# *Smart Contracts: applications and Shariah issues*

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**Abstract:**

This study aimed to examine the legal opinions in smart contracts and highlight their practical experiences within Islamic finance platforms, elucidating the mechanism of implementing these contracts based on blockchain technology. The study concluded that these contracts can play a prominent role in providing low-cost services with an easy mechanism accessible to all segments of society, especially in crowdfunding platforms (waqf, zakat). This is due to the ability of this mechanism to achieve financial inclusion, transparency, and speed in contract execution.

***Keywords:*** *Smart contract, Blockchain, Blossom platform, Teek taka platform, Kapital boost platform*

**Jel Classification Codes:** G21

***Résumé:***

Cette étude visait à examiner les avis juridiques sur les contrats intelligents et à mettre en lumière leurs expériences pratiques au sein des plateformes de finance islamique, en élucidant le mécanisme de mise en œuvre de ces contrats basés sur la technologie blockchain. L'étude a conclu que ces contrats peuvent jouer un rôle important en offrant des services à faible coût avec un mécanisme facile d'accès à toutes les couches de la société, notamment sur les plateformes de financement participatif (waqf, zakat). Cela est dû à la capacité de ce mécanisme à réaliser l'inclusion financière, la transparence et la rapidité dans l'exécution des contrats.

***Mots-clés*** *: Contract intelligent, Blockchain, Blossom plateforme, Teek taka plateforme, Kapital boost plateforme*

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## 1. INTRODUCTION

A smart contract is software that expresses the contents of a contractual agreement and implements this content, due to incentives provided by users or extracted from the environment.

Smart contracts are being promoted as a means of enhancing efficiency, security, and integrity in the implementation of the Agreement, reducing contract implementation costs, and increasing confidence among the parties. The contract in code form is also called self-executing contracts and digital contracts, most notably Blockchain contracts.

The main purpose of the smart contract is to facilitate the transfer of digital assets between contracting parties based on pre-agreed terms or conditions. Like a conventional contract, set rules and penalties in the form of software codes such as a statement if there is other permission to automatically enforce agreed obligations.

These contracts are self-enforcing in nature and can perform tasks and functions without manual interference. It is already intelligent and automates repetitive manual tasks.

It allows the performance of credible transactions with minimal reliance on third parties.

This paper is organized as follows. in section.1, Introduction, In section.2, Overview of Blockchain, in section.3, Mechanisms of Smart Contracts. In section.4, Sharia view of smart contracts, in section.5, Applied models for smart contracts in Islamic finance, and in section.6, Conclusion and recommendation.

## 2. Overview of Blockchain

Blockchain has received a whole lot of traction (Vincent, Skjellum, & Medury, 2020) and is now considered “one of the maximum extremely good technological improvements of the twenty-first century” (Kimani , Adams , & Kim, 2020). This is due to its specific traits regarding the privacy, security, and integrity of community transactions (Kotamraju & Vejendla, 2021) which allow it to serve as the panacea of the modern-day troubles in more than one industry and delivery chain (Ali, Chung, & Kumar, 2021). Because of the dynamic hash and encryption accomplished

at every factor of the transaction, a blockchain refers to a series of interconnected and surprisingly stable records. Intentional or inadvertent tries to hack or destroy transactions are not possible with blockchain technology (Kotamraju & Vejendla, 2021). On the opposite hand, in its maximum primary form, a blockchain is a set of records blocks (generally maintaining facts on crypto-forex transactions or clever agreement specifications) that might be connected thru cryptographic means. It's additionally called an append-most effective log or a disbursed ledger of transactions (Yaga, Mell, & Roby, 2018). Unlike a centralized database, this ledger is disbursed, because of this no unmarried character has manipulated the facts this is written to the blockchain. An institution of nodes or friends ever have a duplicate of the complete blockchain (or the chain's key facts), and all of them agree on how the records ought to be written/delivered thru a consensus process.

**2.1 A key characteristic of blockchains is that it's far tamper-proof:** Cryptographic hashing guarantees that facts written in formerly accredited blocks cannot be changed. In extra detail, all block's transaction facts are successfully hashed via a so-known as Merkle tree inside the header, and every block carries a hash of the preceding block's header facts. In practice, which means any unauthorized alteration (i.e. tampering) with the facts in a previous block can be speedily detected through all nodes. If a transaction in a formerly typical (or "mined") block should be changed or reversed, the simplest manner to achieve this in a blockchain gadget is to report the opposite transaction in a destiny block this is typical among all parties.

A fundamental challenge in blockchain systems is the consensus protocol or the technique for reaching consensus among nodes on each information block to be stored. Several consensus techniques are in use or have been developed, but the following are the most common:

**2.1.1 Proof of Work (POW):** Most open blockchain structures that help their money, along with Bitcoin (Nakamoto, 2008), use this type of consensus. The node with the proper feature the following block to the chain in POW consensus is chosen with the aid of fixing cryptographic trouble (technically, a "zero-expertise proof"), i.e., a riddle that is hard to

resolve however easy to verify. The act of including a brand-new block is referred to as "mining," and the nodes that achieve this are referred to as miners, and they're paid with a fixed quantity of local cryptocurrency (or a sub-unit of it) for every new block they effectively mine. The trouble withinside the Bitcoin machine includes computing a positive range of main zeros, with the complexity of the puzzle being changed with the aid of using converting the range of zeros that ought to be computed. In practice, the puzzle has come to be exponentially extra hard to resolve over time, requiring specialized hardware (referred to as ASICs, or application-particular included circuits), the pooling of computation assets into so-called "mining swimming pools," and, maximum importantly, a sizable quantity of power intake. The excessive quantity of power required to do POW calculations is one of the maximum famous and putting residences of POW blockchains because it now exceeds the power intake of a couple of nations (with Ireland, Denmark, or Argentina being proposed as different options). The big power use has been questioned, given maximum mining swimming pools are positioned in regions in which power is pretty cheap. While that is not an unusual place in places with plentiful renewable power output, it's also not unusual to place in different countries/areas in which less expensive power is sourced in doubtful ways (which might be frequently primarily based totally on coal or different fossil fuels).

**2.1.2 Proof of Stake (PoS):** This exchange consensus method offers nodes with a higher "stake" withinside the device extra weight (and as a result a higher possibility to mine the following block) (e.g. very own extra of the cryptocurrency). This gets rid of the want for strength-in-depth PoW-fashion mining to illustrate trustworthiness, and it may additionally accelerate block generation. The Ethereum community is now searching approximately switching to a PoS-fashion paradigm, partially because of less expensive strength fees for accomplishing consensus.

**2.1.3 Proof-of-Authority (POA):** This consensus manner maybe the notion of a Proof-of-Stake version, with the stake being the validator's identity. POA is primarily based totally on a (very limited) quantity of pre-permitted validator accounts, or “authorities," who have the authority to validate transactions and create new blocks. To live sincerely, authority nodes ought

to undergo a pre-choice procedure, claim their name, sign up with a public notary database, and observe fixed norms. They have a motivation to stay sincere and keep away from being compromised with the aid of using attacks when you consider that they're rewarded for doing so and advantage strength withinside the network. POA protocols had been in particular famous in private (business) blockchains, in particular in strength-associated applications (e.g. the Energy Web Foundation blockchain system). This is attributable to the excessive transaction fee that POA-primarily based structures may also achieve, in addition to the less expensive overheads and strength fees in comparison to PoW structures. However, having a small number of authority nodes can be perceived as going towards the decentralization beliefs that underpin blockchains, making this a much less suitable choice for public, permissionless blockchains.

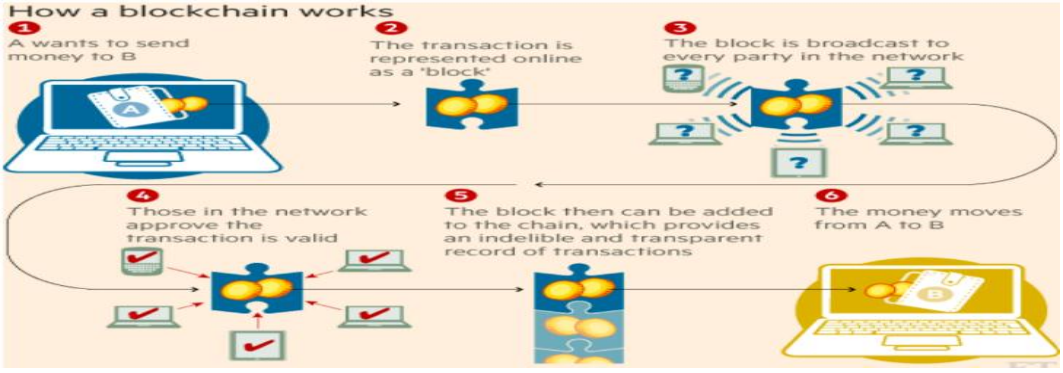
**2.2 How blockchain works**: Blockchain is an allotted database that saves records. Although maximum blockchain packages now keep bitcoin and business transaction records, any type of records can be saved in a blockchain. Identity validation, electoral voting, and private fitness data control are examples of different blockchain uses (Shipman, 2016). Blockchain, because the call implies, continues records withinside the shape of blocks, every that's linked (chained) to the previous block. An allotted community, peer-to-peer trading, and the usage of encryption and hashes are all hallmarks of blockchains (Lewis,2018). For starters, not unlike conventional databases, which keep records in an unmarried area and are consequently at risk of hacking, blockchain records are copied and stored throughout several nodes (e.g., computer systems and servers). The blockchain is an extra steady technique of records garage considering that records are saved in numerous locations, making it extra hard for hackers to assault the database. Second, data travels among friends in the blockchain. In contrast, data travels among a server and customers in a conventional database. Each node in a blockchain is hooked up to some peer nodes, and those peer nodes are related to some different peer nodes, ensuing in a community of related peer nodes. Each node assessments and shops transaction facts, in addition to speaking them to others. The facts of

transactions are synchronized primarily based totally on the blockchain consensus protocol to hold a shared report of transactions withinside the blockchain. (Dinh & Zhang, 2018).

As a consequence of this, blockchain does now no longer depend upon a government that has monopolistic management over the database and can hence be tampered with. Bitcoin (Nakamoto, 2008), a public blockchain in which all of us can see and take part in transactions, become the primary implementation of blockchain technology. Several public blockchains have when you consider that been built and are in use. However, positive programs fee privateness and manage over participation. Businesses, for example, may also have private records that they need to hold personally. In such instances, a personal blockchain may be created, permitting a corporation to govern (supply permission to) the blockchain's members. A personal blockchain also can extrude a public blockchain's functionality. Private blockchain, for example, would possibly have an unmarried or several authorities, hire intermediaries and construct a trust-primarily based machine amongst members (Dinh & Zhang, 2018).

To demonstrate how the blockchain works, consider the following transaction: Ali wishes to compensate Baba. This transaction is recorded in four stages: transaction request, transaction validation, block construction, and ledger update.

**Fig N° 1:** How blockchain works




Source: World Economic Forum

## 3. Mechanisms of smart contracts

The term “smart contract” was first proposed in 1994 by Szabo as “a

computerized transaction protocol that executes the terms of a contract" (Szabo, 1997).

This deal, like a contract, should include standard provisions such as payment terms, liens, confidentiality, and even enforcement. A software system must decrease the necessity of trusted intermediaries such as banks, as well as both deliberate and inadvertent exceptions, and meet economic goals such as decreasing scam loss, mediation and enforcement expenses, and other transaction fees. In late 2013, the Ethereum blockchain initially featured smart contracts, which are systems that autonomously shift digital assets according to arbitrary pre-specified criteria (Buterin, 2014).

Since then, clever contracts had been applied to create custom common sense for precise purposes. Smart contracts can accommodate state-of-the-art wishes due to their flexibility in creation and enforcement, permitting builders to create effective decentralized apps with included domain-precise capabilities. Blockchain packages may also keep domain-precise facts in key-cost layout with the aid of using designing and enforcing domain-precise clever contracts.

As a result, those contracts can be hired in a form of settings, inclusive of industry, regulation enforcement, e-government, and healthcare. The simple purpose of a clever agreement is to make it less complicated for contractual events to switch virtual belongings primarily based totally on pre-decided parameters.

It set the regulations and consequences withinside the shape of software program codes just like if-then-else statements to mechanically implement the agreed-upon commitments, similar to an everyday agreement. These contracts are self-imposing and can carry out sports and capabilities without the want for human interaction. It's smart as it automates tedious guides and repetitious chores. It allows the execution of straightforward transactions with much less dependency on third parties (Nafis Alam, 2019).

3.1 Relation among blockchains and smart contracts: The maximum famous blockchain systems (which include Bitcoin and Ethereum) had been constructed around a so-called "native" cryptocurrency, and the blockchain's number one intention is to report transactions in that cryptocurrency among customers who maintain it in a virtual pocket. Users

might also additionally get entry to and protect this virtual pocket with the usage of public-key (or asymmetric) cryptography, which additionally lets transactions be digitally signed. A blockchain can report software program code, called clever contracts, this is performed whilst pre-described standards are satisfied, further to bitcoin transactions. A clever agreement, like a bitcoin transaction (that's the maximum distinguished use case of blockchain), is inscribed on the blockchain. The produced code and positive bits of information, which include the listing of features to be run, are transferred to the blockchain from a pocket. The clever agreement code needs to then be located in a block this is delivered to the ledger (the usage of the consensus method), and then the clever agreement code will execute to set up the clever agreement's preliminary state. Cryptographic hashing, like financial transactions, protects the clever agreement in a decentralized way in opposition to trying to edit or tamper with it. A clever agreement may be compared to a software program technique to be able to be performed whilst precise standards are met (for example, a positive amount of electricity intake or production). In practice, the clever agreement's code is performed in digital surroundings this is bodily hosted via way of means of all the nodes that make up the blockchain, as though they had been an unmarried computer.

As a result, as soon as a clever settlement is published, it cannot be modified – if an assault takes place due to a flaw or weak point withinside the settlement code, because of the decentralized nature of blockchains, it's miles tough to correct. This is authentic in open, permissionless blockchains, which include the DAO attack on the Ethereum blockchain in June 2016, which triggered the Ethereum network to difficult fork the blockchain and create a brand-new coin. Fixing attacks via way of means of restoring the blockchain may theoretically be simpler in a permission (business) blockchain, which maximum power packages are anticipated to adopt, due to the fact a principal entity controls get right of entry to the system (Kirli , Couraud & , Robu, 2022).

In conclusion, at the same time as understanding what a clever settlement is and what it can accomplish is critical, the blockchain structure can be taken into consideration as being at an awesome implementation degree than the

clever settlement layout itself. In an electricity P2P exchange, for example, the clever settlement, now no longer the blockchain structure, units the guidelines for how/while electricity or flexibility is to be transferred, in addition to the rate to be paid. It's secure to mention that maximum courses analyzed for this take a look at cognizance at the clever settlement's "software layer," in place of the blockchain layer's implementation and simple decisions. Most courses depend upon a pre-current blockchain structure, which pre-specified alternatives just like the consensus mechanism and encryption utilized. Because of its versatility, the Solidity clever settlement language for growing clever contracts primarily based totally on the Ethereum blockchain is proving to be very popular, however, it's far a long way from the most effective option.

3.2 The key features of smart contracts are listed below:

- **Self-executable:** Smart contracts appoint software program code to simplify tough situations through automating operations like if-then-else. It can hurry up the execution of a huge variety of commercial enterprise sports and contractual duties which can be presently dealt with manually.
- **Automated:** All settlement phrases are computerized or want minimum consumer effort. Due to the blockchain generation and automation involved, enterprise offers, and transactions are much less vulnerable to guide mistakes.
- **Tamper proof:** Instead of a centralized database, clever contracts are treated mechanically via the decentralized blockchain network. Deals or transactions grow to be immutable as a result, and no person can extrude or control the information without consensus.
- **Minimum reliance on intermediaries:** The phrases of a clever settlement are executed with or without minimum dependence on third-celebration intermediaries which include legal professionals and judges. Smart contracts, like conventional escrow, are powered by "trust" offerings traditionally, legal professionals or courtroom docket structures had been used to put in force agreements among counterparties.

- **Cost-effective:** There is a low reliance on intermediaries and automation, ensuing in value savings. Legal fees, economic fee processing, minimum operation costs, and the removal of paper-primarily based total operations are all examples of value reductions.
- **Simplified contracts:** Simple traces of code after an "if-then-else" declaration can be used to create clever contracts that don't require felony expertise. Traditional contracts are huge and content-driven, with numerous situations for protecting each party's rights, i.e., situations if both birthday celebration fails to meet their commitments.

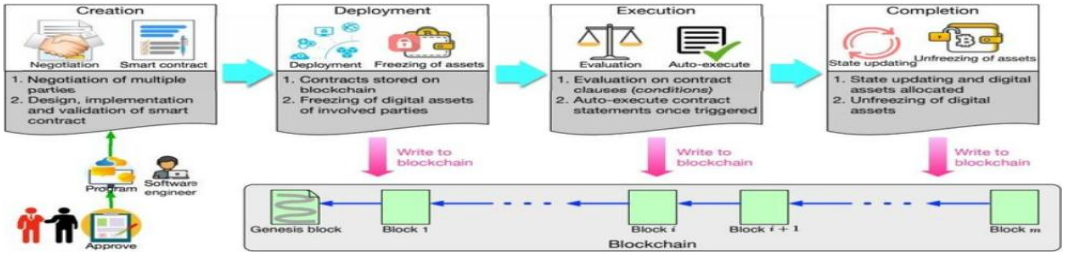
### 3.3 The life cycle of smart contracts:

- **Creation of smart contracts:** Several events concerned first speak agreement responsibilities, rights, and prohibitions. A settlement is probably reached after numerous rounds of discussions and negotiations. Parties can be assisted in drafting a primary contractual settlement with the aid of using legal professionals or counselors. The settlement is sooner or later transformed right into a clever agreement written in laptop languages like as declarative languages and logic-primarily based rule languages with the aid of using software program engineers (Idelberger, Governatori, Riveret, & Governatori, 2016). The clever agreement conversion method follows the identical design, implementation, and validation steps as software program improvement (i.e., testing). It's well worth noting that clever agreement improvement is an iterative procedure requiring several rounds of discussions and iterations. Meanwhile, it's miles running with plenty of people, which includes stakeholders, attorneys, and software program developers.
- **Deployment of smart contracts:** The clever contracts which have been validated can then be deployed on blockchain platforms. Due to the immutability of blockchains, contracts positioned on them can not be amended. Every alternate necessitates the formation of a brand new contract. When clever contracts are positioned on blockchains, all events might also additionally get the right of entry to them through the blockchains. Furthermore, each event to the

clever contract's virtual property is frozen by freezing their respective virtual wallets (Sillaber & Waltl, 2017). Coin transactions (each incoming and outgoing) on wallets associated with the contract, for example, are banned. Meanwhile, the events' virtual wallets can be used to discover them.

- **Execution of smart contracts:** The contractual provisions had been reviewed and analyzed following the deployment of clever contracts. The contractual procedures (or activities) might be mechanically applied on every occasion the contractual situations are met (for example, product receiving). It's well worth bringing up that a clever settlement is made of a chain of declarative assertions connected via way of means of logic. When a situation is met, the applicable assertion is executed mechanically, ensuing in a transaction this is processed and proven via way of means of miners on blockchains (Koulu, 2016). Following that, the devoted transactions and up-to-date statuses were recorded on the Blockchain.
- **Completion of smart contracts:** Following the final touch of a clever settlement, all events worried are up to date with new states. As a result, blockchains include the transactions that arise all through the execution of clever contracts, in addition to the modified states. The virtual property had been moved from one birthday celebration to any other inside the meanwhile (e.g., cash switch from the client to the supplier). As a result, the virtual as-units of the events worried had been opened. After that, the clever settlement has completed its complete lifestyle cycle. (Zheng, Xie, & Imran, 2019).

**Fig N° 2:** A smart contract's lifespan is divided into four key stages.




Source: Creation, Deployment, Execution, and Completion (Zheng, Xie & , Imran, 2019).

### 3.4 Comparison of smart contracts and traditional contracts:

We'll detail the key distinctions between standard contracts and smart contracts in this section of our trip so that potential users may quickly understand their benefits and drawbacks.

- **The time needed to formulate the contract:** A widespread agreement can take everywhere from one to numerous days to prepare, draft, and formulate, relying on the criminal offers and the preparation of the contracting parties. When the usage of a ready-made agreement platform, this length may be shortened to three mins for clever contracts. Ethereum, Hyperledger Fabric, and others are examples of such systems.

- **The execution and remittance of the contract:** In conventional contracts, the events are required to pay the due sums on time - manually and with a brought organizational attempt on their behalf. The remittance is computerized and achieved routinely in clever contracts while the agreed-upon and documented standards are met.

- **The final cost of the process:** Smart contracts, in theory, do now no longer require the intervention of middlemen, making their charges almost negligible. For higher or worse, this opportunity stays withinside the remote future, and the involvement of lawyers in making sure the contractor's compliance with gift prison legal guidelines is critical. Smart contracts, without or with their assistance, aren't the handiest swifter and greater practical, however additionally a mile much less high priced preference for negotiating parties.

- **The data security and protection**: A clever agreement, in contrast to a fashionable agreement, that's simply a bit of paper, may also offer a qualitatively new diploma of safety and secrecy. Blockchain technology's cryptographic safety offers an unprecedented stage of secrecy, in particular, if the agreement is recorded on a person in preference to a public ledger.

- **The need for physical presence:** Given the ever-converting dynamics of our environment, executing faraway sports without compromising their reliability is turning into more and more important. A clever agreement is finished through the use of a digital signature, which gets rid of the requirement for the events to be bodily present, that's a downside that normal agreements can not avoid

- **The archiving**: Traditional contracts need the investment of time, space, administration, and monitoring to archive. Smart contracts are used promptly, safely, and without wasting time or herbal resources. The assessment elements for smart contracts and ordinary contracts are summarized here.

## 4. Sharia view of smart contracts

Modern scholars have persistently debated these contracts, driven by various factors, whether conducted through private or public platforms. The disputes primarily revolve around the challenge of determining the eligibility of contractors. Additionally, disagreements arise concerning the verification of the contract's legality, especially when it involves the use of cryptocurrencies that may not align with the regulations of centralized banks. Consequently, contemporary scholars are divided into three distinct perspectives when discussing the provision of such contracts.

**4.1 The First Perspective - advocate for prohibition**: Several individuals, including Dr. Abdu Sattar Abu Ghada , Dr. Ghassan al-Talib, and others, contended that dealing with these contracts should be avoided due to the issues they entail:

- These agreements rely on the execution of transactions involving digital currencies like Ethereum, bitcoin, and others. Their challenge stems from the lack of conclusive decisions by jurisprudence councils regarding their permissibility (Halal) or prohibition (Haram). Additionally, these contracts lack authorization from legal authorities, and current laws do not officially recognize them, thus impacting their legitimacy. Furthermore, these contracts are not

supported or linked to any other financial asset, leading to their non-approval by official banks and companies (Ghadda, 2019).

- ❖ Numerous contracts are acknowledged in Sharia, including compliance and supply agreements, among others. This suggests the potential for substituting them with smart contracts, a domain that is currently undergoing research and exploration, marked by uncertainties in various aspects of their application (Ghadda, 2019).
- ❖ Severe consequences arise for users when technical and software errors occur during the encryption of contracts on the Blockchain platform. This is particularly critical given that these contracts, once automatically implemented, cannot be modified, amplifying the gravity of their impact (Fadad, 2020).

**4.2 The Second Perspective - A Call for Further Research:** The Islamic Fiqh Academy deemed it necessary to suspend engagement with smart contracts until a conclusive verdict is reached. This directive is outlined in the resolution of the Council of the International Islamic Fiqh Academy, a body associated with the Organization of Islamic Cooperation. The decision was made during its twenty-fourth session in Dubai, held from 07-09 Rabi' Al-Awwal 1441 AH (corresponding to 04-06 November 2019 CE). Following a comprehensive examination of research presented to the Society regarding smart contracts, their activation, and dismissal—particularly in relation to digital currency—and after extensive discussions on the matter, the Academy reached the following conclusion * [2]:

- ❖ Highlighting the resolution of the International Islamic Fiqh Academy, No. 52 (3/6), which was addressed during its Sixth Conference in Jeddah in 1410 AH / 1990 CE. This resolution pertains to the judgment on engaging in contracts using contemporary communication devices, encompassing all its clauses. It's important to note that this ruling extends to electronic contracts distinct from smart contracts.
- ❖ Smart contracts are agreements between two parties that execute

* Islamic Jurisprudence Assembly, Smart Contracts and their Relationship with the Digital Currency Topic Decision 230 (1/24).

automatically, operating on a peer-to-peer basis without the need for an intermediary. These contracts utilize a decentralized distribution network, commonly known as Blockchain, and are conducted using cryptocurrencies like Bitcoin and others.

- The Council opted to defer the resolution of the matter until conducting a specialized seminar on smart contracts. Following the decision on cryptocurrency-related issues, a comprehensive examination of smart contracts, with a specific emphasis on the points highlighted in the second paragraph, will be undertaken. It is recommended to extend invitations to technical specialists in blockchain, cryptocurrencies (encrypted), and related fields.

**4.3 The Third Perspective - advocate for Permissible:** Numerous contemporaries, including Dr. Sano[3], Dr. Qahf, Dr. Al-Omari[4], Dr. Fadad[5], Dr. Dabash[6], and others, have supported the acceptability of engaging in these contracts, citing the following evidence:

- The foundation of all things lies in permissibility. This proof originates as a principle derived by jurists from various sources, including the Almighty's statement (هو الذي خلق لكم ما في الأرض جميعا), as noted by Imam Al-Baq'i: This statement emphasizes that nothing is deemed prohibited without clear evidence[7]. Consequently, everything is considered permissible unless there is explicit evidence prohibiting it. This principle extends to all types of contracts, including smart contracts, wherein the fundamental aspect is the resolution and permissibility in terms of impact.
- Foundation in Financial Transaction Logic: Unlike religious decrees that resist justification, the regulations governing transactions were formulated. These regulations pertain to the legal judgment regarding existence and non-existence. Consequently, the discerning legislator pursued two consistent paths when enacting them:

[3] Sanu, smart contracts in the light of assets, purposes, and outcomes (page: 37).
[4] Qahf Mundhir. Al-Umari, Muhammad, the smart contract (p: 10)
[5] Fadad, Smart Contracts (Page: 1)
[6] Smart Contracts Technology and Its Impact on the Stability of Financial Transactions: A Jurisprudential Legal Study (Page: 11).
[7] Al-Baqai, The Organization of Pearls in the Harmony of Verses and Chapters (1/221).

recognizing a significant portion of contracts and financial transactions not originating initially but guiding them in the correct direction by purging them of taboos. Resorting to general objectives and principles when elucidating the Sharia ruling in these advancements aligns with the accurate principle corresponding to the first characteristic of this Sharia, its validity for every time and place. This principle holds true for the realm of smart contracts, wherein stability, clarity, and growth are evident, especially in preventing fraud, forgery, and financial wastage[8].

## 5. Applied models for smart contracts in Islamic finance

Several trials have been undertaken to address them using smart contracts grounded in blockchain technology, emphasizing the potential advantages within the realm of Islamic finance. Among these experiments:

5.1 Blossom platform: Blossom[9] is a global Islamic microfinance network, in Indonesia, and unlike peer-to-peer platforms that carry the risk of individual default, Blossom uses a fund model. Investment risks for the investor are diversified through a network of local microfinance cooperatives (BMT), which in turn invest in thousands of small-scale projects across various regions in Indonesia.

- **The platform's goal:** The Blossom platform aims for sustainable development by providing financial services to reduce poverty. It recognizes that many people living below the poverty line cannot use traditional banking savings accounts due to limited access and high fees. Therefore, providing financial and savings services is crucial for marginalized communities to help alleviate poverty.
- **Secondhand Technology:** The Blossom platform for smart sukuk is based on Ethereum Blockchain technology. It is a decentralized platform relying on a blockchain supporting smart contracts, and is denominated in the local currency, the Indonesian Rupiah. The platform manages sukuk-related operations such as asset management, profit distribution, and the return of capital at maturity

[8] Rumh, New financial transactions from a purposive perspective (p. 6).
[9] https://www.blssomfinance.com/

in a digital, traceable manner. This is facilitated through the globally recognized ERC20 standard, which is an official protocol for the Ethereum network, implemented as a smart contract enabling digital exchange through peer-to-peer or secondary markets. As a result, there is no need for traditional banks to make payments, leading to reduced costs, increased transparency, and enhanced transaction security. This technology eliminates the involvement of various intermediaries in the traditional sukuk issuance process and is suitable for managing various types of digitally operated financial instruments.

- **Platform expertise:**

**Investment:** The platform believes that there are many investment opportunities in emerging markets, and leveraging them will have many positive social impacts, according to the principle of earning commercial returns on projects with real economic effects.

**Smart Sukuk:** Project financing through fundraising, based on the needs of the institutions and the characteristics of the project it has the smallest Islamic finance cooperative in Indonesia, locally known as Baitul Maal wat Tamwil (BMT), succeeded in raising 715 million Indonesian Rupiah through the issuance of smart sukuk via the Blossom platform.

**5.2 Teek Taka platform:** Teek Taka[10] is a Bengali platform that offers innovative and sustainable solutions to combat poverty. Its digital payment service is designed for those who cannot meet the requirements of traditional banks.

- **The platform's goal:** The Teek Taka platform aims to eliminate poverty by creating a more inclusive and transparent ecosystem with affordable prices. Since children are the most vulnerable to the effects of poverty, the platform targets women responsible for childcare.
- **Secondhand Technology:** The Tik Tak platform leverages blockchain technology to assist suppliers in emerging markets in

[10] https://kapitalboost.com/

accessing cheaper and faster financing in exchange for participating in the ethical transparency system in the supply chain.

- **Platform expertise** :The platform specializes in using blockchain technology to build a rewards and incentive system that contributes to achieving long-term positive changes in behavior. The distributor's ledger creates a transparent supply chain record from start to finish: from factory certificates to shipment tracking to order delivery. The system maintains smart contracts and code-backed invoices that trigger immediate payment release upon meeting specified criteria.

**5.3 Kapital Boost platform:** The Kapital Boost[11] is a crowdfunding platform in Singapore that connects small and medium-sized enterprises needing funding with global investors seeking attractive investment opportunities that support community growth. The platform focuses its activities on four main branches, which are: investment, fundraising, asset purchase financing through Murabaha, and invoice financing through loans and agencies.

- **The platform's goal:** The main goal of the platform is to assist communities in their growth while addressing the problem of insufficient funding available to small businesses in Southeast Asia. It also helps pave the way by providing these companies with a crowdfunding platform to access temporary liquidity for goods and purchases.
- **Secondhand Technology:** It is a technology-based Islamic finance system based on peer-to-peer technology.
- **Platform expertise:** The platform specializes in three types of crowdfunding. Crowdfunding for Small and Medium Enterprises (SMEs), Private Crowdfunding, and Crowdfunding through donations.

## 6. Conclusion and recommandation

The rapid evolution of technology, which is noticeably becoming a major influencer in daily interactions among individuals, is something we cannot

[11] https://kapitalboost.com/

stop. This makes researchers and practitioners in the field of Islamic finance face a challenge that requires innovating solutions that align with both Sharia principles and the demands of the era. In this context, the paper seeks to contribute to this important issue by investigating smart contracts from both a Sharia and practical perspective, examining key legal aspects and highlighting practical applications in Islamic finance platforms.

The study found that individual jurisprudential research in this field has varied, concluding that the jurisprudential assembly affiliated with the Organization of Islamic Cooperation, after its convening in 2019, chose to defer the matter for further research in this type of contract. The study also highlighted some proposals that could be based on this type of contract, including important suggestions such as the Potential of Smart Contracts for Murabahah Home Financing: Towards an Integrated Model (Mohamed Cherif El Amri, Fintech, Digital Currency and the Future of Islamic Finance, 2021),and Zakat on Blockchain: From Theory to Appliation (Abojeib, 2021)

Through research, the study found that smart contracts can play a fundamental role in financial inclusion. Their operation can have a positive impact on collective financings, such as endowments and zakat. If a secure mechanism based on this technology is created, it could contribute to expanding the circle of donors and beneficiaries, thus strengthening the connection between different segments of the Muslim community. Additionally, these contracts are characterized by many advantages, including rapid implementation procedures and a high degree of transparency.

This study recommends focusing on a set of points considered urgent and essential for benefiting from this type of contract:

- ❖ Conduct further research on the topic for its importance and anticipated benefits.
- ❖ Adoption of this technology by Islamic financial institutions aims to enhance trust and create affiliated Islamic financing platforms that rely on this technology.
- ❖ Create a joint entity or organization between technicians and scholars of Sharia whose work is limited to keeping up with

developments in financial technology and addressing them from a Sharia perspective.

- ❖ Create an Islamic innovation body that works on developing Islamic technology to transition the Islamic financial industry from importing financial technology and attempting to adapt it legally, to exporting Sharia-compliant technological products.

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