Why core modernization and AI adoption must align



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Banks are investing heavily in generative and agentic AI, from customer experience to operations to risk management. But it's not enough to have AI ambitions — the conversation in banking has gone from "Should we adopt AI?" to "Why are we stuck in pilot mode?" In many cases, the bottleneck lies not with the AI tools themselves, but in what's underneath them: the mainframe systems that hold the bank's core data and applications.

Core modernization and AI adoption can no longer be treated as separate strategies. Increasingly they need to be one strategy, because AI can only move as fast as the systems it depends on.

Legacy cores: Built for transactions, not intelligence

Nearly half (49%) of banking and payments professionals say the cost of modernizing core technology is the biggest barrier standing between their AI investments and real ROI, according to an American Banker study. "That concern is very consistent with the challenges we see around modernization," said Paul Holland, chief technology officer at Amdocs Mainframe Modernization Practice. "Banks know there is value in modernizing, but these are mission-critical systems, so cost and risk have historically made organizations hesitant."

It's important to consider, Holland noted, that there is also a cost to not modernizing. Maintaining legacy technology involves considerable ongoing expenses — infrastructure, specialized skills, technical debt, and the extra work required every time the bank needs to connect



Paul Holland, Chief Technology Officer, Amdocs Mainframe Modernization

that environment to something new. At many large institutions, 60% to 80% of technology spending still goes to maintaining and operating existing systems, leaving little left over for AI-enabled innovation, according to an August 2026 report from McKinsey, "Core banking in the age of AI: Crafting intelligent financial engines." As AI investment grows, those integration costs become an even greater share of the equation.

That's because many core systems were never designed for what AI now demands of them. "Those systems were designed to process transactions reliably, not to support the real-time data access, integration and agility that today's AI applications require," Holland said. Data often sits siloed in legacy databases. Processing can still depend on overnight batch cycles, and connecting

those platforms to modern analytics and AI tools can be complex and costly.

The stakes get even higher as banks consider more ambitious AI projects. “The ‘next best thing’ in retail banking isn’t a smarter chatbot; it’s experimental autonomous banking,” said Holland. That kind of shift asks more of the underlying technology. AI systems that can act, not just analyze, need reliable, consistent access to the data and processes that power the bank.

The connective tissue approach

For banks wary of the cost and disruption of modernization, there’s an important distinction to make. Core modernization doesn’t have to mean a full rip-and-replace. Drastic strategies carry real risk, and many institutions that have attempted them run into cost overruns, delays, failed migrations, and disruptions to customer experience.

Holland describes an alternative approach this way: “The mainframe remains the secure heartbeat of the bank, embedded with decades of proven business logic. AI acts as the central nervous system, and modernization is the connective tissue between them.” What that looks like in practice is connective tissue can take different forms depending on the application. Some systems can be bridged through APIs and modern data layers that let new and legacy environments work together. Other cases may require deeper changes. Some banks automatically rewrite legacy code into modern programming languages. Others use AI to redesign an application around specific business functions rather than legacy code. Either approach, Holland noted, can be adopted incrementally, letting a bank migrate in phases while staying synchronized with the systems it hasn’t modernized yet.

Ultimately, the goal isn’t modernization for its own sake, but the right approach for the desired applications. “You don’t want to build an advanced AI layer only to discover that the systems underneath it can’t provide the data, connectivity or agility required to scale it,” Holland said. Some applications may need only light bridging, while others need to be completely rebuilt. Banks are better off prioritizing the systems that are causing the constraints rather than treating their entire mainframe as an undifferentiated whole.

The foundation, not the afterthought

Increasingly, banks are recognizing that mainframe modernization is a necessary precondition for adopting AI at scale, not a separate initiative. AI readiness requires the data, applications, and infrastructure underneath to be accessible to and able to integrate with modern technologies. When done well, modernization can turn the core system that was causing a constraint into a truly valuable foundation for faster innovation, digital banking, and AI at scale.

To learn more about how banks can align modernization and AI strategy, view this timely webinar, “Scaling AI in banking: Why core systems matter more than ever.”

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If you’re a financial services institution looking to learn more about modernizing your core systems, click here to explore our solutions or connect with a specialist.