



An Islamic legal review of smart contract regulation in digital economic transactions: A comparative study between Indonesia and China

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Abstract

Purpose – This study analyzes and compares regulatory approaches to Islamic legal reviews of smart contracts in digital economic transactions in Indonesia and China.

Methodology – Utilizing a qualitative literature study method and a responsive legal theoretical framework, this research examines how two countries with distinct legal systems—Indonesia's pluralistic system and China's centralized system—adapt regulations to the development of blockchain-based digital contract technology.

Findings – The main findings indicate that Indonesia remains at an early stage, characterized by a reactive regulatory approach, lacks specific legal instruments, and faces challenges in integrating Sharia principles. Meanwhile, China has established a systemic and proactive regulatory framework that utilizes smart contracts in its judicial system and national digital economy. Differences in legal ideologies and institutional structures influence responses to technological innovation and demonstrate that regulatory harmonization must be contextual and inclusive of local values.

Implications – This research underscores the importance of collaboration across sectors and countries in developing smart contract regulations that are adaptive, fair, and ethical.

Originality – The originality of this research lies in its contribution to filling the literature gap through a comparative approach and the integration of Islamic law values in the legal discourse of the global digital economy.

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Introduction

Understanding the dynamics of the digital economy and the role of smart contracts is crucial in today's global transaction landscape (Kumar & Chopra, 2022). Massive digital transformation has revolutionized the way individuals and entities exchange value, driving innovations that enable unprecedented automation and efficiency. Smart contracts, as digital protocols running on blockchain technology, facilitate the execution of agreements without the need for third-party intermediaries, promising greater transparency, security, and efficiency (Taherdoost, 2023). This phenomenon not only changes the paradigm of traditional contract law but also has significant

implications for the existing regulatory system. The underlying phenomenon of this study is the tremendous acceleration in the adoption of digital technology and the emergence of smart contracts as increasingly popular transaction instruments, particularly in the Islamic economic ecosystem. The growing volume of digital transactions and investments in blockchain technology indicates a fundamental shift in the financial infrastructure (Balcerzak et al., 2022).

Digital transformation in the global economy has brought fundamental changes to the way transactions are conducted (Koshelev, 2022). One significant technological innovation is the emergence of smart contracts or blockchain-based digital contracts that are automatically executed based on preprogrammed agreements. Smart contracts offer high efficiency, security, and transparency in the execution of agreements, especially in financial systems, digital commerce, and platform-based economies (Wysokińska, 2021). Amidst the rapid growth of this technology, significant challenges arise in terms of regulatory adaptation and harmonization, especially in countries with different legal systems and social values, such as Indonesia and China.

This phenomenon is particularly relevant given the significant increase in the global value of blockchain-based digital transactions, including the growing use of smart contracts. According to a report by Statista (2024), the global transaction value of smart contracts is expected to exceed USD 300 billion by 2025. Blockchain-based transactions are growing at an average annual rate of 30% in Indonesia, whereas in China, blockchain adoption is being systematically driven by the state as part of the national digital strategy (Kadly et al., 2021). To reinforce this picture, we compared smart contract adoption trends in Indonesia and China.

Table 1. Smart contracts adoption trends in Indonesia and China

Country	Digital transaction growth (%)	Blockchain-related national policies	Use of smart contracts
Indonesia	30% per year	No specific regulation, adaptive	Limited to fintechs and startups
China	45% per year	Codified in the national digital strategy	Used in the judicial system, logistics, and state finances

Source: Abidin (2023)

Table 1 shows that, while both show growth trends, China is more advanced in terms of policy and systemic utilization of smart contracts. This difference is the fundamental reason it is necessary to conduct a comparative study of the regulatory approaches of the two countries. Research on the adaptation and harmonization of smart contract regulation is fundamental in Indonesia and China, as both countries have unique characteristics that make this comparative study relevant and informative.

First, Indonesia, as the country with the largest Muslim population in the world (Surur et al., 2024), has a strong commitment to developing the Sharia economy. The adoption of smart contracts in digital economic transactions in Indonesia requires an in-depth study of their compatibility with the Sharia principles. Adaptive regulations should not only facilitate innovation but also ensure that transactions conducted through smart contracts meet the standards of fairness, transparency, and blessings set out in Islamic law (Fitzhan, 2020). The digital economy market in Indonesia is also highly dynamic, with the rapid growth of financial technology startups, making it urgent to understand and formulate an appropriate regulatory framework (Siswanti et al., 2024).

Second, China is a global leader in the development and implementation of blockchain technology and in the digital economy. Despite having a different, often more centralized, and strict regulatory approach, China has invested heavily in blockchain infrastructure and is driving the adoption of this technology in various sectors (Du et al., 2023). The study of how China addresses the regulatory challenges of smart contracts, particularly in a socialist legal system characterized by a large but tightly managed market, can provide valuable lessons. The fundamental differences in legal systems, cultures, and regulatory approaches between Indonesia and China offer a unique opportunity to identify best practices and lessons learned (Xia et al., 2022). This comparative study examines how both countries strike a balance between innovation and protection and how they adapt to the borderless nature of smart contracts.

This topic is important not only in the growth of the digital economy but also in the readiness of the legal system to deal with the changes brought about by technology (Laguna de Paz, 2023). In Indonesia, a country with a majority Muslim population and a pluralistic legal system, the development of regulations on smart contracts must consider aspects of legal certainty, Sharia compliance, and social justice (Hadi et al., 2021; Kharisma, 2021). By contrast, China employs a centralized and authoritarian approach to law, enabling swift and structured policy responses (Yao & Sun, 2023). This comparison is crucial for understanding how legal system characteristics influence regulatory adaptation to technological innovation. However, studies on the regulation of smart contracts in both countries are still relatively few, especially those that examine aspects of harmonization between national legal principles, cultural values, and technological developments. Many previous studies have focused solely on the technical aspects of blockchain technology (Zheng et al., 2018; Hewa et al., 2021; Kitsantas, 2022). In contrast, legal and normative aspects have not been thoroughly explored, particularly in studies comparing two countries that differ significantly in their ideologies, politics, and legal systems. Therefore, this study aims to address the significant gap in the legal literature on the digital economy.

Theoretically, this research uses the framework of responsive law theory from Nonet and Selznick (2017), which states that law should ideally be able to adapt to social needs and changing times, not only as a means of control but also as a medium of dialogue between the state, society, and technology. This theory is relevant for analyzing how smart contract regulations can be formed to be responsive to digital dynamics while upholding justice and openness.

Previous research has provided a crucial foundation for this study. For example, Chen et al. (2020) highlighted how China is integrating blockchain technology into the judicial system through the use of smart contracts for the automatic execution of verdicts. Meanwhile, research by Muryanto et al. (2022) indicates that Indonesia is still in the early stages of developing fintech regulations, and smart contracts have not received special attention within the national legal framework. These two studies provide an opportunity for further discussion on the need for policy harmonization in the face of cross-border developments in digital technology. In addition, research by Muryanto (2023) highlights the importance of ethical approaches and local values in developing Sharia-based technology policies in Indonesia, while Zheng and Snyder (2023) emphasize the state's role in establishing a stable and pro-innovation regulatory framework in China. The gap between these studies suggests that few studies address the integration of normative, ethical, and technological approaches in the study of smart contracts in two countries with contrasting legal frameworks.

This research is necessary because the rapid development of digital technology requires adaptive, harmonious, and legally specific regulations. Indonesia must learn from China's systemic and proactive approach to creating a regulatory infrastructure that supports digital innovation without neglecting aspects of fairness and compliance with local values. Conversely, China can also gain insights into the importance of public engagement and ethics in building technology regulations that are not only effective but also sustainable. This study also makes a scholarly contribution to expanding the repertoire of Islamic digital economy law literature, particularly regarding the compatibility of smart contracts with the principles of Muamalah.

Harmonizing smart contract regulations between Indonesia and China is urgent through bilateral, regional, and global approaches. This research aims to compare Islamic contract law in Indonesia with general contract law in China. Using a comparative study approach, this research is expected to provide solution-oriented policy recommendations for strengthening an inclusive and sustainable digital economy ecosystem.

Literature Review

This literature review integrates perspectives on the digital economy, legal aspects, and relevance of Sharia compliance, focusing on how previous works have addressed the challenges and opportunities in the regulatory harmonization of smart contracts. Digital economic transactions have experienced a significant surge, fundamentally transforming the landscape of business and consumer interactions (Riyanti, 2022). Amid this wave of innovation, smart contracts have emerged

as a significant disruption, with promising efficiency and transparency through the automated execution of contracts on top of blockchain technology. Unlike traditional contracts, smart contracts are self-executing codes that do not require a third-party intermediary, potentially reducing transaction costs and increasing settlement speed. However, the emergence of this technology presents complex regulatory challenges, particularly in determining legal validity, jurisdiction, and dispute resolution (Nagle et al., 2024).

Early literacy about smart contracts tended to focus on their technical aspects and their potential for decentralization. Taherdoost (2023), considered the inventor of the smart contract concept, first outlined the idea of automating contracts through computer protocols, much like vending machines that automate sales. The evolution of blockchain technology, particularly the emergence of Ethereum, has enabled the broader implementation of smart contracts, sparking significant interest among academics and practitioners. With widespread adoption, attention has begun to shift to the legal implications of smart contracts. Singh et al. (2022) exhaustively analyzed how smart contracts challenge traditional contract definitions. They emphasized that while smart contracts offer automation, translating human intent into unambiguous code remains a significant hurdle. Their research highlighted the legal validity of smart contracts, particularly in the event of disputes or code errors. The question of how applicable the law recognizes agreements that are executed automatically and without direct human intervention is central to the discussion. They concluded that adapting existing legal frameworks or developing new regulations is necessary to accommodate smart contracts.

In Islamic economics, several studies have examined the compatibility of smart contracts with Sharia principles. Antova et al. (2020) conduct an in-depth analysis of how smart contracts can be integrated into Islamic finance. They concluded that smart contracts are permissible as long as they fulfill the requirements of Islamic contracting, such as the absence of usury, gharar (excessive uncertainty), and maysir (gambling), and that there must be clarity regarding the object and purpose of the contract. They emphasized the need for clear fatwas and Sharia guidelines to guide the development and use of smart contracts in Islamic financial products. Al-Hilal and Jamaludin (2019) also reviewed the potential of blockchain technology in the Islamic finance ecosystem, identifying opportunities to increase transparency and efficiency in Islamic transactions, and also highlighted the need for a strong Sharia regulatory framework to ensure compliance.

Comparative studies between countries are limited, particularly those involving Indonesia and China. Nonetheless, some studies discuss the approach to technology regulation in each country. The literature demonstrates a cautious, yet progressive approach to regulating blockchain and smart contracts in China. Xiao et al. (2024) outlined Chinese government policies that encourage the development of blockchain technology while implementing strict controls on cryptocurrencies and ICOs. They highlight how China is seeking to integrate blockchain into its digital economy, with a focus on industrial applications such as supply chains and digital identity. Wei (2023) examined the legal implications of smart contracts in China, noting that while Chinese contract law is quite flexible, there are still challenges in accommodating automatic execution and issues such as contract modification and remedies.

Research on smart contracts and regulation in Indonesia is still in its early stages, with a greater focus on adapting digital technologies in general and developing the Islamic economy. Iskandar et al. (2022) reviewed the potential of blockchain technology in the development of Islamic finance in Indonesia. However, details of the specific regulation of smart contracts remain largely unexplored. Existing discussions tend to focus on the need for a comprehensive DSN-MUI fatwa and an adaptive regulatory framework from the Financial Services Authority (Otoritas Jasa Keuangan, OJK) and Bank Indonesia to accommodate this innovation, while maintaining Sharia compliance and consumer protection.

Islamic law in Indonesia has had a profound impact on the country's legal system. Islam grants women the right to be self-employed, although there are some cultural barriers to achieving gender equality (Hidayah, 2023). The Islamic Financial Institutions Qanun in Aceh is part of a legal effort aimed at facilitating all financial transactions in Aceh by Islamic Sharia values (Yahya, 2023). Kusumaningtyas et al. (2022) examined normative law with a legislative approach regarding

digitalization reduction policy for Indonesian MSMEs and its implications for the development of the Islamic economy. Many countries are actively working to address cryptocurrencies as a new phenomenon in modern global economic processes and legal institutions. Muslim countries are also interested in this issue, with discussions of the permissibility of cryptocurrencies under Islamic law (Shovkhalov & Idrisov, 2021).

The literature review suggests that although there is a growing understanding of the potential and challenges of smart contracts, significant gaps remain in cross-jurisdictional comparative studies, particularly between countries with different legal systems and economic characteristics, such as Indonesia and China. Furthermore, the integration of Sharia aspects into the regulatory framework of smart contracts in Indonesia requires further exploration. This research fills this gap by systematically analyzing how both countries adapt and harmonize smart contract regulation, taking into account legal, economic, and Sharia implications, and identifying the lessons learned from each approach. This analysis provides a deeper understanding of global efforts to strike a balance between innovation and regulation in the digital economy.

Research Methods

This study employs a qualitative approach, utilizing a library research method that focuses on an in-depth examination of regulatory documents, scientific literature, policy reports, and relevant secondary data from Indonesia and China. The issue under study is normative and complex, encompassing the intersection of digital technological innovation and characteristics of different national legal systems. This method enables us to examine the regulatory construction of smart contracts and comprehend how the two countries with differing legal ideologies respond to these dynamics (Thomas, 2021).

Data were collected from various sources, including laws and regulations, fatwas of religious institutions, government publications, reports of international organizations, journal articles on smart contracts, digital law, and Islamic economics. Researchers also used primary and secondary legal literature from China and Indonesia, including blockchain-related national strategy documents, digital court rulings, and financial regulatory practices.

Thematic and interpretive content analysis techniques were employed during the data analysis process. We identified key themes, including legal certainty, justice, *maslahah*, state control, and digital ethics, and linked them to a responsive law theoretical framework (Redi, 2023). This framework is used to evaluate the extent to which regulations in each country are adaptive, inclusive, and participatory regarding the technological transformation of smart contracts (Vionis & Kotsilieris, 2024).

The selection of Indonesia and China as case studies was based on their distinct legal systems (pluralistic versus centralized) and contrasting levels of digital regulatory maturity. This literature-based comparative study enables researchers to evaluate best practices and formulate strategic recommendations that are contextual, normative, and applicable in specific settings.

Results and Discussion

Dynamics of smart contracts development in Indonesia and China's digital economy

The development of smart contracts in Indonesia and China has undergone significant dynamics, although they have distinct characteristics and approaches. Smart contracts are recognized through technology startup initiatives and blockchain-based financial platforms in Indonesia. This development is driven more by the market need for transparency and efficiency, especially in the digital finance, logistics, and e-commerce sectors. The Indonesian government, through the Commodity Futures Trading Supervisory Agency (Badan Pengawas Perdagangan Berjangka Komoditi, BAPPEBTI), regulates certain aspects of blockchain technology in the study of cryptocurrencies; however, no regulations specifically govern smart contracts (Irma et al., 2021). In contrast to Indonesia, China has adopted a more structured and centralized approach to implementing smart contracts. The Chinese government, through national initiatives such as the Blockchain-based Service Network (BSN), has integrated smart contracts into various public

services and economic sectors. Court systems in some provinces, such as Hangzhou and Suzhou, have utilized smart contracts to automate the execution of legal decisions. Logistics, supply chain financing, and digital identity are among the key sectors that have extensively adopted this technology (Meiriño et al., 2019).

The findings indicate that China's tech ecosystem developed within a centralized and planned regulatory framework, whereas Indonesia developed organically and sporadically. In terms of leading actors, China demonstrates its dominance as the principal director of the ecosystem. By contrast, in Indonesia, private actors and financial technology-based startups play a leading role. A discussion of these results reveals that differences in policy approaches and technology governance have a significant impact on the pace and direction of innovative contract development in both countries (Guo & Hartini, 2023). In Indonesia, policy decentralization and the presence of multiple legal systems have resulted in varied responses to the adoption of new technologies. Unspecific regulations lead to legal uncertainty; therefore, some industry players opt for experimental approaches without clear legal guidelines. This aligns with the findings of Azizah (2023), who states that digital technology regulations in Indonesia tend to be reactive and have not provided certainty for blockchain-based innovation. By contrast, China's approach reflects a proactive and vertically coordinated legal pattern. The government not only encourages the adoption of smart contracts but also integrates technology into the country's institutional system. Cheng (2023) noted that China utilizes blockchain technology as a tool for control and efficiency in state governance, implementing smart contracts as an extension of the state's administrative functions.

These results can be explained by the theory of smart contracts and the digital economy. Smart contracts are digital protocols designed to automatically execute agreements when certain conditions are met. Within the digital economy framework, smart contracts can increase transaction efficiency, reduce transaction costs, and strengthen trust between parties. Smart contracts function as "legal vending machines" that eliminate the need for human intermediaries in executing agreements. This makes smart contracts highly relevant to the study of a digital economy that emphasizes speed and efficiency (Utami et al., 2023).

The application of smart contracts has excellent potential in supporting the Islamic economy in Indonesia, especially in muamalah contracts, such as murabahah and ijarah, which require transparent contractual documentation. However, this potential has not been accompanied by regulatory support or the awareness of economic actors in the existence of this technology. As stated by Safarina and Adinugraha (2023), the development of Sharia-based financial technology in Indonesia faces challenges in terms of legal compliance and infrastructure readiness.

The dominant role of the state enables the systematic and scalable implementation of smart contracts in China. The use of smart contracts in China's digital justice system demonstrates that this technology can expedite the dispute-resolution process and alleviate the burden of court administration. Xu and Xu (2020) noted that an innovation-responsive legal framework and thorough digital infrastructure readiness significantly determine China's success in this regard.

The results also show that regulatory approaches affect public trust and participation in smart contract adoption. In China, state intervention fosters a perception of security and legitimacy for technology, whereas in Indonesia, legal uncertainty raises concerns about unprotected legal and technical risks. This comparison highlights the importance of regulations that are adaptable and responsive to technological advancement. Nonet and Selznick's responsive law theories are relevant (Feeley et al., 1979). This theory emphasizes the importance of law not only as a tool of control, but also as an instrument that supports social transformation and technology. In this case, smart contracts, as part of digital transformation, require a legal framework that not only provides certainty but also allows innovation.

Based on the results and discussion, it can be concluded that China excels in the adoption and integration of smart contracts owing to its coordinated legal system and national strategic vision for digital technology development. Meanwhile, Indonesia still needs concrete steps to formulate policies that support the smart contract ecosystem, including inter-agency collaboration, public education, and the integration of local values and Sharia in the development of regulations.

Regulatory harmonization strategies: Recommendations for responsive and equitable adaptation

A significant regulatory gap exists in Indonesia, particularly in terms of synchronizing national legal norms, Sharia values, and digital technology (Berakon et al., 2023). In contrast, China has shown a more established institutional readiness to regulate and supervise smart contracts despite its authoritarian and centralized character (Zhu et al., 2020). From these two contexts, it can be concluded that harmonization strategies cannot be uniform; instead, they must consider the specific characteristics of each country's legal system, cultural values, and institutional capacity. Key actors, including regulators, the fintech industry, scholars, academics, and civil society organizations, continue to operate in separate silos. The lack of interagency coordination has hampered the establishment of an adaptive and equitable legal framework. Additionally, there are no specific ethical guidelines or regulatory standards tailored to innovative contract technology within the study of a local value-based digital economy. This has led to a normative vacuum in addressing various risks such as code manipulation, system failure, and potential consumer exploitation.

Ideally, the legal system should be open, participatory, and adaptable to the social and technological dynamics. Law functions not only as a means of control but also as a means of community emancipation and guardian of the value of justice. Therefore, regulatory harmonization strategies must refer to the principles of inclusiveness, sustainability, and protection of vulnerable parties in digital transactions (Xu et al., 2022).

Based on these findings, the recommended strategy includes the establishment of an adaptive national legal framework that involves cross-actors in its preparation. The involvement of DSN-MUI, OJK, KNEKS, the Ministry of Communication and Information, industry players, and the digital community must be coordinated through a Sharia digital regulation forum. This forum functions as a deliberative space that encourages the formulation of legal norms based on deliberation and the *maqashid al-syariah*. Wahyunengseh et al. (2020) emphasized the importance of multidisciplinary involvement in digital policy-making to avoid being trapped in technological or sectoral bias. Meanwhile, in a bilateral study between Indonesia and China, this research suggests that regulatory dialogue serves as a form of digital legal diplomacy. This dialogue aims to strengthen the knowledge exchange on technology supervision, consumer protection, and ethical governance. China can learn from Indonesia's normative approach rooted in legal pluralism and Islamic moral values, while Indonesia can adopt best practices from China's more structured and integrated digital surveillance system.

Table 2. Synthesis of regulatory harmonization strategies based on the national and bilateral contexts

Strategic Dimension	Recommendations for Indonesia	Bilateral recommendations with China
Legal Framework	Establishment of a specific law or regulation on smart contracts	Bilateral memorandum of understanding in the field of digital law
Actor Involvement	Cross-agency Sharia digital regulation forum	Inter-agency collaboration (Kominfo, OJK, and Chinese partners)
Ethical and Sharia Principles	Integration of <i>Maqashid Sharia</i> in digital contract design	Normative value exchange and consumer protection
Consumer Protection	National standards for information, education, and transparency	Benchmarking against Chinese protection models
Literacy and Participation	Community-based digital contract literacy program	Bilateral forum for education and exchange among industry players

Source: Qualitative data analysis results, 2025.

Establishing an ethical framework for smart contracts is grounded in the principles of social justice and transparency. This framework should ensure that technology is used responsibly and does not harm ordinary users. Setiawan et al. (2021) found that the majority of digital financial technology users in Indonesia do not understand the terms and conditions of their contracts. This indicates an information gap with the potential to become a loophole for exploitation. Therefore,

in addition to the legal aspects, digital literacy and algorithmic transparency should be part of the harmonization strategy.

This harmonization strategy reinforces responsive legal theory by demonstrating that successful regulation of technology, achieved through a legal-formal approach, is insufficient and requires collaborative governance that is open to social and religious values. Regulatory harmonization must also address the dynamics of the digital economy as a whole, covering substantive, procedural, and ethical legal aspects (see Table 2).

This study builds on the findings of Ionescu et al. (2022), who highlighted the importance of legal adaptation to digital technology in a manner that is responsive to local values and cultural contexts. This research aligns with Hongdao et al. (2022) approach to legal pluralism, which emphasizes the need for a formal legal system to engage in dialogue with the social and religious legal systems that exist within society. Therefore, an integrative approach combining positive law, Islamic law, and public policy is essential for shaping the future of smart contract regulation in Indonesia.

The adaptation and harmonization of smart contract regulations cannot be performed unilaterally or hastily. This process must occur within a responsive legal framework that ensures fairness, public participation, and social sustainability. By integrating Sharia values, consumer protection, and bilateral collaboration, Indonesia and China can serve as strategic models to manage the transition to an ethical and inclusive digital economy.

Comparative analysis of regulations: State responses to smart contracts technology

Indonesia's reaction to smart contracts is gradual and fragmented. The country does not yet have specific legal instruments to explicitly regulate or accommodate the presence of this technology. Existing regulations, such as Bappebti Regulation No. 8 of 2021 and the Personal Data Protection Law, only address the general aspects of digital technology and have not explicitly addressed blockchain-based automated contractual structures (Noor et al., 2023). In addition, the regulatory approach in Indonesia tends to wait for market development and is driven by practical needs emerging from technology and digital industries (Soputro et al., 2023). In contrast, China has a more centralized, structured, and binding state response (see Table 3). The Chinese government has developed a national legal and policy strategy to encourage, regulate, and guide the use of innovative contract technologies. Through agencies such as the National Development and Reform Commission (NDRC) and People's Bank of China (PBoC), the state has integrated smart contracts into national projects, including Blockchain-Based Service Networks (BSN). China's judicial system has even adopted smart contracts to support the automatic execution of legal decisions, demonstrating a high level of regulatory maturity (Yang et al., 2023).

Legal structures and government characteristics are key factors determining the speed and form of a country's response to innovative contract technologies. As Abell et al. (1992) argue, *"Institutions form the incentive structure of a society, and the political and economic institutions, in consequence, are the underlying determinants of economic performance."* Indonesia's pluralistic legal system, which combines the elements of customary law, Islamic law, and modern positive law, results in diverse interpretations and limitations in policy integration. Faiz et al. (2022) note that *"The Indonesian legal system is not a single coherent whole but rather a set of coexisting systems that must constantly be negotiated in practice."* Sopyan (2024) also emphasizes that *"Legal pluralism in Indonesia has both enriched the system and complicated the process of legal unification."* The values of democracy and freedom of expression provide ample space for civil society initiatives and the technological industry. Platzdasch (2011) observes that *"Democratic reforms have opened up political space for a wide range of actors, from civil society organizations to business interests, to influence policy-making."* However, as Crouch (2023) notes, *"The commitment to participatory decision-making in a democratic setting can slow down the capacity of the state to enact swift and centralized regulatory responses."*

China employs an authoritarian, centralized legal approach that allows the state to respond to technological innovation in a rapid and concerted manner. Regulation is not only a tool of control, but also a political instrument of the state to strengthen government legitimacy and economic efficiency (Syahbandir et al., 2022). China's political culture, which prioritizes social

harmony and institutional stability, incorporates technologies, such as smart contracts, into the nation's comprehensive digital reform plan.

Table 3. Comparison of the regulatory response to smart contracts in Indonesia and China

Aspect	Indonesia	China
Legal Basis	Fragmentary, not yet explicit	Codified and integrated into national policies
State Agency Involvement	Limited to financial authorities and Bappebti	Inclusive: PBoC, NDRC, courts, research institutes
Legal Ideology	Democratic, pluralistic, inclusive	Centralized, technocratic, based on state control
Regulatory Orientation	Reactive to market trends	Proactive and visionary in technology direction
The Role of Cultural/Religious Values	Driven by Islamic values and customary law	Controlled by the values of harmony, stability, and collectivity

Source: Qualitative data analysis results, 2025.

A discussion of these results can be further elaborated using the responsive law theory developed by [Nonet and Selznick \(2018\)](#). In this theory, responsive law is described as a form of law that serves not only as a means of social control but also as a mechanism that opens up space for social and technological change. In the responsive law model, the law is not closed and repressive but rather adaptive to the dynamics of society. If analyzed using this framework, Indonesia remains in a transitional stage between autonomous and responsive laws. Although there is a tendency to adapt to technological change, the resulting regulations do not fully reflect sensitivity to the needs and risks arising from the use of smart contracts. The absence of explicit rules and weak coordination between state institutions shows that Indonesian law is still lagging the pace of technological innovation. By contrast, China's approach is closer to what [Nonet and Selznick \(2018\)](#) call responsive law in an authoritarian state. The state acts as the primary architect in determining the direction and ethics of technology, while maintaining complete control over civic space. In this context, although smart contracts are being developed within a clear and structured legal framework, the process does not provide ample space for public participation. Hence, China's responsiveness is instrumental rather than participatory ([Guo et al., 2023](#)).

This finding is supported by [Dong \(2023\)](#), who demonstrates that China's regulatory system for blockchain and smart contracts is designed to enhance state control over the digital space and maintain political stability. Similarly, [Wang et al. \(2021\)](#) state that technology regulation in China reflects a blend of legal efficiency and the state's ideological orientation. Meanwhile, a study by [Diniyya et al. \(2021\)](#) confirms that Indonesia faces significant challenges in establishing a robust technological legal framework due to weak inter-agency coordination and limited institutional capacity. In addition, the pluralistic approach in the Indonesian legal system provides an opportunity to integrate Islamic legal principles into the formulation of smart contract regulations. In mu' amalah's study, the principles of justice, certainty, and prudence can provide a normative framework for developing ethical and inclusive smart contracts. However, this potential has not been optimized because of the lack of dialogue between regulators, academics, and the technology community. According to [Firdaus et al. \(2021\)](#), the application of digital technology in line with Sharia principles still requires harmonization between religious values and state policies.

The differences in regulatory approaches between Indonesia and China provide essential lessons on how countries can respond to technological innovation. Indonesia needs to strengthen its cross-sector coordination and accelerate the formulation of an adaptive and participatory legal framework. This can be achieved by adopting a responsive legal approach that not only encourages innovation but also protects public interests and local cultural values. Meanwhile, while China has prosperously developed efficient and functional regulations, this approach also risks stifling criticism and innovation. As such, this comparative study not only reveals differences in regulatory systems but also provides reflections on how the state can balance control and freedom in the face of digital technological transformation.

Compatibility of smart contracts with national legal principles and Sharia values

The use of smart contracts in Indonesia shows potential for adaptation to the principles of national law and Islamic law. However, challenges remain in terms of regulation and contract structures. Smart contracts generally reflect the principle of legal certainty because of their automatic, transparent, and irreversible nature once parties agree to execution. In the study of national law, these characteristics align with the principles of legality and legal certainty, as stipulated in Article 28D, paragraph (1) of the 1945 Constitution, and the principle of engagement in the Civil Code (KUHPer) (Lusiana, 2022). Sharia values that are integral to the Indonesian legal system, particularly in the field of Islamic economics, prioritize aspects of justice (*al-'isy*), prudence (*al-ihityath*), and usefulness (*maslahah*) as the primary principles in contracts. Smart contracts have the potential to fulfill these values because they can reduce the risk of gharar (uncertainty) and maysir (excessive speculation) through clear contract coding and automatic verification. However, some ethical and legal issues, such as the limited ability to discern the intentions and will of the parties (*niyyah*), and the possibility of wrongdoing if contracts are executed without room for flexibility, require closer examination (Sunier & Buskens, 2022).

The results of this study indicate that, in Indonesia, there is no established rule governing the integration of smart contracts into the state-recognized Islamic legal system. Although the DSN-MUI has issued fatwas related to financial technology, there are no explicit provisions regarding the structure and validity of smart contracts from the perspective of fiqh muamalah. This leads to a mismatch between technological practices and the principles of substantive Islamic law (Butary et al., 2022). In comparison, China's legal approach to smart contracts does not take a religious perspective but is more oriented towards stability, state control, and legal efficiency. The Chinese government positions smart contracts as legal instruments subject to central control and must adhere to the principles of socialism with Chinese characteristics. This approach demonstrates that the *maslahah* aspect is understood collectively and top-down, with the state serving as the ultimate arbiter of the benefits and risks associated with the use of this technology. Even without religious reference, the orientation towards economic stability and benefits is the primary force driving the adoption of smart contracts in the Chinese legal system (Shi, 2023).

This difference highlights the fact that Indonesia's national legal principles and Sharia values require compatibility between the substance of the contract and the moral and ethical values of the transaction. In contrast, the Chinese legal system prioritizes formal structure and administrative stability. The following table presents a comparison of the compatibility of smart contracts with Indonesia's national legal system and Sharia values versus the Chinese legal approach.

Table 4. Comparison of the compatibility of smart contracts with Indonesia's national legal system and Sharia values versus the Chinese legal approach

Aspect	Indonesia (National law and Sharia)	China (Authoritarian law)
Legal Certainty	In line with the principle of legality, it requires formal recognition	Very high, as the state directly controls it
Justice	Must reflect the principles of Sharia justice and proportionality	Measured by compliance with the country's legal system
Maslahah and Mafsadah	Based on public benefit, one must avoid harm	Determined by the state as the sole actor in policy
Validity of the Deed	Must comply with the pillars and conditions of a valid contract in fiqh muamalah.	Valid if compliant with civil law and national policy
Flexibility in Execution	Necessary, by the principle of deliberation	Very limited, following the technical and administrative requirements

Source: Qualitative data analysis results, 2025.

As shown in Table 4, this technology functions as a digital legal instrument with automatic executive power. Giancaspro (2017) explains that smart contracts are transaction protocols that automatically execute contract terms, eliminating the need for human intervention. In this context, technology eliminates the need for a third party; however, it also reduces the room for

interpretation and adjustment to the ethical values stipulated in Islamic law. Therefore, there is a need to design smart contracts that incorporate technological *ijtihad* mechanisms, allowing Sharia values to be accommodated through digital development. In [Nonet and Selznick \(2018\)](#) approach to responsive law theory, the law should ideally be able to adapt to social and technological changes while maintaining the values of justice and humanity. Responsive law is dialogic and participatory, opening spaces for local values, morals, and community aspirations in the formulation of legal policies. Suppose Indonesia wants to integrate smart contracts fully. In this case, a responsive law approach becomes a critical framework for maintaining the compatibility of technology with Sharia principles and the national legal system ([Putra, 2021](#)).

In reality, Indonesia is still moving towards a form of responsive law, with the participation of various actors, including the Sharia Supervisory Board-Indonesian Ulama Council (Dewan Pengawas Syariah-Majelis Ulama Indonesia, DSN-MUI), OJK, and digital halal industry players. However, the lack of integration between Sharia norms, positive legal norms, and technological developments shows the weak institutionalization of responsive law in practice. This aligns with the findings of [Sugiarto and Disemadi \(2020\)](#), who emphasized the importance of codifying Sharia principles within the legal framework of digital financial technology. Meanwhile, [Yuspin et al. \(2023\)](#) show that Muslim communities in Indonesia are positive towards technology adoption but expect Sharia guarantees from authoritative institutions. In contrast, China develops laws that are responsive in terms of administrative efficiency and collective benefit but tend to ignore the particular values of society, especially those of religious or cultural minorities. This is confirmed in [Cheng \(2023\)](#) research, which shows that state control over China's digital legal system strengthens economic stability, but weakens the diversity of people's values and moral principles.

The compatibility of smart contracts with legal principles in Indonesia requires a legal approach that is not only adaptive to technological developments, but also sensitive to Sharia values. This requires the active involvement of academics, scholars, policymakers, and the technology community in formulating legal standards and parameters for smart contracts based on *maqashid al-shari'ah*. Smart contracts have the potential to support legal certainty, enhance transaction efficiency, and promote public benefits. However, to comply with the principles of national law and Sharia, legal reconstruction based on responsive approaches and ethical values is required. A comparison with China is an important lesson that overly centralized laws can accelerate the implementation of technology but risk ignoring the diversity of values that grow in society. Conversely, pluralistic laws such as those in Indonesia have the opportunity to create a more equitable and human-value-oriented regulatory system.

Conclusion

This study concludes that the adaptation and harmonization of smart contract regulations in digital economic transactions between Indonesia and China reflect fundamental differences in legal approaches, ideological values, and institutional readiness. Indonesia, with its pluralistic legal system rooted in Sharia values, faces challenges in striking a balance between the need for legal certainty and demand for principles of fairness and practicality in the digital economy. In contrast, China has shown success in systemically integrating smart contracts through a centralized and technocratic legal approach, despite minimal civil society participation in the regulatory process. The main findings indicate that the regulation of smart contracts in Indonesia remains partial and reactive, and has not yet been formally integrated with the principles of Islamic law. China has implemented comprehensive regulations, albeit with a strict state-control orientation. In this context, Nonet and Selznick's responsive law theory is a crucial framework that emphasizes the importance of adaptive, participatory, and locally value-aligned digital regulation.

In the future, this research suggests the need to strengthen collaboration between institutions in Indonesia to develop smart contract regulations that align with *maqashid al-shari'ah* as well as to enhance digital contract literacy among the public. In addition, it is essential to establish a bilateral dialogue platform with China to adopt best practices in digital technology regulation and to promote ethical, fair, and sustainable international standards. Further research can be directed

towards the integration of smart contracts in blockchain-based religious tourism, digital zakat, and productive waqf sectors, which remain potential spaces in the global digital Islamic economy.

This study confirms that differences in the legal character and political ideology of Indonesia and China influence the rate of adoption and integration of smart contracts in the digital economy. The practical implication is the need for an adaptive national legal framework that involves cross-sector stakeholders as well as the integration of maqashid al-shari'ah values to ensure fair, ethical, and sustainable regulation. Additionally, bilateral cooperation can serve as a means of knowledge exchange and adoption of best practices. The limitations of this study lie in its reliance on literature review methods, which do not incorporate primary field data, and its focus on only two countries. Therefore, generalizations to other contexts must be made cautiously. Further research could expand the scope to specific sectors, such as digital zakat, productive waqf, and blockchain-based halal tourism.

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