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Artificial intelligence:
Transforming the future of banking

Contents

The importance of AI in banking

It would be an understatement to suggest that artificial intelligence (AI) and machine learning (ML) are transformative technologies. According to a recent Deloitte survey of IT and line-of-business executives, 86% of financial services AI adopters say that AI will be very or critically important to their business's success in the next two years.[1] So, what should banks do to keep current with AI marketplace trends and build with confidence into the future?

Figure 1. Strategic importance of AI to financial serviced organization's business success In 2 years

3%	11%	33%	53%

■ No/minimal strategic importance   ■ Somewhat important   ■ Very important   ■ Critical strategic importance
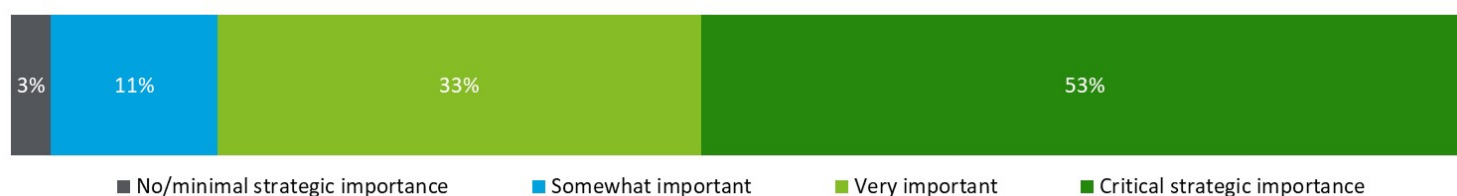
Source: Deloitte, State of AI in the Enterprise, Third Edition: Financial Services Results

While the banking sector has long been technology-dependent and data-intensive, new data-enabled AI technology has the capability to drive innovation further and faster than ever before. AI can help improve efficiency, enable a growth agenda, boost differentiation, manage risk and regulatory needs, and positively influence customer experience. Building sophisticated AI systems was once expensive, restricting deployment to key use cases (e.g., high-frequency trading). Deloitte's recent AI survey of IT and line-of-business executives of companies that have adopted AI technologies found that, from a technology perspective, cost and other barriers to adoption are falling, and it is becoming easier to implement and integrate AI technologies.[1]
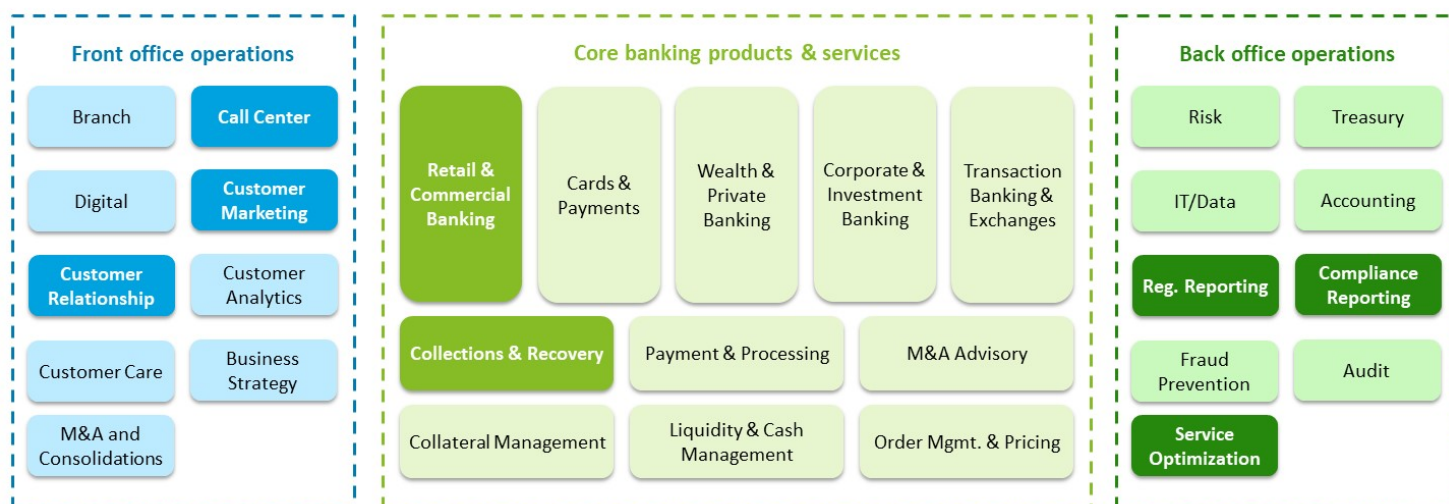
Organizations are making targeted investments in areas such as cloud, big data platforms, and data applications that use updated architecture (e.g., microservices and event hubs), eliminating up-front capital investment needed specifically to develop, deploy, and scale AI solutions. However, multiple operational and organizational challenges remain, notably skills gaps and the integration of AI into the wider organization, to name two examples.[1]

In this article, we explore several topics supporting AI in the banking industry, including key use cases for banking executives as they consider mainstream deployment of AI, how to enable successful AI implementations, and some shifts required for developing a viable implementation.

Banking reimagined with AI

As banks consider the pros and cons of a broader enterprise AI strategy, use cases can be instructive in decision-making. By focusing on use cases like the ones that follow, executives can make informed decisions that can help tailor deployments to their circumstances, yielding a better return on investment. While these examples are by no means exhaustive, they demonstrate that data-driven AI can be used in many ways to generate additional value across a banking organization—from front-office revenue growth to back-office operational efficiencies.

Figure 2. Potential of AI across different areas in a banking organization

Front office operations		Core banking products & services					Back office operations	
Branch	Call Center	Retail & Commercial Banking	Cards & Payments	Wealth & Private Banking	Corporate & Investment Banking	Transaction Banking & Exchanges	Risk	Treasury
Digital	Customer Marketing						IT/Data	Accounting
Customer Relationship	Customer Analytics						Reg. Reporting	Compliance Reporting
Customer Care	Business Strategy	Collections & Recovery	Payment & Processing		M&A Advisory		Fraud Prevention	Audit
M&A and Consolidations		Collateral Management	Liquidity & Cash Management		Order Mgmt. & Pricing		Service Optimization	

Note: Highlighted areas are illustrated in detail in the section 'AI-driven banking use cases'

Customer experience and growth

More than 50% of bank customers believe personalized services are one of the key factors for them to have trust in their banks, while only 35% of traditional banks offer personalization that meets customers' needs at the appropriate time and place.[2] Hence, banks will need to invest (or are investing) more than ever to personalize the services offered to customers and, in turn, retain their trust and loyalty. Banks must employ data-driven AI capabilities to conduct microsegmentation of existing customers and prospects. This level of granularity can help banks more accurately predict customer and prospect needs and behaviors.

A large bank has recently used data-driven AI to offer personalized reward programs (related to travel, shopping, etc.) by predicting customers' redemption preferences. This resulted in an increase of 40% in reward program usage.[3] Some other banks have also employed "next-best action" models to predict customers' needs proactively and personalize the services offered to them by tracking their financial journey—all of which has helped increase sales by almost 30%.[4]

Service optimization

Shuttered branches and an influx of calls about federal coronavirus relief programs created exceptionally long online and telephone wait times for customers (20–180 minutes versus ~40 seconds during normal times).[5] Call centers often hire supplemental staff during peak traffic times, but banks should adopt AI technologies to manage call volume fluctuations. Conversational AI agents can engage in personalized discussions by tapping into data sources that include customer data, social media, current economic conditions, historical customer information, call center patterns, and more. In addition, AI can help improve operational efficiencies in areas such as routing customer calls and calculating appropriate customer hold times.

The top 2,000 US corporations spend roughly $250 billion annually on customer support—some 50 billion cases, each of which costs around $5 to address—and COVID-19 has exacerbated this issue.[6] So, any savings from reducing support ticket volume, time, and costs via AI could positively affect their bottom line.[6] A leading Canadian bank is developing advanced consumer banking AI agents (conversational agents in particular), which can answer hundreds of common questions and can learn to answer additional queries the more it interacts with customers; this would help manage spend while driving consistency and scalability.[7]

Underwriting

A recent report [6] from Autonomous suggests that by 2030, traditional financial institutions can save up to $31 billion of their underwriting and collection system costs by implementing AI technologies. The COVID-19 pandemic exacerbated several current underwriting concerns, namely volume, speed, and risk. Robotic process automation and ML models and varied data sources can expedite the loan underwriting process and improve risk

assessment. This process can be expedited by automating document scanning and manual processes involved to gather relevant data. ML models can run on the data gathered from multiple data sources (e.g., social media posts and third-party data) and can be used to accurately assess borrowers' risk and quickly make loan decisions.

A large retailer recently launched a digital credit line for sellers, which uses authorized seller data (e.g., sales volume and revenue) to identify candidates for credit line offers. A partner bank then offers credit lines to those that meet its underwriting criteria and can expedite loan approvals.

The entire process is automated, which reduces the loan approval time to two days, as opposed to the standard approval time of seven days or more.[8]

Collections and recovery

According to the *Quarterly Report on Household Debt and Credit* (Q2 2020), total household debt balances add up to $14.27 trillion. Out of this, $512 billion of debt is delinquent, and 73% of it is seriously delinquent.[9] Customers are delinquent for many reasons—pandemic-related job losses, a simple missed payment due to lack of reminders, change of address, or collections—making recovery a case of "one size fits none." As such, banks must customize their outreach, especially during uncertain economic times.

AI can drive efficiencies and create preemptive strategies to help customers and lenders alike. Banks can benefit by leveraging customer data to identify warning signals for possible delinquencies and defaults, predict why customers might miss payments, and offer customized solutions to catch up. A Fintech giant that offers AI-driven debt collection assistance, such as using ML to conduct customer-behavior-based personalized

communications, has helped its clients recover more than $100 million since its foundation in 2014, and it typically collects 40% to 50% more than traditional collection agencies.[10]

Regulatory and risk assessment
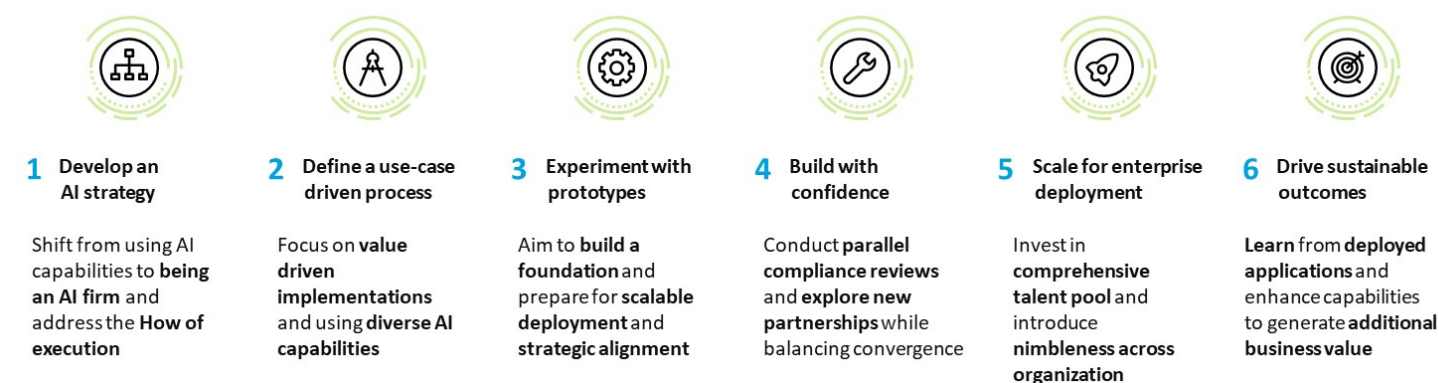
Banks spend a lot of money to comply with government rules and regulations. In a recent Global Regulatory Outlook 2020,[11] 33% of banks reported that they have allocated or will allocate more than 5% of their annual budgets to compliance in 2020. Although banks are spending a significant amount of their budget on compliance, and AI has been a hot topic, based on Deloitte's *State of AI in the Enterprise, 3rd Edition: Financial Services Results*,[1] only 4% of the respondents in financial services used AI technologies primarily in legal and compliance functions.

Banks can create efficiencies—and save money—by leveraging AI to automate labor-intensive compliance processes and automatically detect regulatory changes to ensure they remain in compliance. Initial regulatory reporting configurations can take years of effort and still require continual manual supervision to stay current with evolving regulations. The time frame and effort level can be reduced if banks use AI as part of the setup process. Deep learning and natural language processing can help shorten implementation time frames by reading compliance requirements from regulatory websites, notifying banks about updates, and incorporating changes automatically in the systems that generate reports.

Organizing for success

Much like the evolution of cloud platforms in recent years, banks must move beyond the hype and consider the practical applications of AI. While there are proven examples of effective applications, many banks still consider AI to be experimental, with many of their pilot programs never moving into full-scale implementation. In the following section, we cover critical focus areas across six steps where banks may need to evolve their processes to be successful on their AI implementation journey.

Figure 3. Banks must reconsider their AI/ML approach and invest in the below implementation journey for successful outcomes
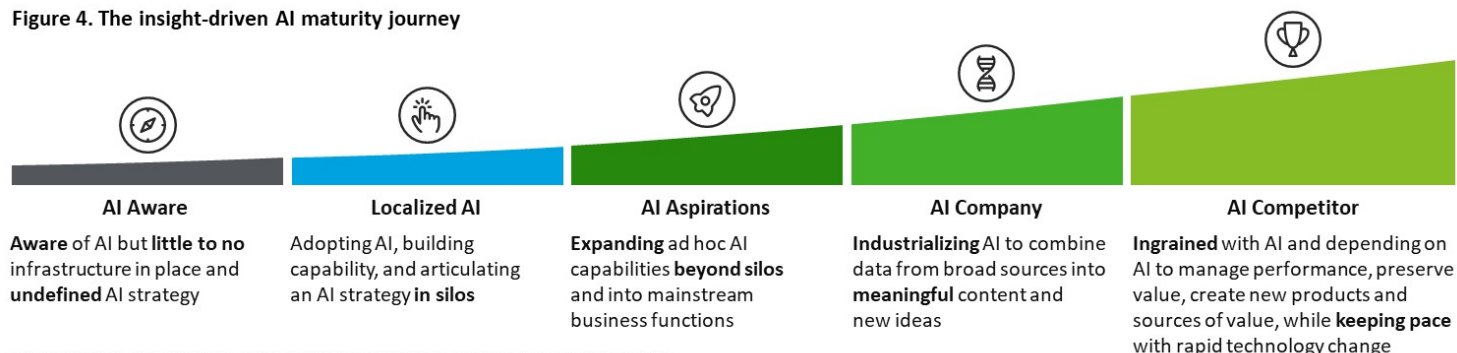
1 Develop an AI strategy

Shift from using AI capabilities to **being an AI firm** and address the **How of execution**

2 Define a use-case driven process

Focus on **value driven implementations** and using **diverse AI capabilities**

3 Experiment with prototypes

Aim to **build a foundation** and prepare for **scalable deployment** and **strategic alignment**

4 Build with confidence

Conduct **parallel compliance reviews** and **explore new partnerships** while balancing convergence

5 Scale for enterprise deployment

Invest in **comprehensive talent pool** and introduce **nimbleness across organization**

6 Drive sustainable outcomes

Learn from **deployed applications** and enhance capabilities to generate **additional business value**

Step 1: Develop an AI strategy

From just using AI to becoming an AI insights–driven organization: Many banks today are defining use cases to implement AI in some capacity within their organizations, from testing AI to creating a marketplace reputation for being tech-savvy. As shown in figure 4, most organizations are either just becoming AI-aware or are using localized AI. However, to stay competitive in both the short and long term, banks must escalate AI as a foundational component instead of treating it as a stand-alone initiative.[12]

Bank strategies should evolve from implementing AI on a piecemeal basis to embedding AI in its organization and culture and focus on moving from simply being AI-aware to becoming a strong AI competitor.

Figure 4. The insight-driven AI maturity journey

AI Aware

Aware of AI but **little to no** infrastructure in place and **undefined** AI strategy

Localized AI

Adopting AI, building capability, and articulating an AI strategy **in silos**

AI Aspirations

Expanding ad hoc AI capabilities **beyond silos** and into mainstream business functions

AI Company

Industrializing AI to combine data from broad sources into **meaningful** content and new ideas

AI Competitor

Ingrained with AI and depending on AI to manage performance, preserve value, create new products and sources of value, while **keeping pace** with rapid technology change

Source: Deloitte, Analytics and AI-driven Enterprises Thrive in the Age of With: The Culture Catalyst

According to a recent Deloitte survey [13] (see figure 5), frontrunners benefited from early recognition of how critically important AI is to overall business success. This likely helped frontrunners shape a specific AI implementation plan that considers holistic AI adoption across the enterprise. The survey indicates that many frontrunners launched AI centers of excellence and established comprehensive, companywide strategies for AI adoption for their departments to follow.

Figure 5. AI adoption frontrunners better recognize strategic importance of AI adoption
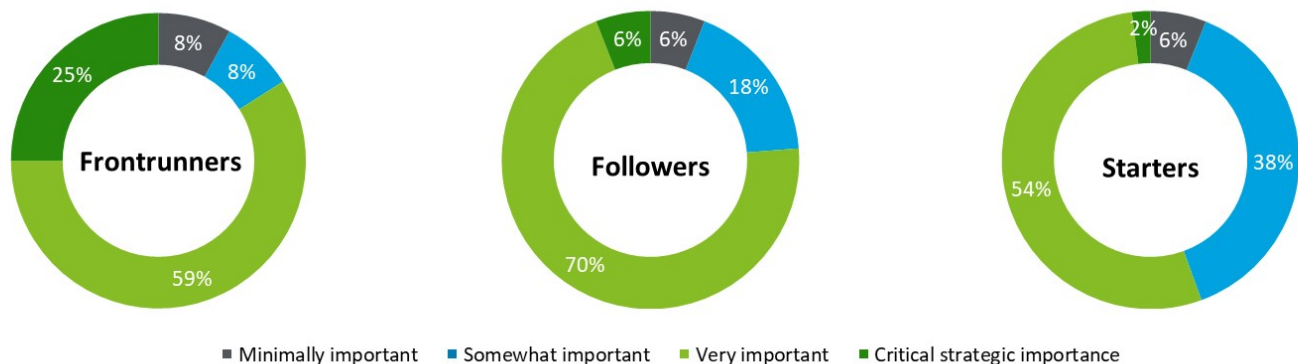
■ Minimally important ■ Somewhat important ■ Very important ■ Critical strategic importance

Source: Deloitte, AI Leaders in Financial Services: Common Traits of Frontrunners in the Artificial Intelligence Race

From what to how: Many strategies today revolve around defining the bank's specific goals and how they align with the bank's mission and vision. Executives still must use the strategy phase not only to determine what needs to be done, but also to address how it must be accomplished, focusing on a plan that defines how:

- The right data can be made available
- AI culture can be ingrained across the organization
- AI applications can be embedded into existing processes
- AI technology should be selected
- AI processes and applications remain ethical and minimize risk

Establishing an AI vision with these components allows an organization to picture what's possible and agree upon the priorities and goals that guide the AI journey.

## Step 2: Define a use-case-driven process

From "don't miss the hype" to developing value-driven use cases:
Developing AI for the sake of AI can be the fastest route to failure. Many banks seem to be heading down this path and trying out AI due to pressure to keep up with current market trends without any long-term adoption plans or clear path to value realization. In a 2019 survey,[14] the second-greatest bottleneck to AI adoption focused on the challenges of identifying business-value-driven use cases. Defining relevant use cases and prioritizing them into a road map can help banks stay focused during implementation and help achieve the goals defined during the strategy phase.

From focusing on limited AI solutions to pursuing a diverse portfolio of options:
AI incorporates many different technologies and capabilities, which can support a wide range of use cases extending beyond common applications, such as fraud detection and call center automation. Companies need time to gather the necessary experience about the benefits and challenges of each capability. Early success in the process can be generated by pursuing the "low-hanging fruit"—a diverse portfolio of achievable projects to help identify and tailor the most appropriate AI solutions to specific use cases. According to Deloitte research, a diverse portfolio of options seems to accelerate AI development and drive more robust AI adoption for frontrunners.[13]

Figure 6. AI adoption frontrunners are more comfortable in developing through a diverse portfolio of options
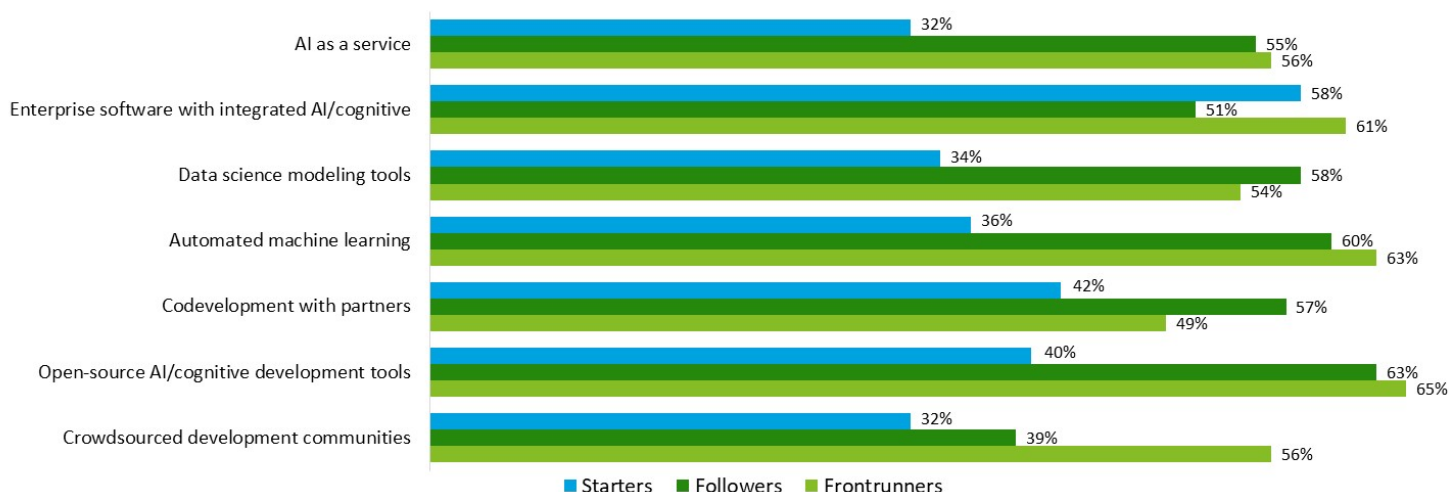
Source: Deloitte, AI Leaders in Financial Services: Common Traits of Frontrunners in the Artificial Intelligence Race

Step 3: Experiment with prototypes

From short-term to strategic focus: The purpose of a prototype is generally to determine if it is worth continuing investing more time and money in a technology solution.[15] Thus, companies typically focus on acceptance of a short-term use case scenario before they start preparing for enterprise implementation. However, AI and ML use cases require prototypes to be scaled up to the enterprise, and thus, up-front planning and setting expectations around data, timelines, expectations, business goals, and strategy is crucial.

In AI prototyping, teams need time to learn and explore different solutions to fit use cases, which can only succeed in a constructive, not punitive, environment for failed trials. Along with addressing these areas up front, firms should continually evaluate against the overall business goal to ensure the broader objective is achieved in the long term.

From proving a concept to laying a foundation: Many prototypes today are built to prove a concept and technical feasibility. Even proven AI prototypes can still face challenges to successful

deployment. According to Gartner, only 11% of the organizations surveyed were able to move more than 75% of their AI prototypes into production.[16]

Instead of considering a prototype as developing or testing an isolated functionality, companies should consider it in the context of an entire solution or ecosystem (e.g., customer experience and growth or call center optimization) and how this will fit with other building blocks of that solution. Several factors should be considered when designing such prototypes:

- Will the prototype create synergies with other ongoing or existing prototypes or pilots?

- Does the development team represent all domains that will be affected by the solution?

- Can the solution integrate with the company's existing or future ecosystems?

- Is it acceptable to the broader audience of the AI solution?

- Does the projected business value still hold true after scaling up?

Banks must be forward-thinking and consider prototypes as a first step down the path of future success. Ongoing alignment with broader AI strategy will improve the chances that prototypes ultimately succeed and can be productionized.

Step 4: Build with confidence

From reactive to proactive focus on risks and ethics: Traditionally, risk, compliance, legal, and ethical reviews are usually thought of in the last phase of an implementation life cycle. With AI implementations, these reviews should take place early in the process, starting with the strategy phase. "Organizations ready to embrace AI must start by putting trust at the center."[16]

To preserve trust, it is crucial that AI processes and models are ethical and regulation compliant. According to research in Deloitte's *State of AI in the Enterprise*, 60% of financial services AI adopters believe that risks associated with using AI-based models are slowing their organizations' adoption of AI technologies. Despite this awareness, only about 36% of adopters are actively addressing the risk—establishing guiding principles or a board and following leading practices.[1]

AI processes need to be monitored so that underlying data is protected, and results are consistent and used only for the agreed-upon purposes. "The right safeguards not only assist in preserving trust, but also enable organizations to innovate, break boundaries, and drive better outcomes in the Age of With™."

From converging solutions to exploring new partnerships: Banks generally follow an approach that enables the convergence of data and application platforms, enabling consistency and standardization while reducing vendor application maintenance cost. Though these foundational aspects are still important in AI and ML implementations, use case implementations and innovations should not be restricted in order to reduce vendor dependency. According to a World Economic Forum (WEF) report, banks will need to depend on multiple nonfinancial service providers to access emerging technologies, and the partnership landscape is expected to become more fragmented.[18]

Banks can find it difficult to catch up with technologies that have been collecting data and learning for many years. New partnerships that expand their AI capabilities, as well as data sources that help generate new insights, can help banks compete. Banks must identify and define a new balance in controlling and converging their data while exploring new data sources and partners.

Step 5: Scale for enterprise deployment

From "nice-to-have" to "must-have" AI talent: The correct talent mix is a key factor in any AI deployment, and banks lag here because there isn't enough of a data-centric focus, which explains why many projects fail to last beyond the proof-of-concept stage. The leadership team needs to build a centralized talent pool composed of key roles like data scientist, user experience designer, AI and business SME, data engineering manager, analytics visualization developer, and analytics manager.

From rigid to adaptive technology and operating models: Although banks' primary technology platforms and systems support day-to-day core operations, they lack the flexibility required to deploy AI at scale. Many banks have just started on the journey to implement cloud-based technologies that will enable AI innovation and allow for scale. According to a WEF report, one of the challenges of AI implementation is that most AI applications need a robust and expansive integration into the business versus a straightforward add-on implementation.[19] For example, if a model that is built to assess creditworthiness is not strictly integrated into the underwriting process as one of the inputs, it will not help achieve the goal of reducing risk for a bank. Employing AI models, integrating them with current processes, and fine-tuning them as business processes change is key to ensuring firmwide (and potentially broader) scalability of models.

Step 6: Drive sustainable outcomes

From end of implementation to beginning of discovery: The goals of a normal post-deployment phase are to focus on maintenance of the system and make minor enhancements to the system via change requests. However, the goals for AI after deployment should focus on continuously learning how models react to various inputs and identifying ways to improve results. These lessons can then be applied to development of AI systems across the organization.

True learning begins after the deployment phase, as real-world scenarios require applications to quickly adapt to unexpected changes and might require a redesign of current parameters. One corporation, for example, uses AI to evaluate the tone and perception of newspaper articles and makes regular investment recommendations based on the outcomes. But since the news was grimmer than normal during COVID-19, due to reports about public health and the

economic crisis, the advice was distorted.[20] Models can be inconsistent and need expert human intervention to monitor inputs and model behavior. In the previous example, the inputs needed to be enhanced to include other factors beyond sentiment. This also indicates that a single team within the company might not be able to identify and react to all anomalies due to a sudden external event. A firmwide push and insight-driven culture can enable quick reactions to sudden changes.

From using to enhancing capabilities: In general, a deployed system continues to support the original use case and is siloed—hence not explored further to support additional use cases. However, banks can tap into new business opportunities by reusing existing AI insights and infrastructure. For example, if a bank implements a robust AI and ML system that helps detect fraudulent loan applications, data-fed AI models can be retrained to identify and classify other kinds of fraud, like money laundering or wire transfer fraud. They can also help predict the likelihood of fraud in advance, when they are fed consumer profiles. This way, the existing AI models are repurposed to improve the entire fraud detection process. Banks can also try to identify ways to enhance existing AI applications—such as a regulatory reporting automation application extended to automatically detect regulatory changes and incorporate them for upcoming filings.

Conclusion

The growing adoption of AI promises to have a lasting impact on the banking industry. While legacy data systems worked yesterday, they may not necessarily work today and realistically won't work tomorrow. AI, which was once considered science fiction, is not only science fact today, but is also moving increasingly into the mainstream. Even though banks must still overcome significant operational and organizational challenges, as was discussed throughout this paper, they are making great strides forward in implementation and adoption.

Banks are coming to recognize the changes that advanced technologies can foster, and, more importantly, they are embracing them. In the long term, it is possible that banks' competitive features could very well depend on building the technological foundations and processes to fully realize the benefits that AI promises to deliver. Even so, technological advances could potentially outpace industry adoption, even as banks embrace an accelerated journey toward modernization. To successfully realize the benefits that AI can deliver in the future, banks must stay the course today, which, for some, can be easier said than done.

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