

AGENTIC AI: THE NEW ENGINE OF COST- OPTIMIZED BANKING

Abstract

The banking industry increasingly leverages advanced technology to address operational pain points and capitalize on emerging trends. This paper explores Agentic AI as the next evolution in banking automation, distinguishing it from traditional rule-based systems through its integration of Large Language Models (LLMs) with autonomous decision-making. Unlike static AI, Agentic AI can plan, execute, and self-correct multi-step workflows across complex environments. By synergizing with data lakes, cloud platforms, and Robotic Process Automation (RPA), it enables seamless end-to-end task execution. This research identifies specific banking domains where Agentic AI significantly reduces operational costs and accelerates processing speeds. The findings suggest that transitioning to agentic workflows allows institutions to move beyond incremental improvements toward truly intelligent, autonomous operations. Ultimately, Agentic AI provides a scalable framework for modernizing banking infrastructure, ensuring long-term efficiency and a competitive advantage in a digital-first financial landscape.

Context

The global banking sector is currently navigating a multifaceted landscape of operational and strategic challenges, including intensifying market competition, stringent regulatory compliance mandates, and diminishing loan demand driven by global tariff impacts. Amidst rising customer expectations and the persistent pressure to deliver quarterly profitability, banking leaders are increasingly turning to advanced technological interventions to enhance operational



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efficiency and reduce overhead costs.

Artificial Intelligence: The Architectural Paradigm of Modern Banking

The integration of financial

technologies—including automation, cloud computing, the Internet of Things (IoT), and blockchain—has fundamentally restructured banking operations, optimizing systemic efficiency and enhancing the consumer experience. Central to this digital evolution is Artificial Intelligence (AI), which has emerged as the foundational infrastructure for contemporary financial institutions.

Banks are increasingly leveraging a sophisticated suite of AI technologies—specifically Natural Language Processing (NLP), Large Language Models (LLMs), Machine Learning (ML), and Neural Networks—to drive operational efficacy, mitigate costs, and bolster data-driven decision-making. The specific applications of these technologies include:

- ⦿ **Natural Language Processing (NLP):** Facilitates the automated extraction of high-fidelity data from KYC documentation, credit applications, and client correspondence, thereby minimizing manual processing latency.
- ⦿ **Large Language Models (LLMs):** Provide robust decision support for frontline personnel by generating comprehensive portfolio summaries, drafting credit memoranda, and navigating complex internal policy queries.
- ⦿ **Machine Learning (ML):** Empowers predictive analytics for credit scoring, default forecasting, and the hyper-personalization of financial products based on longitudinal behavioural data.
- ⦿ **Neural Networks:** Underpin real-time fraud detection frameworks, enabling the identification of anomalous transactions with high precision and reduced false-positive rates.

Collectively, these advancements have enabled financial institutions to achieve superior throughput, higher accuracy, and reduced overhead.

In this list of AI technologies, a new significant addition is Agentic AI (AAI) - an autonomous LLM-based agents. It represents the next significant frontier in the autonomous evolution of the banking sector.¹

The Rise of Agentic AI(AAI)

Agentic AI is a relatively new formal concept. Although some of its underlying ideas have been around for a while, there is still no universal definition.

Agentic AI refers to AI systems that can take autonomous actions to complete tasks end-to-end, rather than only generating responses like a traditional LLM.

In banking, these are software agents that can:

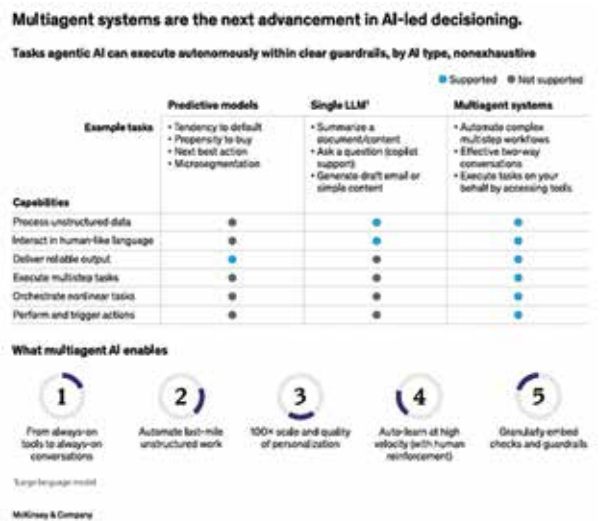
- ⦿ Understand requests in natural language
- ⦿ Determine which actions fulfill those requests
- ⦿ Execute those actions across banking systems
- ⦿ Adapt based on context and constraints

The primary differentiator is, “autonomy”.²

While LLMs are powerful at understanding and generating language, they do not independently decide what steps to take next. *Agentic AI enhances this by giving AI the ability to plan, reason, break down tasks, take actions, use tools, and monitor outcomes-much like a digital worker.*

The core idea is to move from AI that answers to AI that acts.

The difference between Predictive models, LLMs and AAI can be summarised in the form of a chart enclosed below

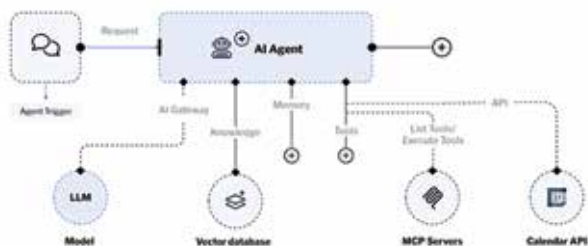


Source: (McKinsey & Co - AI in Asia: Reimagining banking operations through agentic AI, Dec 2025)

Agentic AI Architecture for banking

Agentic AI operates by merging the reasoning power of an LLM with a system that effectively executes tasks. The components for banking include

- ⊙ **LLM's** that provide the reasoning engine
- ⊙ **Context & memory** that allow agents to maintain awareness across interactions
- ⊙ **System connectivity** through APIs which enables agents to read data from and write data to core banking systems.
- ⊙ **Knowledge bases** that give agents access to product information, policies, procedures, and regulations that govern their decisions.
- ⊙ **Guardrails** to ensure that agents operate within defined boundaries. These include access controls, approval thresholds, compliance rules, and audit trails.



*Source: (Backbase.com)

AAI follows a continuous loop of four actions: understand, plan, act, and reflect.³ Initially, it analyses the issue, then divides it into tasks and organises them sequentially. Next, it performs these tasks using integrated systems such as databases, CRMs or document handlers. Finally, it reviews what it has done, fixes any mistakes, and moves forward until the task is fully completed. Due to this closed loop, *Agentic AI functions more like an autonomous workflow engine rather than a passive assistant waiting for prompts. This architecture enables banks and enterprises to automate complex, multi-step processes that previously required human judgment and system navigation.* What makes AAI transformative is not the LLM alone, but the combination of reasoning, autonomy, tool use, and continuous self-correction layered on top of it.

Agentic AI's, potential transformative impact on Banks & Financial Institutions

Banks in India are at an AI inflection point. Agentic AI can become a key differentiator for the banking sector in Asia by reimagining operations to streamline processes, drive productivity, and deliver better customer outcomes. As per McKinsey survey report⁴, the AI-powered next best experience capability can

- ⊙ enhance customer satisfaction by 15 to 20 percent,
- ⊙ increase revenue by 5 to 8 percent, and
- ⊙ reduce the cost to serve by 20 to 30 percent

In the Indian banking industry, Agentic AI is now moving from early-stage pilots to limited production use, mainly in back-office and middle-office operations wherein repetitive, multi-step tasks can be mated with oversight.

KPMG reports estimate agentic AI will lead to \$3 trillion in corporate productivity and a 5.4% EBITDA improvement for the average company annually based on research on more than 17 million firms. The report further states that as of June 2025, AI agents' ability to automate tasks is doubling every three to seven months. Companies earn \$3.50 for every \$1 they invest in agentic AI, while the top 5% globally earn about \$8 per \$1. The report further states that agentic AI could drive a 30% increase in workforce efficiency and a 25% decrease in operational costs by 2027.

Applications of Agentic AI in Banking

The infusion of Agentic AI in Banking industry increases process efficiency, improves customer experience and reduces errors and costs:

1. Customer Onboarding and KYC

AAI systems can autonomously manage the end-to-end onboarding lifecycle by orchestrating document ingestion, identity verification, and cross-referencing customer data across disparate internal and external repositories. By leveraging Large Language Models (LLMs), these systems interpret unstructured data—including digitized forms, correspondence, and natural language inputs—to extract critical information.

The architecture enables the agent to define procedural workflows, execute mandatory validation protocols, and update records without human intervention. This automation significantly mitigates manual labour, accelerates throughput, and ensures standardized adherence to KYC regulatory frameworks. Furthermore, through iterative learning from diverse edge cases, the system enhances its predictive accuracy and operational efficiency. Consequently, financial institutions can achieve substantial cost reductions by minimizing manual reviews and rectifying procedural inaccuracies, ultimately fostering a superior user experience.

2. Anti-Money Laundering (AML)

In the context of AML, AI facilitates real-time transaction monitoring, enabling the automated identification of anomalous patterns and the flagging of high-risk activities. AAI can create Suspicious Activity Reports (SARs) significantly faster and with greater accuracy than traditional methods⁶. By leveraging Large Language Models (LLMs) to synthesize unstructured data—such as historical customer profiles, communication logs, and regulatory watchlists—these systems provide critical contextual enrichment for generated alerts.

The agentic framework autonomously investigates suspicious cases, performing entity resolution to link disparate accounts and generating preliminary investigative reports. Furthermore, the system can draft regulatory submissions for human oversight, thereby streamlining adherence to AML compliance mandates. Through the integration of automated reasoning, operational autonomy, and LLM-driven linguistic comprehension, financial institutions can accelerate detection latencies, mitigate false-positive rates, and ensure standardized reporting. Ultimately, this approach reduces the fiscal and manual burdens associated with traditional AML workflows.

In AML detection, 20-25% reduction in false positives, and 30-40% cost savings in

automated compliance⁷.

3. Retail Loan Processing

The integration of AAI into retail loan workflows facilitates an end-to-end automation of the credit lifecycle, from initial application to final approval. By leveraging LLMs, these systems can autonomously execute document verification, data extraction, and eligibility assessments. LLMs provide the cognitive capacity to interpret unstructured financial data and complex forms, generating nuanced insights to support credit risk evaluation. Furthermore, these autonomous agents orchestrate the entire procedural pipeline—including credit scoring, policy compliance checks, and cross-departmental approvals—while maintaining real-time synchronization with core banking systems. This systematic automation significantly reduces manual intervention, thereby accelerating processing times and ensuring rigorous adherence to lending regulations. Ultimately, the deployment of agentic AI mitigates operational risk, optimizes cost structures, and enhances the customer experience by providing a *scalable, consistent, and audit-ready framework for high-volume retail lending*.

4. Corporate Loan Processing

Within the domain of corporate lending, Autonomous AI agents provide a robust framework for managing the multifaceted operational complexities inherent in the credit lifecycle. By orchestrating cross-departmental approvals, verifying documentation, and monitoring covenant compliance, these systems enhance the structural integrity of credit assessments. Utilizing LLMs, these agents facilitate the extraction of critical insights from heterogeneous, unstructured datasets—including financial statements, legal contracts, and historical communication logs—thereby augmenting evaluative precision. Furthermore, AI agents optimize task sequencing, execute preliminary risk screenings, and generate

technical syntheses to support human-led credit deliberations. The integration of such automated workflows significantly mitigates temporal inefficiencies and alleviates systemic bottlenecks, thereby ensuring the standardized application of institutional credit policies. Furthermore, this automation not only *enhances operational transparency and regulatory compliance but also facilitates a substantial reduction in overhead expenditure. As these systems iteratively evolve through machine learning, they develop the capacity to refine workflows and proactively identify data requirements, ultimately fostering a more empirically informed and accelerated decision-making framework for large-scale corporate loan portfolios.*

5. Regulatory Compliance

AI agents significantly mitigate the operational burden associated with regulatory monitoring and reporting by automating data ingestion across heterogeneous systems, interpreting multifaceted regulatory frameworks, and executing subsequent compliance protocols. Leveraging the natural language processing capabilities of LLMs, these systems can synthesize unstructured regulatory mandates, internal governance policies, and organizational communications into executable operational workflows. Furthermore, continuous surveillance of transactional data and routine operations facilitates the real-time identification of potential breaches, the generation of standardized regulatory documentation, and the maintenance of comprehensive, immutable audit trails. Such technological integration enables financial institutions to maintain rigorous alignment with evolving

Traditional AI models are powerful, but **Agentic AI** is transformative. Capable of handling end-to-end tasks like document verification and suspicious activity reporting without manual intervention, AAI is expected to deliver a **\$170 billion profit boost** to the global banking sector by 2028. Discover why the future of finance isn't just digital—it's agentic.

regulatory expectations, reduces the incidence of human error inherent in manual verification processes, and accelerates reporting lifecycles. Consequently, these advancements *lower compliance-related expenditures and bolster institutional confidence during regulatory interactions.* As regulatory environments remain dynamic, the inherent adaptability of these AI systems ensures a flexible compliance posture that is substantially less dependent on manual intervention.

6. Risk Management

In risk management, an AI agent can help banks keep a close watch on exposures, evaluate risk models⁸, risk thresholds, and spot emerging threats before they escalate. With support from LLMs, it can make sense of unstructured information like news articles, market updates, or internal reports to provide context for risk assessments. The agent can carry out control checks, update risk dashboards, and flag high-risk situations for human review. By automating these tasks, the agent can improve the accuracy, consistency, and speed of risk evaluation, reducing the need for constant manual monitoring. It can also

standardise processes and provide predictive insights, helping banks manage operational, credit, and market risks more proactively thereby strengthening overall governance.

7. Counter Fraud

The integration of AAI represents a significant advancement in fraud detection, moving beyond static, rule-based systems to a paradigm of proactive and autonomous mitigation. Unlike traditional models, agentic systems are capable of continuous transaction monitoring⁹ and the autonomous execution of pre-defined preventive measures. By

extracting contextual nuances from sources like customer communication, notes & emails, LLMs provide the necessary intelligence to enrich alerts and inform autonomous decision-making.

The operational benefits of deploying agentic AI in fraud detection include:

- ⊙ **Case Prioritisation and Investigation:** Agents can autonomously prioritize alerts based on risk severity and investigate anomalies without constant human oversight.
- ⊙ **Operational Efficiency:** Automation significantly reduces operational overhead and labour costs while maintaining high detection accuracy.
- ⊙ **Improved Detection Metrics:** These systems are designed to minimize **false positives** while accelerating response times, ensuring a more seamless user experience.
- ⊙ **Adaptive Resilience:** Through **continuous learning**, agentic systems dynamically adapt to evolving fraud patterns, thereby mitigating financial losses and staying ahead of emerging threats

Implementation Challenges

The successful deployment of Agentic Artificial Intelligence within the financial sector is contingent upon a comprehensive strategic framework that addresses four critical pillars:

- ⊙ **Governance and Regulatory Risk Management:** To ensure systemic stability, financial institutions must implement rigorous governance frameworks capable

“\$3.50 return for every \$1 invested. A 30% jump in workforce efficiency. A 25% cut in operational costs by 2027. Agentic AI isn't a future bet — it's a present imperative for banks. This piece unpacks how autonomous AI agents are reshaping the entire banking value chain, from onboarding to risk management, and what it takes to implement them at scale.”

of supervising autonomous reasoning and execution. These systems must be engineered to function within predefined operational parameters, thereby facilitating strict adherence to evolving regulatory compliance standards.

⊙ **Technological Integration and Interoperability:** The efficacy of Agentic AI solutions is inherently tied to their seamless integration with legacy and emerging infrastructures. This requires high-fidelity interoperability with distributed ledger technologies (blockchain),

cloud computing environments, and advanced big data analytics to support real-time, data-driven decision-making.

- ⊙ **Human Capital and Talent Development:** A primary prerequisite for institutional readiness is the cultivation of an “AI-ready” workforce. Organizations must prioritize reskilling initiatives that synthesize deep domain expertise in finance with specialized technical proficiency in emerging autonomous systems.
- ⊙ **Ethical Scrutiny and Algorithmic Transparency:** Beyond technical performance, banking institutions are compelled to mitigate inherent biases within AI models. Establishing explainable and transparent decision-making processes is essential to maintaining public trust and ensuring ethical integrity in customer-centric applications.

Conclusion – The Way ahead

Indian Banks today have an immediate opportunity to harness AAI to fundamentally transform their operations. The prize that beckons: breakthrough gains in efficiency and customer experience, and enduring competitive advantage through significant cost reduction.

To get started, leaders need to embrace a mindset shift, from a technology-first approach to a

business-first outlook. Ultimately, any undertaking to reimagine banking operations through AI is not simply a technology program; it is a strategic reinvention and rewiring of workflows. A clear vision, disciplined prioritization, and a road map that balances ambition with scalability can help to keep organizations on track. **IMA**

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