

Smart Contracts and Shariah Compliance: A Legal Paradox?

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ABSTRACT

The places where technological change in personal finance and matters of law and Islam intersect form a dynamic and problematic point of inquiry. One of the most controversial inventions in this field is the emergence of smart contracts, which are digital contracts written on blockchain or similar platforms, programmed to execute the binding provisions of contracts without any involvement of human agents. Although smart contracts have apparent benefits regarding efficiency, transparency, and cost-saving, there are underlying issues of legality and ethics that are brought up when they are implemented in Shariah-compliant applications. Diverging against the logic of smart contracts, the jurisprudence of Islamic law places an interest on human intention (niyyah), mutual consent (ridha), forbidden aspects of unjust elements like riba, gharar and maysir.

By comparing and contrasting the legal framework of both smart contract and Islamic commercial jurisprudence (fiqh al-muamalat), the analysis determines whether decreased legal precision can be accommodated concomitantly by current civilian codes of law that are free of intentions to seek novelty or claim innovations. Specific focus is placed on the interactions of the role of contracts interpretation, dispute resolution, and equitable remedies, which the Islamic law puts more emphasis on ethical discretion and situation-specific decisions which is usually lacking in the strict smart contract code. The paper then analyses the current innovation of the so-called halal smart contracts and the utilization of the Shariah compliant oracles as possible means of aligning these two opposite paradigms.

Finally, the article contends that although existing smart-contract implementations might not simply meet Shariah-compliance demands, a formulated combination of the programmable logic and juristic control, which is considered a hybrid approach, is an alternative way ahead. The paper resolves that in the spirit of interdisciplinary discussion, a constructive converging of both the Islamic scholars and technological and legal theorists can be made by the regulators but only with the cooperation of all the stakeholders. This overlapping may aid the creation of a more diverse and

ethically principled digital financial framework by focusing on the legal aspect of organization and the moral purpose.

Keywords: Smart Contracts; Islamic Finance; Shariah Compliance; Blockchain Technology; Fiqh al-Muamalat; Legal Technology; Halal FinTech; Islamic Contract Law; Legal Innovation; Financial Ethics

Introduction

With the advent of the blockchain-based technology and accompanying changes, new paradigms of how to execute contracts appeared, one of which finds a specific place in scholarly and commercial discourse in the form of smart contracts. Smart contracts are praised because they allow decreasing transactional costs, removing the need of intermediaries and increasing trust in the digital transaction due to a decentralized enforcement mechanism, being described as self-enforcing agreements, where the contract terms are directly stored in code (Werbach, 2018). These automated contracts were initially developed out of the earlier theoretical contribution made by Szabo and currently form the basis of a variety of applications in multiple industries such as finance, insurance, and supply chain management (Mik, 2017a).

Despite of their efficiency and innovativeness, the normative problems brought about by the incorporation of the smart contracts in the Islamic legal system are enormous. Shariah leads the Islamic finance; it is based on the divine sources, Quran and Sunnah, as well as on jurisprudential thought (fiqh). It has stipulated certain bans on the use of *riba* (interest), *gharar* (excessive uncertainties) and *maysir* (speculation) and, at the same time imposes ethical intention (*niyyah*), transparency and approval of involved parties in the contractual commitments (Islamic Finance, n.d.). These are not procedural rules but moral requirement and spiritual responsibility that applies to each staging of exchange.

This is the main conflict between the deterministic, pre-programmed smart contracts and the human-centric, ethically-contextual essence of Islamic law. Automation nature of smart contracts bring into focus a number of relevant questions: Whether smart contract, which has no human judgment to work with, can pass the ethical and legal requirements of Shariah? How will automated enforcement be compatible with doctrines that depend on intention, fairness and juristic control? What is more, do we have any possible frameworks that will aim to reconcile the two legal paradigms?

Issues such as this are answered in this paper, which examines the paradoxical point where smart contract technology meets Shariah-compliant business activities. It employs a doctrinal approach to law with examples of case studies based on Pakistani, Malaysian and the United Arab Emirates jurisdictions, which are jurisdictions where Islamic financial instruments are legally entrenched, in further pursuing to:

Examine the core attributes of smart contracts from a legal-technical perspective;
Analyze key areas of conflict and convergence with Islamic contractual principles;
and

Propose a potential hybrid framework that accommodates technological automation while preserving Shariah integrity.

By identifying the normative gaps and exploring possible reconciliations, this study contributes to the broader discourse on legal innovation within faith-based systems

and the future of Islamic finance in an increasingly digitized legal economy.

Understanding Smart Contracts

One of the main uses of the blockchain technology is the use of a smart contract, where the terms of the contract are executed without the assistance of a traditional system of enforcing the contract or a third party. Smart contracts were conceptually invented by Nick Szabo in the 1990s and now, they are useful digital tools that run on decentralized networks, including Ethereum, Solana, and Hyperledger. With these contracts, it is the executable code that creates pre-determined rules, and when specific conditions are attained, the rules are executed (Smart Contracts, n.d.).

Definition and Mechanism

The term smart contract typically refers to the following concept: it is an agreement that is automatically executed, and the details of the contract are usually programmed in lines of code (Rizos, 2022). The blockchain stores these digital contracts on a distributed ledger system that ensures immutability, transparency, and decentralization of consensus. The building, in its turn, generally consists of:

Trigger conditions coded into the contract (e.g., payment upon delivery);

Automated execution, eliminating the need for human intervention;

Permanence and transparency, as the contract is recorded on the blockchain;

Irreversibility, which may complicate dispute resolution

This type of execution model is highly distinct to the traditional contracts through which enforceability is based on ex post legal remedies and judicial interpretation. Rather, the smart contracts are coded and enforced ex ante instead.

Legal Recognition and Challenges

Smart contracts are starting to become the target of countries that are trying to clarify their legal status. The Law Commission (2021) of the UK confirmed that smart contracts can fulfill the considerations of a legally binding agreement under English contract law when the conventional conditions of offer, acceptance, consideration, and intention to create legal relations are fulfilled. In the same way, the Dubai International Financial Centre (DIFC) and Securities Commission Malaysia have provided regulatory frameworks which permit the use of smart contracts within the financial services (Othman & Dosh, 2024).

Nevertheless, this is not a walk in the park. There is a legal confusion as to how and when a dispute should be resolved, ability to contract and the meaning of ambiguous terms which is problematic. Moreover, the inflexibility of code can restrict the possibility to add some equitable solutions like good faith or reasonableness- the important concepts in most legal frameworks including Islamic law.

Deterministic vs. Probabilistic Smart Contracts

The majority of smart contracts are deterministic so that the output of the contract will be defined each time an identical input is given, therefore, being predictable. Nonetheless, probabilistic contracts, notably those involving the use of AI, or external data sources (via oracles), are the source of uncertainty and manipulation or failure risks (Mik, 2017b).

This is crucial in Shariah-compliant structures. Deterministic contracts are more visible and less gharar (uncertainty) and probabilistic models may bring in unpredictability which would undermine compliance.

Principles of Shariah-Compliant Contracting

Fiqh al-mu‘āmalat (jurisprudence of transactions), and, more specifically, its division of law on contract (Islamic contract law) is based on divine revelations and centuries of juristic reasoning. Instead of focusing on formal legality and enforceability as secular systems of law champion, Islamic law considers both the moral validity and the spiritual responsibility of contracts through equal importance given to them. Therefore, Shariah contracts are not merely means of providing transactions alone, but are instruments of justice, transparency and ethical conduct in economic life (Kamali, 2008a).

Prohibited Elements: Riba, Gharar, and Maysir

Three major prohibitions govern the validity of financial contracts under Shariah:

Riba (Usury/Interest): Any guaranteed or predetermined gain over a loan amount, regardless of the rate or motive, is strictly prohibited. Riba is seen as exploitative and unjust, disrupting the equitable distribution of wealth (Kaya, 2023).

Gharar (Excessive Uncertainty): Contracts must not involve ambiguity regarding the subject matter, price, delivery, or conditions. Excessive gharar renders contracts void as it leads to potential exploitation (Paltrinieri, 2023).

Maysir (Gambling): Transactions that depend entirely on chance or speculation are invalid, as they promote unjust enrichment and moral hazard (Qadri & Bhatti, 2024). These prohibitions are not merely formal constraints—they reflect maqāṣid al-sharī‘ah (the higher objectives of Islamic law), which seek to protect wealth, prevent harm, and promote justice and social welfare.

Positive Requirements for Valid Contracts

To ensure enforceability and legitimacy, Islamic law mandates that all contracts satisfy the following essential elements (Kamali, 2008a):

Offer and acceptance (ijab and qabul) must be clearly expressed and mutually understood.

Legal capacity of the contracting parties must be established (mental competence, maturity, legal standing).

Lawful subject matter, not involving forbidden goods or services (e.g., alcohol, gambling).

Mutual consent, free from coercion, deception, or misrepresentation.

Contracts must be based on transparency and uphold the principles of equity and good

faith. Importantly, the intention (niyyah) behind a transaction also matters, a purely technical compliance is insufficient in the absence of ethical intent.

The Role of Human Discretion and Interpretation

Whereas in the western contract law, the objective standard tends to predominate when it comes to the enforcement of contracts, the Islamic legal tradition allows subjective and ethical elements when enforcing contracts. Judges and jurists are supposed to take into consideration equitable results, contextual senses, and ethical responsibility. This ability to be flexible in jurisprudence is necessary to guarantee application of legal instruments to serve form and spirit, particularly in commercial contexts (“Contributions of Professor M. Kabir Hassan to the Islamic Finance Literature,” 2021a).

This fundamental dependence on human judgment, be it *ijtihad* (independent reasoning) or *fatwa* (juridical opinion), poses fundamental issues towards automating the very process itself in smart contracts as they generally bypass the aspect of human interpretation in the process.

Compatibility Analysis: Smart Contracts vs. Shariah Norms

There are complex issues related to the compliance of smart contracts with Shariah in Islamic finance. Although blockchain-based contracts are transparent, efficient, and immutable, they can be incompatible with values that include ethical, spiritual and jurisprudential because they are governed by Islamic transactional law. In this section, potential synergies or underlying tensions among the two systems have been discussed.

Potential Points of Convergence

Smart contracts and Shariah-compliant finance have some values in common as they have philosophical and operational dissimilarities:

Transparency and immutability, key features of blockchain, align with Shariah’s emphasis on clarity and avoidance of *gharar*. Once a smart contract is deployed, all terms are publicly visible on the blockchain and cannot be altered unilaterally, reducing ambiguity and potential deception (Rahmani & Kadari, 2024a).

Automation of ethical screening can be achieved by embedding Shariah-compliance checks directly into the smart contract code. For instance, interest-bearing elements or prohibited sectors (e.g., alcohol, gambling) can be algorithmically excluded (Rahmani & Kadari, 2024b)

Reduction of intermediaries resonates with Islamic finance's principle of minimizing unjust enrichment, particularly in rent-seeking structures often found in conventional finance.

Areas of Conflict

But there are some inherent contradictions that deny the possibility of reconciling smart contracts with Shariah:

Lack of Human Intention (Niyah) and Juridical Oversight

Instead of the formal aspect of contracts Islamic law regards them on the basis of underlying intention (niyyah) and accountability. By definition, smart contracts do not provide any human discretion when executing it. They are operationalized once they have been put in place and therefore respond to no circumstances of change, or prerogative of morality (Kamali, 2008a). This may cause unfair results in case the conditions that surround the contract change following the implementation.

Inflexibility in Addressing Gharar (Uncertainty)

Although blockchain decreases the ambiguity between transactions, the deterministic quality of smart contracts can even create a gharar of its own. To illustrate, the use of oracles, that is, based on external data (oracles), brings operational uncertainty and risks of dispute due to authenticity in case oracles fail or are manipulated (Allen & Hunn, 2022).

Absence of Dispute Resolution Mechanisms

The breach of contract or misunderstanding Traditional Islamic contracts give the parties recourse to arbitration (tahkim), mediation (sulh) or court. However, smart contracts are compulsorily automated and intrinsically incapable of interpreting will, arbitrating issues or justice values. Such hard determinism potentially blocks the observance of justice and fairness by Shariah (“Contributions of Professor M. Kabir Hassan to the Islamic Finance Literature,” 2021b).

Complex Financial Instruments on Blockchain

Speculation and leverage are inherent parts of some financial products enabled by smart contracts, such as decentralized finance (DeFi) protocols, which raises the objections under Shariah. As an example, yield farming protocols or even smart derivatives can resemble riba and maysir (Taufik Syamlan et al., 2025).

Case Studies: Sukuk and Murabaha on Blockchain

Partial compatibility is demonstrated by few models of experiments. As a case in point, a demonstration of using blockchain to issue Sukuk has taken place in Bahrain and the UAE, where they have been practiced as transparent and traceable issuance practices subject to Shariah compliance. In the same way, Murabaha smart contracts with the mark up and sale design representing a clearly coded structure provide a potential use case in case validation of the intention and consent operations is provided by the parallel off-chain operations (Saad et al., 2024).

Nonetheless, to avert the Shariah legitimacy issue, these models usually resort to the hybrid structures, hybrid structures allow them to run with the automated execution but do so after reviewing them by human beings, which also shows that fully automatic operations without scrutiny are problematic.

Regulatory Perspectives and Scholarly Opinions

The connection between the two terms smart contracts and Shariah compatibility have not only attracted scholars but also regulators in those countries where Islamic finance is of importance to the economy. Like so many regulatory regimes surrounding blockchain technology, these are still developing. Nevertheless, in some jurisdictions,

typically those of the Gulf Cooperation Council (GCC) and Southeast Asia, they have already made a very early start in considering the application of smart contracts in Islamic finance. Nonetheless, sharp academic interpretations and inconsistent regulative responses also signal preponderant lack of agreement as to the complete incorporation of smart contracts in Shariah-compatible frameworks.

Regulatory Developments in Islamic Finance Jurisdictions

As the leader in Islamic financial regulation internationally, Malaysia has taken a cautious optimism attitude. The Guidelines on Digital Assets of the Securities Commission Malaysia also accept the use of smart contracts; however, acknowledges that these are to be used in an Islamic financial product where their usage must comply with approval of the Shariah Advisory Council. In addition, Bank Negara Malaysia has been promoting fintech experimentation through its regulatory sandbox, and a number of Islamic fintech projects are experimenting with blockchain applications (Digital Assets - Guidelines | Securities Commission Malaysia, n.d.).

In United Arab Emirates (UAE) and especially the Dubai International Financial Centre (DIFC), in 2023 a regulatory framework of digital assets and smart contracts was enacted, which also policy some principles of ethical deployment of technology. The DIFC framework does not have a specific provision for Shariah, but it does have a provision with regards to the application of Islamic finance by way of the Dubai Islamic Economy Strategy (3: Digital Assets and Smart Contracts in: Private International Law In An Era Of Change, n.d.).

Bahrain also embraces blockchain technology with its own Financial technology regulatory sandbox to the Central Bank of Bahrain and its Shariah boards are now taking greater interest in the concept of Islamic fintech platforms, though more cautious of automated decision-making and gharar-related risks.

Scholarly Opinions and Institutional Fatwas

There is both zeal and doubt in the scholarly discourse. According to certain Islamic finance experts, smart contracts, when designed carefully, could be used to greater effect in increasing Shariah compliance through greater transparency and limiting both riba and gharar. Still others warn that automation can skip important juristic review, compromising such concepts such as niyyah (intention) and fairness (adl), particularly in more complex or speculative contracts (20, n.d.).

Organizations like Accounting and Auditing Organization of Islamic Financial Institutions (AAOIFI) and the Islamic Financial Services Board (IFSB) have not provided exhaustive standards regarding the smart contracts but have remained silent of their future provisions. Interim roles imply that there should still be a human oversight within an Islamic fintech solution.

Ongoing Gaps and Jurisprudential Caution

One of the limitations that regulators and academics bring up over and over again is the lack of legal flexibility on smart contract platforms. The fact that there is no opportunity to revise terms, cancel contracts because of reasons not expected (udhr) and fail to provide equitable remedies, is a challenge to the Shariah principles, which are justice and welfare of humans (maslahah). Therefore, numerous researchers advise

the following framework: keeping the effectiveness of smart contracts but adding in parallel juristic regulation applies and review or after-execution dispute resolution (Rabbani et al., 2025).

Bridging the Gap: Hybrid and Smart Halal Contracts

With the structural incompatibilities between fully automated, smart contracts and the value-based demands of Shariah law, scholars and technologists have sought means of accomplishing hybrid solutions that introduce the element of automation but balances out human privacy. Such models, which are called Smart Halal Contracts, are designed to bring the advantages of blockchain and at the same time contain layers of juristic regulation and ethical control. This part summarizes the remedies that have to come up to address the legal paradox between the technological determinism and the Shariah principles

Human-in-the-Loop Design

A possible solution is to ensure that in smart contracts, there is always a human-in-the-loop mechanism that means that some of the contractual events or event-driven triggers may need human approval prior to occurring. An equivalent example could be a blockchain-supported Murabaha (cost-plus financing) transaction which has a programmed payment schedule but before fulfillment of delivery or markup conditions needs certification by a Shariah board or seller verification (Ikhwan et al., 2025). This upholds the niyyah (intention) and moral discretion of Islam contracts. With such design frameworks, programmable conditionality is achievable, that is, it will only be executed when the off-chain is being verified, and this will help to address the gap uncertainty between legal certainty and theological legitimacy.

Use of Oracles for Contextual Data

To overcome the gharar issue, a proportion of transparency and reduce information asymmetry can be achieved by integrating oracles as external data sources into the blockchain. With the Islamic form of insurance (Takaful), smart contracts may be used to automatically pay out a claim that occurs due to weather or health data provided by oracles. Nevertheless, the reliability, neutrality, and Shariah-compliance of such oracles are technical and ethical problems (Mik, 2017a).

Smart Shariah Compliance Layers

The latest prototypes suggest integrating Shariah-checks as modules or layers of smart contracts, which can be verified by third-party sites or those scholars who can be certified in this field. As an example, the “Halal Chain” initiative employs a blockchain in product tracking, which employs the phases of Shariah-approving it in the supply chain (Purusottama & Simatupang, 2025). Likewise, fintech services like HelloGold and Blossom Finance have tried smart sukuk constructions which consist of on-chain automatization and off-chain audit of compliance.

Juridical Escrow and Dispute Resolution Mechanisms

To solve the problem of irreversible execution, hybrid smart contracts have the capability of adding juridical escrow functionality to the contracts so that a neutral

arbitrator would be capable of stopping or updating execution in case of a dispute. This brings in flexibility in accordance to Islamic ideology of istihsan (juristic preference) and maslahah (public interest) which cannot be coded on logic-based only code (Kamali, 2008b).

Toward a Normative Framework for Smart Halal Contracts

In the end, the multi-stakeholder collaboration is needed to develop standardized frameworks to Shariah-compliant smart contracts. Regulators, academics, technologists, and financial institutions have to develop protocols together that both incorporate ethical standards, legal flexibility and technical feasibility. These frameworks would be able to match international standards in Islamic finance (e.g. AAOIFI, IFSB) and they would promote innovation by introducing a sandbox clause of testing and controlled introduction of a product.

Conclusion

The emergence of Shariah-compliant finance and smart contracts have potentially become one of the highlights and a rich legal contradiction. The potential of automation, transparency, and efficiency that smart contracts will bring to the table on the one hand coincide with a number of goals of the Islamic commercial jurisprudence, such as focus on fairness, clarity and absence of unjust enrichment. Conversely, by being deterministic and rigid smart contracts usurp the important attributes of Islamic law, foremost amongst them being the centrality of intention, the role of human discretion, and the ability to make equitable adjustments in face of unforeseen conditions.

This paper has established that though theoretically, smart contracts can be used to improve the likelihood of adherence to some aspects of the technical nature of the Shariah, the current architecting of the contracts may actually not take into consideration the moral and ethical elements behind the Islamic legal understanding. The lack of juristic interpretation, arbitration, and ethics police minimizes their acceptability because contracts under the system are not just legal tools but also moral commitments driven by divine rules.

The emergence of hybrid frameworks, smart halal contracts that implement compliance layers embedded into them, oracles and the human-in-the-loop controls shows, however, a possible way ahead. In shaping these innovations prudently, it is possible to make an eventual synthesis of the strength of rigidity inherent in the blockchain with the adaptability of Islamic finance in the spiritual and jurisprudential sense.

Paradox of smart contracts and Shariah compliance will have to be addressed with a multidisciplinary approach in the end. Technologists are responsible to generalize more open systems; scholars have to discuss extensively considerations of ethical aspects of automation and regulators have to give a clear direction that ensures fairness to innovation as well as Islamic legal integrity. Only in this way, Islamic finance will be able to fit in the #contractlaw digital transformation process, without losing its values within.

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