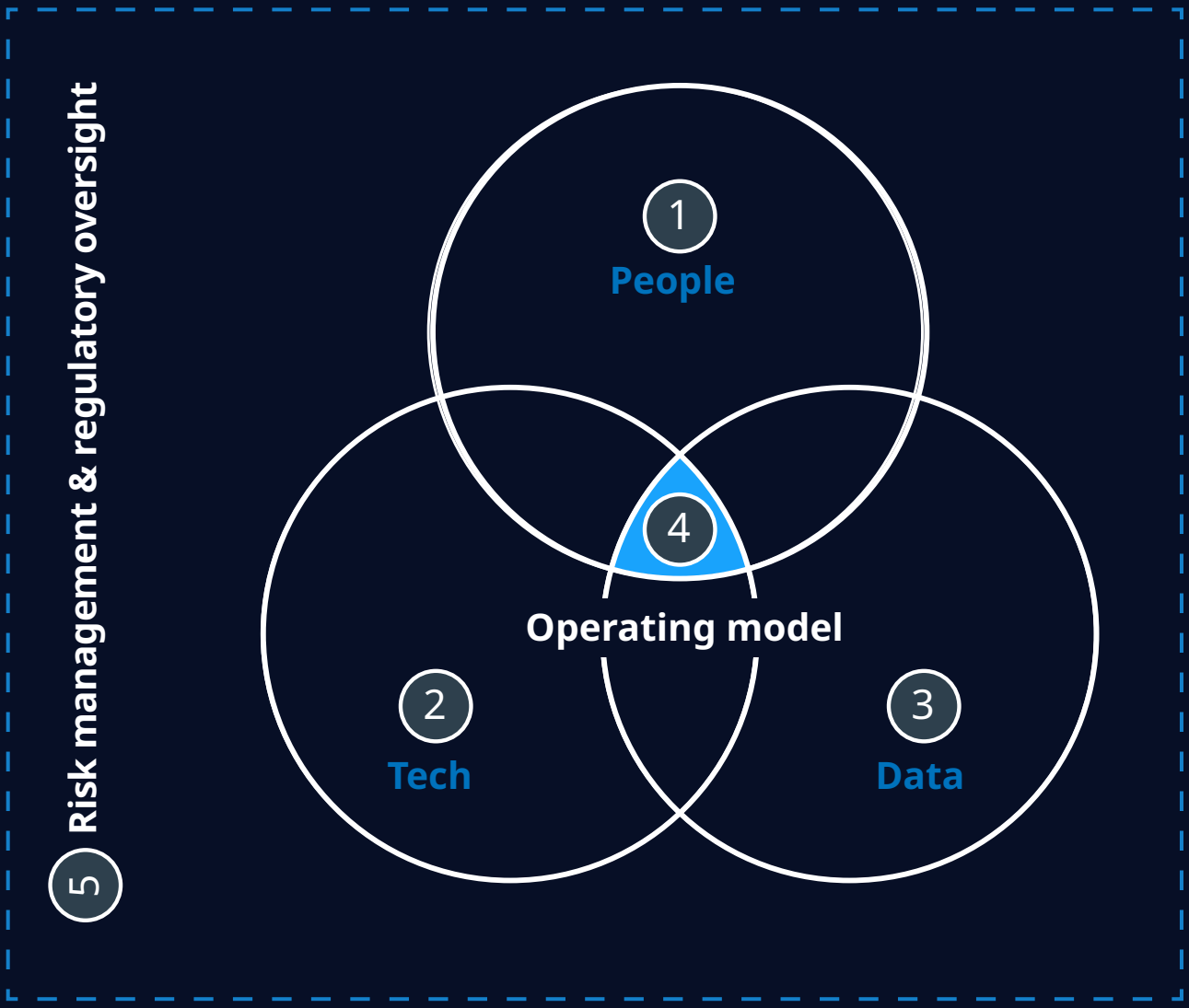
3. **One of the most common missteps in AI implementation is neglecting data management.** The unstructured nature and size of many data sets add complexity, necessitating adaptations in banks' data strategies and architectures to address quality issues and uncover insights (such as built-in vector databases and data processing pipelines). One of the reaped benefits of strategically deploying generative AI solutions facilitates the democratization of data access, unlocking the full value of unstructured data for the entire organization.

4 **At the heart is an operating model,** which is essentially a blueprint for how a business puts strategy into action, balancing including its structure (roles and responsibilities, governance, and decision making), processes (performance management, systems, and technology), and people (skills, culture, and informal networks). Banking institutions that successfully use gen AI have made a concerted push to produce a fitting, tailored operating model that accounts for the new technology's nuances and risks, rather than trying to incorporate gen AI into an existing operating model.

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

As the technology evolves, the trend may shift toward a more decentralized approach. However, up to this point, centralization has yielded the best results.

5 **Fool proofed by a risk management strategy: the responsible use of generative AI 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 mitigate risks such as generative AI "hallucinations"—where models produce illogical or inaccurate outputs.



Achieving value from generative AI implementation

Continuous assessment and monitoring of the value and costs associated with generative AI adoption are essential for reaping anticipated benefits and managing potential risks.

A well-defined generative AI strategy has the potential to profoundly influence shareholder value by opening up new and transformative opportunities aligned with enterprise objectives, including 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. Successful organizations in the AI realm have adopted 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

Early identification of metrics is essential for ensuring the success of AI initiatives. By defining clear objectives and success criteria upfront, 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

Chapter 3: Adoption framework for scaling GenAI in banking

Key considerations for scaling generative AI in the banking industry

As banking trying to move forward scaling generative AI, they face numerous challenges associated with key dimensions previously explained. These challenges include:

Regulatory compliance & 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 transparency and interpretability of AI driven-process.
- Continuously updating solutions to reflect improvements and evolving AI regulations.

Culture & 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 Generative AI.
- Aligning leadership, business, and non-business units around the use cases and problems addressed by Generative AI, setting clear targets.
- Addressing skills gaps by recognizing the scarcity of highly skilled professionals both in the market and within the organization who possess knowledge of Data, AI and Generative AI technologies.
- Prioritizing the education and continuous training of AI and Generative AI technologies for the existing workforce.

Strategy deeply integrated with AI

- 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 Generative AI aims to solve.
- Investing in key enablers like code and operational assets to deploy AI across business functions.

Driving transformation, operating model

- Beyond initial proofs of concept, scaling generative AI within an organization requires building strong capabilities across many dimensions of bank operations. This impacts 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 around the scaling process and technology adoption, transcending the technology areas and being monitored by strategic areas.

Infrastructure, data governance & security

- With 31% of banks highlighting the challenges in melding generative AI with their existing IT infrastructure, it´s clear that seamless integration is easier said than done. GenAI requires a more robust infrastructure that will often require a substantial computational resources, with a complex and time-consuming process to be able to process the data.
- Recognizing that Generative AI systems often require large amounts of data, including sensitive customer information, thus necessitating a high level of data privacy and security.
- Enhancing data governance and security measures to effectively train, test, and refine AI models.

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

While these general challenges set the foundational stage for GenAI adoption, banks must also navigate unique hurdles within specific operational verticals. Each vertical presents distinct challenges that require tailored strategies and solutions.

Addressing FINCRIME challenges in banking with generative AI

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

Investment in cybersecurity has become paramount for operational risk management, particularly given the rising sophistication and frequency of cyber threats. Financial crimes such as money laundering, fraud, tax evasion, corruption, and identity theft pose significant risks, leading to substantial losses within the financial system.[5] As a result, banking have been significantly increasing investments in new technologies and solutions to thwart cyber-attacks and secure their data.

The implementation and scaling of generative AI to combat financial crimes pose several unique challenges:

- **Data Quality and security:** Ensuring data quality and security is intricately linked to data storage and access methods. Many banks still contend with vast amounts of unstructured data, complicating data source management, permissions, and security classifications. In the event of a cyber-attack, identifying and understanding the data impacts and closing security breaches is an arduous task. This complexity increases the risk of leaving some breaches unaddressed, thus maintaining a significant level of uncertainty in data security management.
- **Transparency and regulation:** Ggenerative AI 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:** Generative AI systems rely on data sources and training models, which can sometimes produce inaccurate information, leading to misguided decisions.

Generative AI boosts cybersecurity by swiftly identifying breaches and enhancing efficiency in preventing financial crimes.

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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:** Thereis a potential risk that generative AI systems could infringe upon intellectual property rights or exhibit inherent biases, impacting 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 generative AI effectively while maintaining robust security and compliance standards. The journey towards integrating GenAI in combating financial crimes requires meticulous planning, strategic investment, and a clear understanding of the associated risks and opportunities.

Navigating payment ecosystems: challenges in scaling generative AI

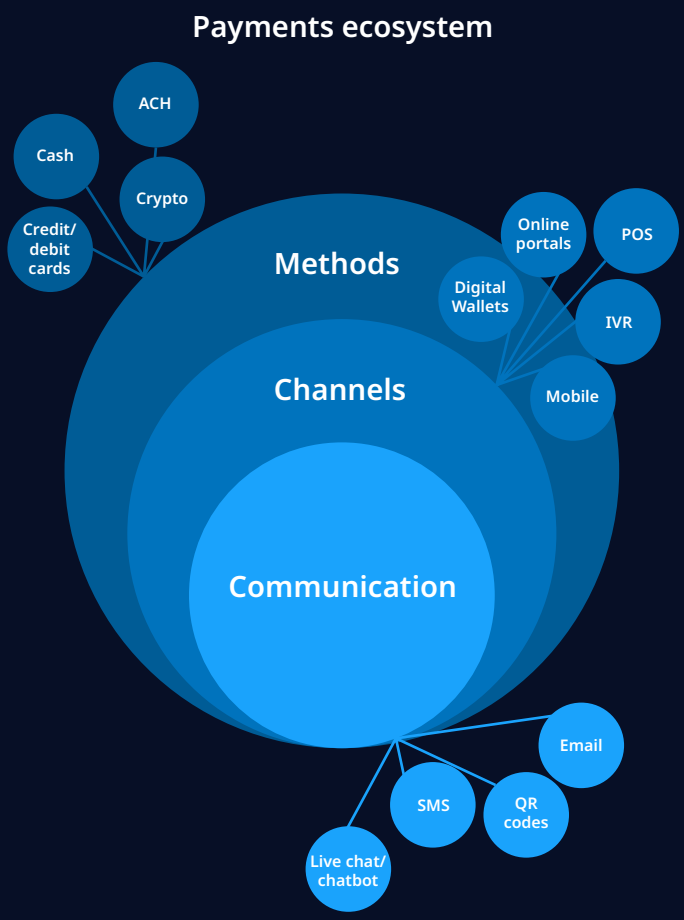
Banks specializing in payment services face several challenges in scaling their business, including:

- Seeking new solutions in the payment methods market that are more disruptive or modern, which can positively impact their clients.
- 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 exponentially because most banks do not own these solutions; they are partners.

For payment banks, navigating these complex ecosystems poses a formidable challenge in implementing Generative AI at scale. The multitude of platforms and technologies involved amplifies the intricacy of integrating Generative AI in a structured manner.

As external partners primarily own these solutions, payment banks face limitations in defining the adoption of Generative AI within these frameworks. **This underscores the need for a strategic approach that aligns Generative AI initiatives with overarching business strategies, despite the inherent complexities of these collaborative ecosystems.**



Modernization frontier: confronting hurdles in scaling generative AI

In addition to the challenges outlined at the beginning of this chapter, the endeavor of scaling generative AI (GenAI) technology within banking modernization initiatives presents several hurdles. These challenges involve both the adaptation of technology and intrinsic complexities within various workflows, sectors, and regions.

Examples of these challenges include:

- **Adapting Legacy Systems and Technology Integration:** The utilization of Generative AI is intricately linked with the ongoing challenge of managing legacy systems and the imperative to integrate modern solutions.

> Still a problem at large across industry ~ 50% of the business function driven by tech has legacy

- Many banks still heavily rely on these legacy systems, necessitating their adaptation to efficiently process large volumes of data, ensure compatibility, scalability, and seamless integration. The scaling of generative AI is contingent upon the willingness of banks to modernize their legacy solutions.
- **Optimizing make vs. buy decisions for AI and GenAI solutions:** the dilemma of whether to build or buy solutions is heightened when considering the integration 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, the requisite infrastructure and data capabilities become paramount. This includes high compute capacity, efficient data analysis, and fast processing times, among other necessities. 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 MLOPS (Machine Learning Operations) 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, adopting and other critical components.
- **Cost management:** prudent management of budgets and the associated high costs of implementing and maintaining AI and GenAI systems is imperative. 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 of maintaining operational stability is paramount. effectively managing this equilibrium is central to success.

By comprehensively understanding and addressing these challenges, banks can navigate the complexities of scaling GenAI and unlock its full potential to drive sustainable, data-driven innovation and growth in modernization efforts.

A comprehensive guide to scaling generative AI in banking – strategic framework

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

Before embarking on the journey to scale GenAI, we propose an initial reflection on the "Enterprise AI Continuum" to understand and build knowledge around the spectrum of AI and GenAI technologies in enterprise applications.

1. Automation & analytics

Automation is a way to "unlock" data so it can be leveraged 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 math models that can decompose problems, predict behavior, and prescribe the next best action to take.

3. Machine learning

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

4. Gen AI

Gen-AI is a class of models that can create new content (e.g., text, images, music) based on similarity to data it has "seen" before in training datasets.

5. Artificial general intelligence*

AGI refers to highly autonomous systems that possess the ability to comprehend and reason in a way that is indistinguishable from that of humans.

*As of today, AGI remains only a theoretical concept.

During this reflection, addressing critical questions [7] will guide a comprehensive understanding of the banking needs, constraints, and capabilities across several key areas:

Strategic alignment and core competencies:

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

Control tower approach: key action lines:

- Examine cost impacts, including the budget for GenAI initiatives and the long-term costs of building versus 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 and evaluate whether in-house solutions provide better control over data privacy and security concerns.

NTT DATA's GenAI banking framework

To accelerate the adoption and scaling of GenAI in the banking industry, we propose the use of our comprehensive framework. This framework guides and supports banks in reviewing and addressing the challenges discussed above, as well as many others that may arise throughout the journey.

To ensure a successful adoption our framework focuses on the following driving forces:

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:

- Strategic emphasis on data and AI governance.
- Solutions prioritize the quality and integrity of data and AI outputs.

Guaranteeing operational efficiency:

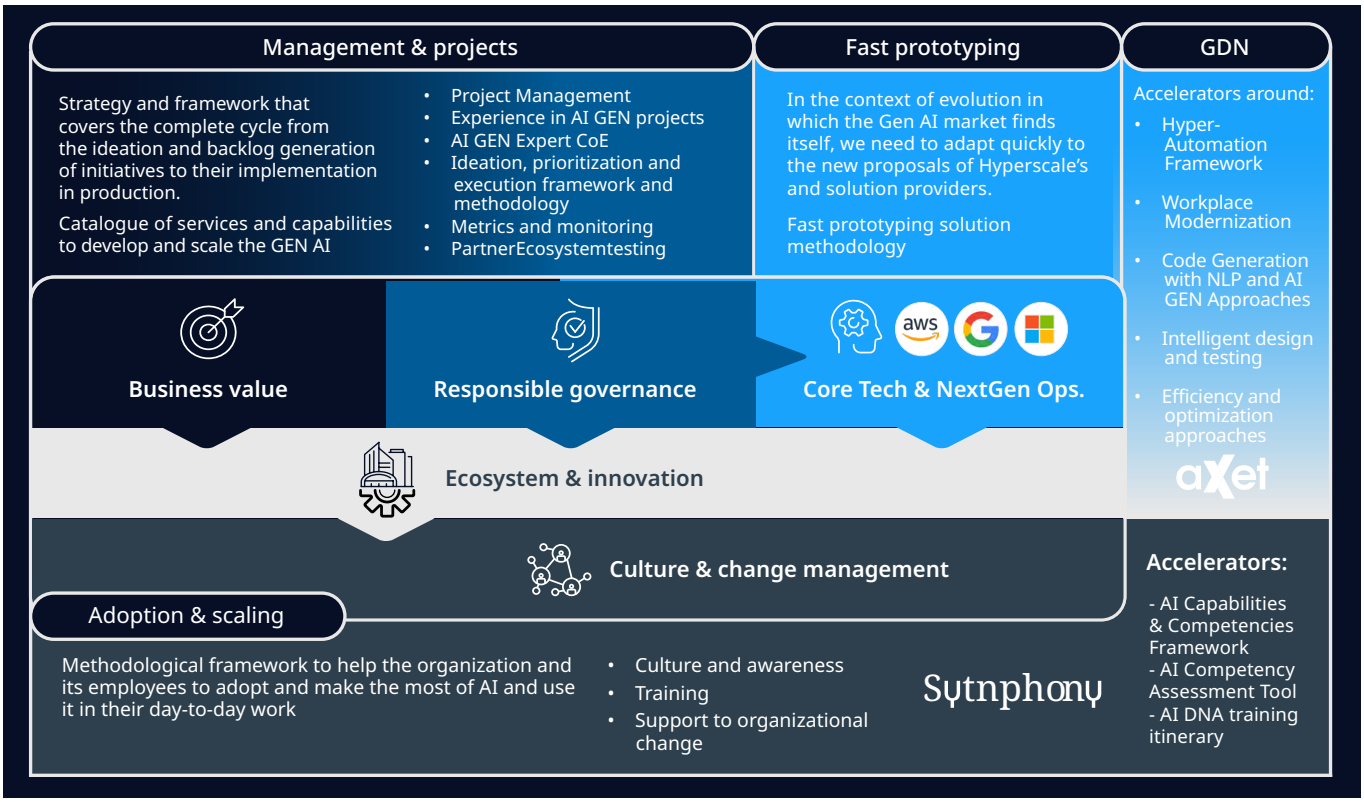
- AI enhances operational efficiency, allowing the workforce to concentrate on high-value tasks.
- Our strategies reinvent workflows, optimize resource allocation, and cultivate talent and skills.

Addressing risks:

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

The GenAI banking framework is designed to create a trustworthy strategy addressing banking challenges and concerns, with a strategic roadmap, enabling the entire bank to use and scale Generative AI confidently and safely while supporting and guiding a space for cutting-edge innovation.

This framework helps banking understand and implement the evolution of GenAI within their organization, **from abstract concepts to concrete applications, and from vision to execution with governance.**



The framework is focused on the bank's business and challenges, ensuring seamless integration within the dynamic landscape of GenAI, harnessing the full potential of this technology while addressing the nuanced challenges posed by the forefront of GenAI innovation.

Key components of the GenAI banking framework:

Business value

- Develop a comprehensive responsible banking AI strategy and roadmap identifying value-adding GenAI applications.
- Align these initiatives with the banking business objectives to ensure integrity and compliance with regulations.
- Enable the bank to prioritize initiatives and maximize the value derived from AI and GenAI technologies.

Core tech and next gen 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 (Proof of Concepts) and successfully transition from PoCs to production.
- Use of key assets and technology accelerators.

Culture and change management

- Emphasize the bank's and employees' ability to adopt and utilize 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 the AI transformation.

> "Embracing AI isn't just about technology; it's about transforming the very fabric of our operations and culture to unlock unprecedented value and innovation.

Through rigorous monitoring and a structured GenAI scaling governance that addresses user impact, cultural and technological challenges, and aligns with the enterprise strategy, banks can smoothly 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 support banking in defining and orchestrating all actors, data, AI models, and tools.
- Ensure 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 the bank's advancement.

Chapter 4: 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 upfront investments, is revolutionizing the industry, although challenges such as data privacy and ethical algorithms must be addressed. As technology advances, AI and ML are poised to play an even greater role in shaping the future of financial services, as evidenced by their current deployment and benefits in the industry.

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

Cost savings

AI offers significant cost savings and operational efficiency across various domains. Examples include AI-driven product recommendations, personalized marketing campaigns, supply chain optimization, customer service automation, fraud detection, and demand forecasting. **These initiatives result in substantial savings in human capital, which can be redirected towards customer-centric product innovation.** Additionally, **AI can optimize data center cooling and energy usage** for on-premises data centers, reducing operational costs. For businesses utilizing cloud infrastructure, leveraging managed services that leverage compute optimization can achieve up to a 25-30% reduction in operating costs through AI and ML-based workload analytics.

Practical Case: A real-world example that illustrates the impact of AI, ML, and GenAI on capital markets, particularly in terms of cost savings and growth, is JPMorgan Chase's use of machine learning to improve trading strategies and reduce operational costs. The bank has implemented advanced AI systems to analyse 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 significant cost reductions in their trading operations.

This example show how major financial institutions are leveraging AI technologies to streamline operations, enhance decision-making, and drive growth while managing costs more efficiently in the capital markets.[7]

Risk and compliance

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, MRAs, and 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 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 non-compliance. **Automating the compliance process allows organizations to meet regulatory obligations more effectively and efficiently.**

Practical case: Goldman sachs' use of 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 costs associated with risk assessment [8].

Benefits from AI & ML

Data analysis and data quality

Machine learning techniques are being used to discover insights from Big Data. Techniques like classification, clustering and regression help in the discovery of good vs. bad data and can 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.**

Practical Case: Citadel utilizes 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 [9].

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-advisors 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, streamlining the customer service process,** and enhancing satisfaction and loyalty. Human intervention is minimized, improving efficiency.

Practical Case: morgan stanley's next best action system: morgan stanley employs an AI-driven system known as Next Best Action, which analyzes individual client data to provide personalized investment advice. The system uses machine learning algorithms to understand client preferences, financial goals, and risk tolerance, enabling financial advisors to offer tailor-made suggestions that resonate with each client's unique situation. This not only enhances customer satisfaction but also improves client engagement and retention.[10]

Process automation

Process automation offers banks and 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.

Practical Case: goldman sachs' automated trading: 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, which 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.[11]

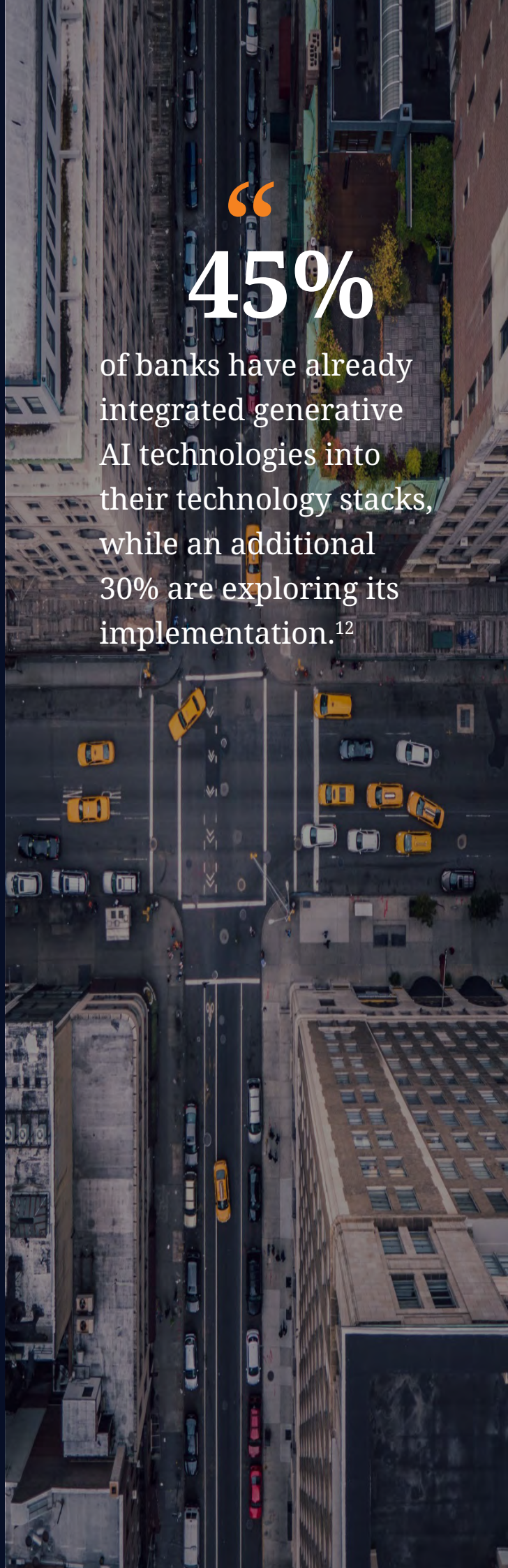
Key takeaways

These examples 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.

As the capital markets industry continues to evolve under the influence of AI, ML, and GenAI, the benefits are manifesting across multiple dimensions. These technologies are not only driving growth and cost efficiencies but also 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.

The ongoing advancements in AI promise to unlock further potential, making it crucial for industry players to continuously innovate and adapt to maintain competitive advantage and meet the evolving demands of the market. This trajectory indicates a future where AI is 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]

Conclusions

Shedding light on GenAI

In 2024, global banking trends are centered around 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 artificial intelligence is crucial. Generative AI, unlike any previous technological innovation, has the potential to transform every aspect of business. However, it is essential to move beyond the hype and critically evaluate what generative AI is, its capabilities, and the associated risks and opportunities, making it crucial to be aware that it is not the panacea for every banking challenge.

On the lookout for regulation

The responsible use of generative AI 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 abreast of 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. Yet, extensive preparatory work is indispensable. Achieving sustained value from GenAI implementation demands a multifaceted approach, with strong capabilities across people, technology, and data dimensions. Crucially, this requires establishing an operational model to coordinate efforts effectively and implementing robust risk management and regulatory oversight mechanisms. Moreover, as an essential add-on, is the importance of knowing how to measure AI impact and value: 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 bank leaders to recognize generative AI as more than just a cost or productivity enhancer; it's 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 not only unlock new revenue streams and enhance their competitive advantage but also ensure their relevance and resilience in an ever-evolving financial landscape.

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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.

12 NTT DATA banking & financial services | Annual decision-maker survey.
Digital Horizon: The Technology Shift in Banking From Mainframe to AI-Driven Cloud | NTT DATA

> We are still in the early stages of adopting Generative AI. 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.
>
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