

# Credit risk modeling with the power of AI

Consider more data, decide  
and price with confidence,  
and elevate customer experience



For banks, risk modeling is integral to critical areas such as credit determinations, fraud detection, and regulatory compliance. The models that guide credit decisions also shape investment strategies and help providers offer credit in a cost-effective way that helps reduce the risk of default.

The reliability of a risk model increases with the volume of data it uses. A lending program that incorporates more digital elements can be more responsive to customers, which often helps differentiate a brand in a competitive market. This underscores the importance of evolving technologies like the cloud, application programming interfaces (APIs), analytics, and artificial intelligence (AI) in lending and risk modeling.

Implementing AI in risk modeling requires a mature, cloud-based technology infrastructure and a solid understanding of the ways data analytics intersect with regulation. Financial institutions also need robust data governance, quality, and access, to make these models work effectively, especially since AI can introduce new data streams that impact credit decision-making through the adaptive nature of Generative AI.

Many financial institutions are transitioning from outdated, siloed data platforms to modernized systems, which can run up against cultural resistance to change. It can also invite inefficiencies in processes such as credit pricing and decisioning. Establishing a comprehensive support platform can be a path toward the development of a next-generation credit risk modeling program. With advanced data analytics and machine learning in place, banks can not only improve performance in what they do today but also unlock new opportunities for their customers.

In this document, we will explore:

- Different types of artificial intelligence;
- The business case for AI-enhanced risk modeling;
- How it works and the central role of data;
- The platform it requires; and
- How Deloitte and AWS can help.

## Understanding different forms of AI

Banks should recognize that various forms of AI offer distinct capabilities and applications. Traditional AI, such as machine learning (ML), automates rule-based tasks and applies analytics to large data sets. In contrast, Generative AI (GenAI) interprets and creates content in less structured formats, mimicking human reasoning and creativity.

A recent internal benchmark shows that three-quarters of banks already apply ML techniques in their credit risk operations. Common use cases include credit decision models, early warning systems, and pricing. While banks are advancing in ML applications, GenAI represents a new frontier that complements ML, particularly when integrated with a robust cloud platform.

The synergy between AI and GenAI can transform the loan application process. When a bank streamlines interactions and gathers comprehensive data, it can accelerate decision-making and enhance customer experiences. By combining the strengths of these technologies, banks can create a more efficient, personalized, and accurate loan application process. When that happens, both customers and lenders can benefit.

## The business case for AI-enhanced risk modeling

Incorporating AI, including GenAI, into the loan process can offer significant benefits for banks. It can make it possible for them to shorten loan approval times, provide tailored lending options, and extend credit to more borrowers with more confidence. Additionally, AI can enhance fraud detection, improve pricing accuracy, and reduce loan default probabilities. GenAI further assists by augmenting incomplete data sets, facilitating model development, and converting unstructured data into structured formats. Furthermore, it can also enhance model validation, which is crucial for maintaining compliance with regulatory standards.

AI-fueled risk modeling can also lower the operational and capital costs associated with lending. As these costs trend downward, the relative risk of loans increases, making effective risk management essential. Overly critical assessment of individual loans can result in missed lending opportunities. Conversely, adopting a too lenient risk approach in lending practices can lead to the winner's curse. Supported by GenAI, lenders can identify and manage risks more efficiently, offering a competitive advantage.

Moreover, there are social benefits: Increased access to credit can stimulate economic growth by supporting startups and small-to-medium-size businesses, thereby enhancing employment prospects. First-time homebuyers may find it easier to obtain mortgages through AI-enhanced processes that bring nontraditional data into a bank's decision process.

AI can also enrich customer experiences by guiding them through the application process and gathering information that traditional systems may overlook. Online chatbots that interact conversationally represent one example of these potential benefits of AI in lending. Furthermore, AI enables near real-time decision-making, an attractive feature for applicants.

While ML and GenAI present numerous advantages, challenges remain. Data quality and governance are among the most prominent ones. These factors are critical for training effective risk models. AI can streamline predictive analytics and unstructured data intake, but transparency is vital for understanding AI-driven decisions. Banks must promote fairness and mitigate bias within their AI processes.

## Data governance at the core

Data should be viewed as a “living” entity in AI risk modeling. It progresses through a life cycle, from intake to analysis and output. For effective outcomes, data must be current, complete, accurate, discoverable, and readily accessible. Improving data quality along this journey can be viewed as keeping the data “healthy”—and it’s a crucial step in effective risk modeling.

Governance plays a pivotal role in overseeing both the data and the AI models that use it. By implementing continuous monitoring and clear policies, organizations can improve performance tracking, detect anomalies, and ensure ongoing model enhancement while also establishing standards and defining rights of ownership and access. Robust data governance is vital for the effective functioning of AI and GenAI, and strong governance frameworks are necessary to protect data integrity and promote transparency.

Furthermore, direct governance of AI is critical for monitoring model development and deployment, ensuring compliance with regulatory standards, and preventing bias and discrimination. Any data structure that influences lending decisions should be integrated into a dashboard that provides decision-makers with real-time visibility into the sources and uses of information, as well as the scoring associated with each input. This integration can offer insights into data usage and help demystify the AI “black box” for regulators, promoting transparency and accountability in the decision-making process.

## Building an effective AI platform

To leverage ML and GenAI, banks need scalable data architectures that can handle increased data volumes. Cloud-based solutions can address physical scalability needs. Incorporating version control can keep systems current without disrupting business. And using multiple, domain-specific models rather than a single large model can reduce training time and data extraction costs. In addition, training AI models close to data sources can enhance performance and ensure continuous feedback loops. Given that GenAI thrives on diverse data, banks must design their architectures for robust integration and quality control to enable effective AI applications.

Adopting cloud-native data solutions can accelerate AI and GenAI initiatives, automating data pipelines and improving performance. Incorporating customized large language models and monitoring tools can help address bias, AI hallucinations, and privacy breaches.

Banks must recognize that for the foreseeable future, new AI-enabled solutions and legacy systems will likely coexist side by side. Operating both systems in parallel can provide fallback options and facilitate real-world benchmarking of the new models’ accuracy and reliability.

## How Deloitte and AWS can help

AI-enabled credit risk modeling introduces complexities associated with the platform, data, talent, and operational challenges. Successfully navigating these complexities requires a broad spectrum of expertise. Deloitte and AWS offer the experience and platforms to empower financial institutions in implementing AI-driven solutions. Deloitte provides extensive knowledge as a technology leader and trusted adviser for financial services, while AWS offers the cloud capabilities essential for AI platforms.

When Converge™ by Deloitte BankingSuite and AWS's cloud architecture work together, banks can engage customers effectively and make real-time credit decisions. This integration does not replace traditional risk modeling. Rather, it enhances banks' abilities to serve a broader customer base, faster, with more confidence.

## Conclusion

Next-generation credit risk modeling platforms powered by ML and GenAI can significantly improve service, streamline operations, and capture more value. However, banks must approach this as an operational transformation rather than a mere software installation.

Ensuring transparency in data and processes is essential for maintaining stakeholder confidence, particularly from customers and regulators. Robust model validation and monitoring are vital for fostering these conversations and keeping AI models responsive to business needs.

By making strategic investments in data governance, monitoring mechanisms, and cloud infrastructure, lending institutions can position themselves for long-term performance and competitive advantage. Working with Deloitte and AWS can provide valuable resources for navigating this transition to next-generation credit risk modeling.

# Contacts

For further information, please contact us.

## Jurre Deijnen

Partner, Strategy

[JDeijnen@deloitte.nl](mailto:JDeijnen@deloitte.nl)

+31622210156

## Sarah Mellet

Partner, Financial Risk Management

[SMellet@deloitte.nl](mailto:SMellet@deloitte.nl)

+31625091907

## TH Her

Principal Partner Solutions Architect, FSI

[taehyunh@amazon.com](mailto:taehyunh@amazon.com)

## Simon Philips

Principal Partner Development Manager, FSI

[phismo@amazon.com](mailto:phismo@amazon.com)

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited (“DTTL”, its global network of member firms, and their related entities. DTTL (also referred to as “Deloitte Global” and each of its member firms are legally separate and independent entities. DTTL does not provide services to clients. Please see [www.deloitte.nl/about](http://www.deloitte.nl/about) to learn more.

Deloitte is a leading global provider of audit and assurance, consulting, financial advisory, risk advisory, tax and related services. Our network of member firms in more than 150 countries serves four out of five Fortune Global 500® companies. Learn how Deloitte’s approximately 264,000 people make an impact that matters at [www.deloitte.nl](http://www.deloitte.nl).

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the “Deloitte network” is, by means of this communication, rendering professional advice or services. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser. No entity in the Deloitte network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.

© 2026 Deloitte The Netherlands