



Distributed Ledger Technology in Banking



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The financial industry has long operated with duplication. Each bank maintains its own ledger of transactions and spends considerable resources reconciling those ledgers with its counterparties. This constant checking creates cost, delay, and operational risk.

Distributed Ledger Technology (DLT) emerged to address these inefficiencies by enabling institutions to share a synchronized transaction record in real time. While DLT offers transformative potential, it is not yet positioned to fully replace existing transaction systems. Instead, it serves as a powerful complement, particularly in areas where traditional infrastructure struggles with speed, transparency, or interoperability.

What is Distributed Ledger Technology (DLT)?

DLT is a shared digital ledger maintained across a network of computers, known as nodes. Every participant in the network holds the same version of the ledger, and transactions are validated collectively before being recorded. Once recorded, data cannot be changed, creating an immutable audit trail.

Blockchain is the most well-known type of DLT, but it is not the only one. Blockchain organizes transactions into linked “blocks.” Other distributed ledgers use different structures, yet the principle is the same: a synchronized, secure record that removes the need for constant reconciliation.

Why DLT is Important for Banks Today

The concept of shared ledgers has existed for years, but three forces have made DLT highly relevant now: **mature technology, regulatory focus, and real-world adoption.**

- **Efficiency gains:** DLT reduces reconciliation work by eliminating duplicate records.
- **Faster settlement:** Unlike legacy systems that operate within business hours, DLT can operate continuously. That means 24/7 settlement and lower liquidity buffers.
- **Smart contracts:** Transactions can carry rules within them. For example, a payment may only be released once delivery is confirmed. This creates automation and reduces manual checks.
- **Stronger resilience.** Because the ledger is distributed, there is no single point of failure. Every entry is traceable and transparent, making audits and regulatory checks faster and more reliable.

DLT Use Cases in Banking

1) Payments and Settlement

Banks are applying DLT to one of their biggest challenges: moving money quickly and safely across borders.

- **Cross-border payments.** HSBC has tested tokenized deposits to move funds between affiliates instantly, even outside RTGS hours.
- **Atomic settlement.** Delivery versus Payment (DvP) ensures cash and securities settle at the same time, reducing settlement risk.
- **Interbank reconciliation.** Shared ledgers allow counterparties to work from the same transaction record, reducing mismatches and exceptions.

2) Capital Markets and Liquidity

- **Tokenized securities.** UBS and Deutsche Börse have issued digital securities directly on DLT, shortening issuance timelines and lowering entry barriers.
- **DLT in repo transactions.** J.P. Morgan’s platform has processed over USD 1.6 trillion in repo trades with near-instant settlement.

3) Compliance and KYC

- **Reusable digital identity.** Projects such as [DAMA](#) and Wecan allow investors to use one verified KYC record across institutions.
- **On-ledger compliance.** Smart contracts can embed AML checks and automatically enforce regulatory requirements.

4) Trade Finance and Supply Chains

- **Programmable supply chain finance.** [Linklogis](#) and [Standard Chartered](#) use programmable tokens to extend financing deeper into supply chains, providing working capital to smaller suppliers.

DLT and AML Compliance

In its open form, DLT created challenges for AML by allowing pseudonymous transactions. However, permissioned DLT networks — where participants are known and governance is established — turn the same technology into a compliance tool.

- Transactions are transparent and fully traceable.
- Smart contracts can enforce KYC, sanctions screening, and Travel Rule checks automatically.
- Immutable records provide regulators with clear, verifiable audit trails.

Rather than adding complexity, DLT can actually streamline AML and make compliance more efficient.

Benefits of DLT for Financial Institutions

DLT offers measurable advantages in three key areas:

1. **Operational efficiency.** Shared ledgers reduce reconciliation costs, manual checks, and settlement delays.
2. **Regulatory trust.** Immutable audit trails and automated compliance improve supervisory confidence.
3. **Innovation.** Tokenization and programmable payments open new product possibilities, from fractional securities to 24/7 liquidity management.

However, these benefits are most impactful when DLT is applied to specific pain points — not as a wholesale replacement for existing systems.

Challenges Banks Must Address

DLT adoption is not without hurdles. Integration with legacy systems is complex. Governance across multiple participants must be clearly defined. The shortage of skilled professionals slows implementation. And regulators are still shaping legal frameworks for digital assets and settlement finality.

These are not reasons to delay; they are reasons to start small, focus on processes with the highest friction, and scale up with clear results.

Conclusion: A Complementary Path Forward

Distributed Ledger Technology is no longer experimental. It is already delivering value in reconciliation, cross-border settlement, capital markets, compliance, and trade finance.

But DLT is not a silver bullet. It is not yet ready to replace the robust, high-throughput systems that underpin global finance. Instead, it offers a complementary path — one

that enhances transparency, efficiency, and innovation where traditional systems fall short.

For banks, the opportunity is to move from fragmented records to shared sources of truth. Start with the processes that generate the most friction. Build permissioned networks with strong governance. Focus on interoperability with trusted systems.

The result is more than efficiency. It's the foundation for a new generation of programmable finance — where trust, compliance, and innovation are built into the very structure of transactions.