Blockchain and trade finance in Islamic finance

Trade finance remains one of the least digitized parts of global finance, despite underpinning the movement of goods across continents. For Islamic finance, this is more than an operational inefficiency. It raises a deeper question about whether modern systems can still support the level of evidential clarity that Shariah requires. LIM SAY CHEONG elaborates.



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Many Islamic financial structures depend not just on legal form but on demonstrable sequence and ownership. When documentation is fragmented and dispersed across institutions, it becomes harder to show that transactions have been executed as intended. In that sense, the issue is not contractual design. It is infrastructure.

This tension is not new. Trade has always been central to Islamic commercial life. From the early centuries of Islam, merchants operated across networks that linked Al Andalus and North Africa with the Middle East, Central Asia, India and China. These were not occasional exchanges but part of an integrated commercial system built on shared legal norms, enforceable contracts and trust.

Historical evidence gives a clear picture of how sophisticated this system was. The Cairo Geniza documents, studied extensively by S D Goitein, reveal a commercial culture that would not look unfamiliar today. Merchants appointed agents in distant markets, extended credit across regions and maintained written records of obligations with discipline. These records, although preserved in a Jewish context, reflect a broader Mediterranean trading world in which Muslim, Jewish and Christian merchants operated within a common commercial framework.

What made this system work was not simply connectivity but clarity. Contracts such as Mudarabah, Salam, Istisna, Wakalah and Murabahah were designed to support real trade. Ownership had to be genuine. Risk had to be identifiable. Terms had to be clear. Profit was tied to economic activity rather than financial abstraction. Islamic finance, in its origins, was not a parallel banking system. It was a legal architecture for commerce.

Against that background, the shortcomings of modern trade finance become more apparent. On the surface, the system appears sophisticated. In practice, it remains heavily dependent on fragmented documentation. A single shipment can generate multiple documents, each held separately by banks, logistics providers, insurers and counterparties, with no unified record of truth.

The consequences are well-known. Processing times remain slow, often stretching over several days. Documentary discrepancies are common and frequently delay settlement. The Asian Development Bank continues to estimate the global trade finance gap at around US$2.5 trillion, with SMEs bearing the brunt. Many firms are excluded not because of lack of demand but because of the complexity and cost of verification.

The system is also vulnerable to fraud. The collapse of Hin Leong Trading in Singapore illustrated how the same cargo could be used to secure financing from multiple lenders. This was not a failure of contractual structure. It was a failure of visibility. Institutions were operating with separate records and limited ability to verify whether assets had already been pledged elsewhere.

For Islamic finance, these weaknesses cut deeper. Murabahah requires the financier to own the asset before resale. Salam depends on precise specification and delivery. Wakalah requires proper execution of agency. When the evidential chain is fragmented, it becomes difficult to demonstrate that these requirements have been fulfilled in practice.

The contracts remain sound. The infrastructure struggles to keep up.

This is where blockchain begins to attract attention. It does not alter the contractual foundations of Islamic finance. Its significance lies elsewhere, in how it reshapes the evidential backbone of trade.

In a permissioned setting, blockchain functions as a shared record keeping system in which authorized participants operate from a common ledger. Banks, logistics providers, insurers and regulators can interact within a controlled environment where identities are known and governance is defined. Transactions are recorded in sequence, time stamped and resistant to alteration once confirmed.

The practical effect is straightforward. Instead of multiple parties maintaining separate versions of the same transaction, there is a single synchronized record. When a shipment is confirmed, a document issued, or a transaction executed, all authorized participants see the same information. The need for repeated reconciliation is reduced, and the scope for duplication narrows.

For Islamic finance, this is not a marginal improvement. It addresses a central concern. Ownership transfers, document issuance and execution steps can be recorded and verified in sequence. It becomes easier to demonstrate that a Murabahah was structured correctly, that title passed at the appropriate point and that agency relationships were properly executed. Technology does not replace Shariah governance. It provides it with stronger evidence.

The architecture behind such systems is not conceptually complex. A distributed ledger records events. Rules based logic can trigger actions when conditions are met, such as releasing payment upon confirmation of delivery. Identity controls ensure that only authorized participants can access or update records. External data sources can be integrated to reflect real world events such as shipment status or inspection outcomes.

None of this removes existing trade finance instruments. Letters of credit, Murabahah structures and agency arrangements continue to operate. What changes is the quality of the information and the efficiency with which it can be verified.

This is no longer theoretical. In 2018, HSBC and ING completed a blockchain based letter of credit transaction for a soybean shipment using R3 Corda, reducing processing time from several days to less than 24 hours. Platforms such as Contour later built on this approach, demonstrating that shared trade finance networks could process live transactions with measurable efficiency gains.

Contour itself ceased operations in 2023 after struggling to achieve sufficient scale and sustained backing from participating institutions. Similar outcomes were seen in other consortium led initiatives. This does not suggest that the technology failed. It points to a different constraint. The challenge lies less in digitizing transactions than in aligning incentives across institutions and jurisdictions.

That distinction is important. The first wave of platforms attempted to transform the system as a whole. What is emerging instead is a more incremental approach, where digitization is applied to specific use cases, corridors and processes rather than imposed as a universal solution.

One area where this shift is particularly visible is in the treatment of trade documents. The bill of lading, which functions as both proof of shipment and, in many cases, document of title, sits at the center of trade finance. Its digitization has long been constrained by legal uncertainty.

Recent legislative developments are beginning to address this. The UK's Electronic Trade Documents Act 2023 recognizes electronic trade documents as legally valid. Singapore has introduced similar provisions through its electronic transaction framework. These changes matter because digital records only become commercially meaningful when they are legally enforceable.

For Islamic finance, the implications are significant. When ownership and title can be evidenced through verifiable digital records with legal standing, the compliance case for asset backed structures becomes stronger. It also reduces the risk of duplicate financing, since assets recorded on a shared system cannot easily be pledged multiple times without detection.

Automation is another area attracting attention. Certain actions can be



triggered automatically when predefined conditions are met. Payment can be released upon delivery confirmation. Ownership can transfer once acquisition is recorded. For Islamic finance, where sequencing matters, this has clear implications. A Murabahah transaction can be structured so that resale cannot occur before acquisition is complete, with the sequence enforced at a system level rather than relying solely on procedural controls.

Yet caution is necessary. Legal meaning must be translated into precise logic. Not all scenarios can be reduced to code. Human oversight remains essential, particularly in cases of dispute or exception. Shariah governance must therefore extend beyond contract approval to include how systems operate in practice.

The efficiency gains from improved infrastructure are difficult to ignore. Faster transaction cycles reduce the time capital is tied up, improving liquidity for financial institutions and working capital access for businesses. For SMEs, which are disproportionately affected by the trade finance gap, simplified verification processes can make access to financing more viable.

From a broader perspective, this aligns with the objective of facilitating economic participation. Trade should not be constrained by administrative inefficiencies that exclude smaller players.

At the same time, new risks emerge. Blockchain systems record what they are given. If incorrect or fraudulent data is entered at the source, the system preserves it. This places greater emphasis on onboarding standards, verification processes and operational controls. Legal recognition also remains uneven across jurisdictions, requiring careful consideration in cross border contexts.

For Islamic financial institutions, governance must extend to the technology layer itself. Approving the structure of a contract is no longer sufficient if execution depends on digital systems. Weaknesses in platform design, data integrity or operational controls can introduce compliance risks even where the underlying structure is sound.

Islamic finance originated from a tradition of trade grounded in clarity, fairness and real ownership. Modern trade finance, for all its sophistication, remains fragmented and often inefficient. Blockchain does not change the principles of Islamic finance. It offers a way to better align infrastructure with those principles.

The efficiency case is already evident. The compliance case is increasingly compelling. What remains is the question of adoption. Not whether the technology works, but whether institutions are prepared to implement it in a way that is disciplined, governed and consistent with both regulatory and Shariah requirements.