VIEW POINT

THE ROLE OF AI AND BLOCKCHAIN IN SECURING CROSS-BORDER PAYMENTS

Abstract

Cross-border payments are the latest subject of the profound transformation that has redefined global industries over the past decade. This comes as financial institutions face rising fraud risks, regulatory fragmentation and increasing demand for real-time, transparent settlement. AI and blockchain are emerging as the dual pillars of a new trust architecture, one that secures cross-border payments through intelligence, automation, and end-to-end visibility. AI delivers predictive fraud detection, real-time compliance validation and risk-based decisioning, while blockchain provides immutable records, shared transparency, and faster settlement.This article offers a strategic perspective on how leaders can harness AI and blockchain to build resilient, future-ready cross-border payment infrastructures that are secure, transparent, interoperable, and commercially competitive.

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Cross-border payments have entered a new era of scrutiny and transformation. As global value chains expand and digital commerce breaks geographical boundaries, the demand for fast, transparent, and secure international transactions has intensified. Yet traditional infrastructures, built decades ago, continue to struggle with rising fraud, operational inefficiencies, regulatory fragmentation, and customer expectations for instant settlement.

For organisations across banking, FinTech, payments, and regulatory bodies, this moment represents more than a technology shift; it marks the evolution of a new trust architecture. Artificial Intelligence (AI) and blockchain are emerging as foundational pillars for securing cross-border payments, enhancing visibility, strengthening compliance, and reducing systemic risk.

The evolving complexity of cross-border payments

The traditional correspondent banking model distributes responsibility across multiple intermediaries, each with its own compliance regime, verification processes, and risk thresholds. The result is predictable:

- High processing cost
- Delayed settlement cycles
- Low transparency for senders and regulators
- Manual investigation overhead
- Inconsistent compliance standards

Meanwhile, transaction volumes continue to grow. Global cross-border flows reached USD 347.7 billion in 2024. Forecasts suggest the market will grow significantly, moving from USD 371.6 billion in 2025 to USD 620.15 billion by 2032, supported by a steady CAGR of 7.60% during the review period.

At the same time, threat vectors are rising at an alarming pace. Cross-border fraud attempts are growing, fuelled by the spread of synthetic identities, digital mule networks, and cross-jurisdiction laundering schemes.

This creates a paradox: cross-border payments are both more essential and more vulnerable than ever. AI and blockchain in cross-border payments offer a clear path to resolving this tension, reshaping security across the entire payment lifecycle from initiation to settlement.

How AI strengthens security across the cross-border payment lifecycle

AI introduces a new paradigm of intelligence-led security, one that adapts to evolving threats, operates in real time, and scales across jurisdictions.

AI for cross-border fraud detection: a predictive defence layer

Legacy rule-based systems detect only known fraud patterns. AI models, by contrast, continuously learn from:

- Behavioural indicators
- Transaction histories
- Geo-location patterns
- Device signatures
- Network-level anomalies

This allows them to detect previously unknown fraud modi operandi before financial loss occurs.

Case Study

After deploying an advanced AI-driven risk assessment system, a major global financial institution reported detecting two to four times more financial crime than before, while achieving 60% fewer false-positive cases. This demonstrates how AI can significantly enhance detection precision and reduce unnecessary customer interventions.

For organisations, this translates to:

- Sharper fraud controls
- Accelerated investigation workflows
- Reduced customer friction
- Materially lower operational cost

Accelerating identity and compliance validation

Cross-border payments rely heavily on KYC, AML, sanctions screening and document verification. Manual checks extend settlement windows and create vulnerabilities.

AI enhances these processes by enabling:

- Automated document intelligence
- Enhanced sanctions and Politically Exposed Person (PEP) scanning
- Behavioural biometrics for identity assurance
- Instant anomaly-based risk scoring
- Real-time validation of source-or-destination-risk indicators

These capabilities are not simply about speed; they reinforce compliance integrity while reducing the regulatory burden on operations teams.

Supporting risk-based compliance models

As regulatory regimes evolve, from FATF guidelines to regional digital asset frameworks, financial institutions face increasing pressure to demonstrate real-time oversight and auditability.

AI assists leadership by offering:

- Explainable risk models
- Automated reporting
- Continuous monitoring rather than periodic testing
- Proactive identification of emerging behavioural risks

This shift supports a more agile, data-driven compliance posture, which is critical in cross-border transactions.

Securing cross-border payments with blockchain transparency

Blockchain replaces fragmented trust in cross-border payments with a single, shared ledger, giving authorised participants a synchronised source of truth, where all authorised participants operate on the same tamper-resistant record of transactions.

Immutability as a strategic security asset

Every transaction on a blockchain ledger is cryptographically secured, time-stamped, and immutable, eliminating risks such as post-settlement manipulation, reconciliation gaps, opaque audit trails, and reliance on fragmented databases. By enabling near-real-time settlement, often reducing processing times from days to minutes, blockchain significantly narrows the window for fraud.

Smart contracts to automate trust

Smart contracts embed predefined business rules directly into transaction workflows, automating fund release, compliance checks, reconciliation, dispute resolution, and conditional payments. By shifting trust from manual intervention to deterministic execution, they reduce manual touchpoints and error rates while ensuring consistent rule enforcement across complex regulatory environments, without increasing operational overhead.

Tokenised money as the future of settlement

As Central Bank Digital Currencies (CBDCs), tokenised deposits, and regulated stablecoins mature, blockchain-based settlement rails are positioned to replace multi-hop correspondent banking structures. Tokenised settlement models eliminate redundant intermediaries, increase transparency, and streamline cross-border value exchange. Industry estimates suggest these models can reduce international transfer costs by up to 60%.

Blockchain secures the transaction layer; AI secures the decision layer. Together, they form the foundation of next-generation cross-border payment security.

AI and blockchain converging to transform global security

The convergence of AI and blockchain shifts cross-border payments from static control frameworks to continuously adaptive security systems. Instead of layering intelligence on top of legacy processes, risk assessment, compliance enforcement, and settlement execution become part of a single, integrated operating model.

AI evaluates identity, intent, and risk before transactions are initiated and continuously as they move across corridors, while blockchain provides the execution and settlement backbone on which those decisions are enforced consistently and transparently.

This integration enables preventive intervention rather than post-transaction investigation, reducing reliance on manual reviews and episodic controls.

Early implementations demonstrate the impact of this architectural shift. Global pilots reinforce readiness in securing cross-border payments. Initiatives such as Singapore's Project Ubin, European digital euro pilots, and UAE–India corridor programmes achieved measurable reductions in settlement time.

This architectural convergence creates the conditions for a new fraud-prevention model, one that aligns AI-driven intelligence with evolving regulatory expectations across jurisdictions.

Strengthening fraud prevention through regulatory-aligned intelligence

As digital payment ecosystems globalise and accelerate, fraudsters increasingly exploit jurisdictional gaps, real-time settlement windows, and identity vulnerabilities. Because traditional, rules-based controls struggle to keep pace with this complexity, AI for cross-border fraud detection has become central to modern prevention efforts. It enables the identification of synthetic identities, coordinated mule networks, and laundering patterns by analysing behaviour across transactions and corridors. Unlike rules-based controls, it continuously adapts to evolving fraud typologies without fatigue.

Importantly, this shift toward AI-driven fraud controls is reinforced by growing regulatory alignment. Global bodies are signalling support for digital-first oversight models that combine AI and blockchain to enhance transparency, supervision, and systemic resilience.

- FATF encourages AI-led risk-based monitoring for high-volume corridors.
- The Bank for International Settlements is piloting multi-CBDC initiatives, such as mBridge with integrated supervisory analytics.
- The G20 has outlined a roadmap prioritising digital identity, AI-enabled compliance, and blockchain-based settlement by 2030.

These developments highlight that effective fraud prevention depends on the operating backbone underpinning next-generation cross-border payments.

Building the operating backbone for next-generation cross-border payments

Realising the value of AI and blockchain requires modernising the operating backbone governing data, workflows, and settlement across cross-border payments. This backbone must support real-time intelligence, regulatory assurance, and interoperability across complex payment ecosystems. At its core is data unification. Fragmented datasets across risk, compliance, fraud, and payments teams limit AI accuracy and slow investigations. Centralised, well-governed data layers enable real-time detection, decisioning, and supervisory visibility.

Equally critical are workflow orchestration and connectivity. Embedding AI insights into case management, reporting, and settlement workflows reduces manual hand-offs and strengthens compliance quality. At the same time, API-first connectivity allows legacy platforms to consume blockchain events, tokenised settlement records, and real-time risk scores. Resilience must be engineered by design through continuous monitoring, stress testing, and secure ledger operations to ensure continuity in the face of operational and cyber disruptions.

Interoperable foundations for scalable value creation
Ensuring legacy platforms connect seamlessly with digital asset rails and AI-driven risk engines, enabling faster launches of new cross-border services.

Trusted data and intelligence governance
Embedding explainable AI, disciplined model validation, and clear accountability to sustain trust while scaling personalised, real-time payment experiences.

Regulatory readiness as a competitive advantage
Positioning the institution for environments where tokenised value, digital identity, and AI-led compliance are baseline expectations, reducing friction to market entry.

Ecosystem leadership in global payment networks
Orchestrating partnerships with central banks, fintech innovators, regulators, and payment networks to unlock new corridors, products, and shared infrastructure.

Capability transformation to sustain innovation
Building depth in AI, distributed ledgers, cyber security, and digital compliance to support continuous product evolution and monetisation.

This operating backbone is what enables security, compliance, and monetisation to scale together.

Elevating customer value and new revenue models in cross-border payments

With these strategic foundations in place, AI and blockchain move beyond strengthening security to reshaping how financial institutions deliver value. What was once a cost-intensive and opaque process becomes an intelligence-led experience that builds trust, accelerates global commerce, and supports new revenue opportunities.

The shift starts with predictive, advisory-driven engagement. AI-powered behavioural and corridor insights enable banks to move beyond transaction processing to proactive guidance, alerting corporates to potential delays, recommending lower-risk routes, forecasting liquidity needs, and identifying compliance risks early. Cross-border payments begin to function as a strategic service rather than a back-office operation. Blockchain strengthens this value proposition by delivering real-time transparency across fees, settlement status, and intermediary paths. For exporters, logistics providers, and digital businesses, this visibility becomes a competitive advantage.

These capabilities enable new monetisation models such as guaranteed settlement windows, corridor-specific risk intelligence, programmable supply-chain payments, and embedded compliance services, reshaping how global businesses transact and grow.

The path forward: intelligent, transparent cross-border payments

Cross-border payments are entering a phase where security, speed, and transparency are no longer competing objectives but reinforcing outcomes. AI delivers adaptive intelligence to detect fraud, manage compliance, and respond to risk in real time; blockchain provides an immutable, shared infrastructure that removes opacity, strengthens settlement finality, and reduces systemic exposure. AI and blockchain in cross-border payments are shaping payment environments that are instant, predictive, transparent, resilient, and aligned with regulatory expectations. Leadership in the next decade will depend less on technology adoption and more on how effectively AI and blockchain are orchestrated across the cross-border payment ecosystem.

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