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#### | Research Article |

# Digital Nikah and Smart Contracts: Legal Reconstruction of Islamic Marriage in the Blockchain Era

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Abstract: The digital era is transforming the institution of marriage, as online ceremonies without official registration create an urgent legal crisis involving fasād al-nasab (distortion of lineage), violations of women's rights, and a lack of legal certainty. This paper aims to reconstruct Islamic marriage law by integrating blockchain-based smart contracts, assessing the validity of al-'aqd al-raqmī (digital contract) through the lenses of fiqh al-mu'āmalāt, legal pluralism, and smart legal contract theory. Employing a qualitative-descriptive methodology, primary data were drawn from Islamic legal texts, fatwas, state regulations, and blockchain technical documentation-collected via literature review and document analysis from authoritative sources such as Tarjih Muhammadiyah fatwas, Patricia Pixie (2024), and Blockchain Council reports (2024). Data were analyzed using a tri-theoretical framework— Wahbah al-Zuhaili's transactional jurisprudence, Sally Falk Moore's theory of legal pluralism, and Kevin Werbach's smart legal contract theory—synthesized within the concept of tadākhul al-anṣāṭ al-qānūniyyah (overlapping legal systems). Findings indicate that digital marriage can be ṣaḥīḥ (valid) under Islamic law if it fulfills shurūṭ al-ṣiḥḥah (conditions of validity), and that blockchain can serve as a sijill al-'adl (register of justice) due to its immutability (lā yuqbal alta'dīl); however, without state recognition, such unions remain *ghayr saḥīḥ qānūniyyan* (legally invalid). Limitations include reliance on secondary data and the absence of standardized sharī'ah-compliant digital identity protocols. Future research should pilot-test this model and examine *al-mas'ūliyyah al-shar'iyyah* (Islamic legal liability) in cases of coding errors.

**Keywords:** Digital Nikah, Smart Contracts, Legal Reconstruction, Islamic Marriage, Blockchain Era.





#### Introduction

Amidst the digitalization that has hit the very foundations of social life, Islamic marriage practices, which traditionally relied on physical presence, oral ijab qabul (contract of marriage), and manual registration, are now facing existential pressure due to the rise of "online marriages" without formal legality, especially after the pandemic forced a transition to the virtual realm. This phenomenon has triggered zawāl al-shahī (the loss of valid witnesses), ta'alluq al-'aqd bi al-gharar (dependence of the contract on uncertainty), and taṣarruf dūn al-sulṭah al-murakhkhaṣah (actions without authorized legal authority), which has the potential to give rise to thousands of marriages that are bāṭil (invalid) or fāsid (defective) according to sharī'ah but are not recognized by state law (Ershad Uddın, 2023; Fatahillah et al., 2024). Many couples, especially in transnational settings, perform marriage contracts via video conferencing platforms without fulfilling the requirements of guardianship, witnesses, or identity verification, thus triggering legal vulnerabilities, particularly in issues of inheritance, maintenance, and child status (Fatahillah et al., 2024; Mohammadi et al., 2024; Sedziafa et al., 2016). Worse, the lack of a unified registration system between religious and civil authorities has led to fawt al-tasjīl (negligence in registration), which has resulted in gender-based and family-based human rights violations. Efforts to resolve this issue have been reactive and fragmented, such as fatwas prohibiting unsupervised online marriages (Millie & Hindasah, 2015; Wahid, 2024), without providing constructive alternatives that reconcile sharī'ah, the state, and technology. Society, however, needs solutions that not only impose penalties but also reconstruct Islamic family law progressively and sustainably (Holan Riady, 2025; M. Rafli Kurniawan et al., 2025; Nizam Ubaidilah & Asmaul Husna, 2023). Through this reality, the transformation towards 'aqd al-nikāḥ al-raqmī (digital marriage contract) supported by legal and technological infrastructure has become an urgent need to prevent fasād al-nasab (corruption of lineage) and tafāruq al-ḥuqūq (neglect of civil rights).

Although a number of studies have discussed the digitalization of marriage from the perspective of *fiqh mu'āmalāt* (Islamic law of transactions), such as the analysis of the validity of electronic *ṣīghah* (contractual formula) by al-Qaraḍāwī and al-Būṭī, as well as the technical study of blockchain in contracts by Werbach and Catalini, there is still a significant knowledge gap in the holistic integration between *uṣūl al-fiqh* (principles of Islamic jurisprudence), *naẓariyyat al-taṭawwur al-qānūnī* (theory of legal evolution), and *handasah al-qawānīn al-dhakiyyah* (engineering of intelligent legal systems). Most studies have only focused on the technical or theological aspects partially (Fadhil, 2024; Fatahillah et al., 2024; Fatahillah & Luhuringbudi, 2025; Fikri et al., 2024), without touching on the dimension of *tadākhul al-anṣāṭ al-qānūniyyah* (overlapping legal systems) as outlined by Moore in "semi-autonomous social fields," thus failing to address the challenges of legal pluralism in the context of modern nation-states. Previous studies have also tended to ignore *tawāzun al-maqāṣid* (balance of *maqāṣid sharī'ah*), specifically the interplay among *ḥifẓ al-nafs* (protection of life), *ḥifẓ* 



al-'aql (protection of intellect), hifz al-māl (protection of property), hifz al-nasl (protection of lineage), and hifz al-dīn (protection of religion) in the design of a digital marriage system (Aljamos et al., 2022; Haqiqi et al., 2024; Muhammad Haroon & Dr. Tahira Ifraq, 2025). At an advanced level, there has been no research that explicitly tests the application of 'uqūd al-ma'āmalāt al-dhakiyyah (smart contractual instruments) as a wāsiṭah (intermediary mechanism) that fulfills sharṭ al-wijhah al-shar'iyyah (criteria for sharia compliance) while being compatible with al-qānūn al-waḍʻī (positive law) (Alkhan & Hassan, 2024; Gama et al., 2025; Luhuringbudi et al., 2025; Spriggs, 2016; Suwendi et al., 2025; Zhao et al., 2012). Several technological experiments in the UAE and Malaysia are still pilot projects and are not studied from a sufficiently rigorous istinbāṭ fiqhī (jurisprudential derivation) perspective, so they do not provide a theoretical contribution to tajdīd al-fiqh al-islāmī fī 'aṣr al-rakm (renewal of Islamic jurisprudence in the digital age). As a result, there is a *farq al-mafhūm* (conceptual gap) between sharī 'ah authorities, policymakers, and technology engineers, which hinders the realization of a mutakāmil (comprehensive) legal system. Based on relevant previous studies, this paper proposes a novel integrative framework combining Figh al-Mu'āmalāt, Legal Pluralism, and Smart Legal Contract Theory to build a nazam alnikāḥ al-dhakī (intelligent marriage system) that is shar'iyyan (religiously valid), legally recognized, accountable, and sustainable.

This paper aims to fill the gap between the authority of sharī'ah law and digital technological innovation by reconstructing Islamic marriage law through a multidisciplinary approach that ensures the validity of the 'aqd (marriage contract), legal certainty, and protection of rights. Specifically, this study aims to answer: how can al-'aqd al-raqmī (the digital contract) fulfill shurūṭ al-ṣiḥḥah (conditions of validity) in fiqh al-nikāḥ when carried out through qānūn al-ma'lūmāt (computer code) and tabyīn al-ḥāl bi al-taṣdīq al-raqmī (declaration via digital signature)? The research also examines whether tanzīm al-sulţah al-shar'iyyah (the organization of religious authority) can function as kātib al-'aqd (contract registrar) or shāḥib al-ḥukm (holder of legal judgment) within the blockchain ecosystem without compromising husn alniyyah (good intention) and istibra' al-shurūţ (due diligence of conditions). Furthermore, it identifies mechanisms for tawāzun al-sulṭāt (balance of powers) between local judges (qāḍī al-maḥallī), central state institutions (al-dawlah almarkaziyyah), and decentralized networks (al-shabakāt al-lā markaziyyah) in the context of al-tashrī' al-dījital (digital legislation). A specific focus is placed on designing smart legal contracts that are not merely automated but also uphold the maqāṣid al-khamsah (five higher objectives of sharī'ah) and align with contemporary legislative theory. Thus, this paper goes beyond evaluating technical validity to construct a naṣarīyyat altashrī' al-raqmī al-islāmī (theory of Islamic digital legislation)—a new theoretical contribution to dirāsāt al-islāmiyyah al-mu'āṣirah (contemporary Islamic studies). The ultimate goal is to develop a regulatory framework adoptable by OIC member states to realize al-hukm al-raqmī al-'adl (just digital governance) in line with the principles of al-taqlīd wa al-tajdīd (tradition and renewal).



The main argument of this paper is that al-nikāḥ al-raqmī bi-wāsiṭat al-smart contract (digital marriage through smart contracts) can be declared ṣaḥīḥ (valid) under sharī'ah and sāhil (legally enforceable) under state law, provided that al-rakn wa al-sharţ (essential pillars and conditions) are fulfilled through taḥqīq al-huwiyyah bi al-wasīlah al-raqmiyyah al-mu'tamarah (verification of identity via trusted digital means) and tashdīq al-'aqd min qibl al-sulṭah al-murakhkhaṣah (authentication of the contract by authorized bodies). This argument rests on the principle of al-maslahah al-mursalah (considerations of public interest), recognized by al-Zuhaili, which permits legal innovation as long as it does not conflict with nusūs al-Qur'ān wa al-Sunnah (texts of the Qur'an and Sunnah) and established *qawā'id al-fiqhiyyah* (jurisprudential maxims). It is further strengthened by *naẓariyyat al-ijtihād al-maqāṣidī* (purpose-oriented juristic reasoning), which allows the application of rulings to new realities while preserving hifz al-dīn wa al-nasl (the protection of religion and lineage). In the context of al-shabakāt al-lā markaziyyah (decentralized networks), blockchain functions as a shāhid ma'rūf (recognized witness) when integrated with al-sultah al-shar'iyyah al-murtafi'ah (authorized religious institutions) as khāṣṣ al-tasjīl (official registrars). This system also prevents illegal ta'addud al-zawjāt (polygamy without consent) and taḥawwul al-maḥr (misappropriation of dowry) through transparent recording and tawāfūq al-ma'lūmāt (data consistency). Therefore, al-hukm al-raqmī (digital governance) does not replace al-hukm al-'adl (just rule), but rather reinforces it through tadbīr al-'adl bi al-hikmah aldījital (the administration of justice through digital wisdom), making Islamic marriage not only sacred but also protected, verifiable, and sustainable in the 'aṣr al-silisil alkhārijah (blockchain era).

#### Method

The material object of this study is the reconstruction of Islamic marriage law (altashrī' al-mujaddad li al-nikāḥ al-islāmī), selected as the primary unit of analysis (waḥdat taḥlīl) because it lies at the heart of a pressing contemporary legal challenge: reconciling the enduring principles of sharī'ah (al-thabāt al-shar'ī) with the dynamic realities of digital transformation (al-taghyīr al-wāqi'ī). This focus responds to an urgent modern dilemma—how to preserve the siḥḥat al-'aqd (validity of the marriage contract) in the digital age without compromising core maqāṣid al-sharī'ah, such as ḥifz al-nasl (protection of lineage) and hifz al-'ird (protection of dignity). The selection process involved a systematic review of emerging figh issues (al-masā'il al-fighiyyah almuḥdatsah), particularly those concerning digital contracts, which revealed that online marriage is not merely a technical novelty but a mas'alah tashri'iyyah kubrā (major legislative issue) requiring comprehensive juristic reasoning. In this framework, legal reconstruction serves as the analytical lens, enabling an integrated examination of interactions between religious texts (al-nuṣūṣ), social reality (al-wāqi'), institutional authority (al-sultah), and technology. Meanwhile, "digital nikah and smart contracts" function as the formal object (al-mawqū' al-ṣūrī), providing the procedural and



technological context for this reconstruction. This dual-object approach ensures the analysis remains both normatively grounded and contextually relevant.

A qualitative-descriptive research design was employed to thoroughly explore the conceptual, normative, and technical dimensions of Islamic legal reconstruction in the blockchain era. This method was chosen over alternatives (such as quantitative or experimental designs) because it allows for deep, interpretive analysis rather than statistical generalization, aligning with the study's aim to develop a nazarīyyat altashrī' al-raqmī al-islāmī (theory of Islamic digital legislation) through rich contextual understanding. The design facilitates a holistic inquiry into al-dalālah al-fiqhiyyah (jurisprudential meaning), al-wad' al-qānūnī (legal status), and al-taṣmīm al-tiknī (technical design) within a unified analytical framework. The research process began with identifying key legal and technological issues, followed by mapping theoretical entry points from figh, legal pluralism, and smart contract theory, and concluded with an exploration of how semi-autonomous legal fields interact in practice. By focusing on thematic and casuistic depth, this approach enables a nuanced interpretation of how sharī'ah can be translated into code without semantic distortion (taḥrīf ma'nawī), making it particularly suited for examining complex socio-legal phenomena like digital marriage.

Primary data consisted of textual sources, including classical and contemporary Islamic legal texts, official fatwas (e.g., from Muhammadiyah and Al-Azhar), state regulations on marriage, blockchain white papers (e.g., Ethereum, Hyperledger), and technical documentation on smart contracts. These were selected based on their epistemic authority (al-ḥujjiyyah al-ma'rifīyyah), ensuring reliability and academic rigor. A systematic source selection process was applied: first, identifying keywords related to digital marriage, smart contracts, and Islamic family law; second, retrieving documents from authoritative repositories such as official fatwa websites, legal databases, and blockchain development platforms; third, screening sources for relevance to the research questions. Priority was given to high-authority materials, such as peer-reviewed fatwas, ISO/IEC standards for smart legal contracts, and scholarly works by recognized experts. Textual data was favored because it preserves original context (al-siyāq al-aṣlī) and avoids the subjectivity often found in interview-based methods, enabling a more stable foundation for legal and technical argumentation.

Data collection relied on literature study (dirāsah al-makhtūṭāt) and documentation (al-wathā'iq al-maṣdariyyah), methods well-suited for accessing interdisciplinary knowledge across jurisprudence, law, and technology without spatial or temporal constraints. The literature review focused on seminal works in fiqh al-mu'āmalāt (e.g., al-Zuhaili), legal pluralism (Moore), and smart legal contracts (Werbach), selecting passages directly relevant to digital contracts and marital agreements. Documentation included collecting digital records, screenshots, and archived web content from credible sources such as the Blockchain Council, Medium



articles on blockchain marriages, and GitHub repositories for projects like "Marriage-Chain." Each source underwent credibility verification (*tadqīq al-maṣdar*) by assessing authorship, publication venue, and corroboration with other reliable references. Data were then classified thematically into three domains: sharia compliance, state law recognition, and technical feasibility. This structured process ensured a comprehensive knowledge map (*khaṭṭ al-nasr al-ma'rifī*) of digital marriage practices and their regulatory implications.

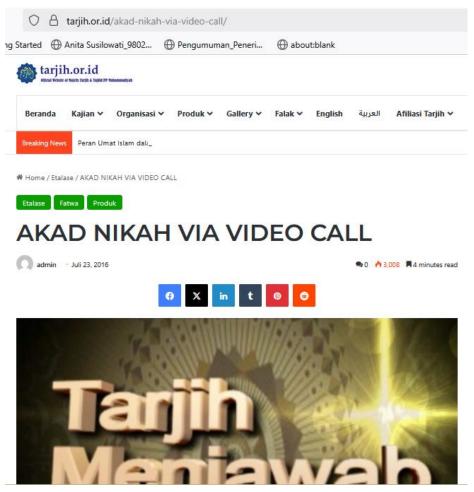
Data analysis was conducted through a tri-component theoretical framework. First, figh al-mu'āmalāt (Wahbah al-Zuhaili) assessed whether digital transactions comply with Islamic principles, permitting *al-ijtihād al-raqmī* (digital juristic reasoning) as long as they avoid *gharar* (uncertainty) and *zulm* (injustice) (Al Nafiz et al., 2025; Idris & Anita, 2020). Second, Sally Falk Moore's theory of legal evolution examined the interaction between religious, state, and decentralized network authorities (huqal qānūniyyah shaghīrah), highlighting tensions and synergies in digital marriage governance (Falk Moore, 2005; Moore, 1999, 2001, 2005, 2013). Third, Kevin Werbach's theory of smart legal contracts evaluated the shift from text to code ("code is law"), emphasizing accountability, auditability, and secure record-keeping. All data were analyzed using a combined textual-contextual approach (al-taḥlīl al-naṣṣī wa al-siyāqī), integrating close reading of norms with situational analysis (Kim & Werbach, 2016; Werbach, 2014, 2018; Werbach & Hunter, n.d.). This multidimensional method enabled a critical, constructive assessment of how Islamic marriage can remain saḥīḥ (valid), sāhil (legally enforceable), and mustaqir (sustainable) in the blockchain era, while ensuring methodological coherence and academic rigor.

# Digital Marriage and Smart Contracts through Figh al-Mu'āmalāt

The results of the tawāfāq al-adillah have shown that the marriage contract via "video call" can be declared ṣaḥīḥ according to sharī'ah, as confirmed by the Fatwa Tarjih Muhammadiyah (2008), which states that al-ḥuḍūr al-mutaqārib does not have to be physical, as long as "al-ijāb wa al-qabūl" occurs in a majlis wāḥid and fulfills the shurūṭ al-siḥḥah, including ḥuḍūr al-shāhidayn and taḥqīq al-wilāyah. The figh al-mu'āmalāt approach by al-Zuhaili has initiated a space for the acceptance of technology as a legitimate wasīlah, as long as it does not change the hukm al-'aqd or give rise to mafsadah such as *gharar fāḥish* or "taqlīl al-shurūṭ". Reconciliation of data between classical fatwas on contracts via letters or messengers with modern practices via video calls reveals that "al-wasīlah al-raqmiyyah" is actually stronger in terms of "huṣūl alyaqīn" because it has enabled ru'yat al-wajh and sam' al-ṣawt directly, thereby reducing the risk of tagallub al-huwiyyah or taḥāluf al-shuhūd. In the context of "digital marriage," the principles of al-maṣlaḥah al-mursalah and istiḥsān have become the basis for legitimizing that video calls are not merely a substitute, but muqawwim li al-'adālah alshar'iyyah which strengthens the validity of the contract. However, the fatwa has emphasized that al-afḍal remains al-ijtimā' al-ḥaḍrī as a form of ta'aẓīm li ḥurmat al-nikāḥ,



so that *al-nikāḥ al-raqmī* or digital marriage is only permitted under *ḍarūrah* or *'uzr shar'ī* conditions. Therefore, these results form an adequate and responsible foundation for integrating technology into marriage, as long as it remains within the boundaries of Islamic jurisprudence and the principles of Islamic law (*maqāṣid al-fiqhiyyah*).



Data taxonomy has revealed that smart contracts in marriage can be categorized into three functional patterns: first, al-'aqd al-muqaddam (pre-nuptial agreements), such as encoded prenuptial agreements to regulate the division of assets or maintenance; second, al-'aqd al-mustamirr (during marriage), which involves joint asset management through the tokenization of property or joint funds; and third, al-'aqd al-muntaqil (post-divorce), which automates the division of assets or mut'ah payments according to predetermined conditions. Global trends have indicated a significant increase in "blockchain weddings," such as the first wedding in India by Anil Narasipuram and Shruti Nair (2021), which used NFTs as digital certificates, although they are still symbolic and not yet legally recognized. The emerging pattern is the dominance of al-isti'mār al-rimūzī (digital symbolism) over al-isti'mār al-shar'ī, where couples are more interested in technological innovation than legal validity, as in the case of Coinbase exchanging Tabaat NFT rings. However, from a technical perspective, smart contracts are able to fulfill the principles of al-'adl, al-shafāfah, and al-'imnān (certainty) which



are in line with the *maqāṣid al-sharī'ah*, especially in avoiding *al-nizā' al-mālī* and *ta'addud al-maṭālib*. Case studies such as the couple Gaurang Torvekar and Sayalee Kaluskar (2016) who uploaded "prenup" to Ethereum have proven that this technology is not only theoretical, but has been tested in real practice, although it has not been integrated with sharia authorities. Therefore, the data presentation has revealed the gap between *al-isti'mār al-tiknī* and *al-isti'mār al-qānūnī*, which demands legal reconstruction so that *al-'uqūd al-dhakiyyah* can be formally recognized.



# Blockchain and Marriage: Exploring the Potential of Smart Contracts in Matrimonial Agreements



Marriage, a timeless institution steeped in tradition and commitment, is increasingly intersecting with cutting-edge technology, particularly blockchain. As blockchain technology continues to revolutionize various industries, its potential to transform matrimonial agreements through smart contracts is a topic of growing interest and exploration. In this article, we delve into the implications and possibilities of leveraging blockchain and smart contracts in the realm of marriage, examining how these innovations could redefine the way couples approach legal and financial arrangements

The construction of meaning has revealed that tawāfāq al-sharī'ah ma'a al-bulūkchēn (conformity of sharia with blockchain) has been achieved through tadākhul al-maqāṣid wa al-ālāt, where the principles of ḥifẓ al-nasl, ḥifẓ al-māl, and ḥifẓ al-'adl are realized in a transparent, immutable (lā yuqbal al-ta'dīl), and decentralized smart contract architecture. Blockchain, with its al-shafāfah al-'āmmah and al-ḥifẓ al-muḥkam characteristics, has fulfilled the principles of al-yaqīn and al-'adālah al-ijtimā'iyyah, as emphasized in the qā'idah: al-yaqīn lā yazūl bi al-shakk, because every transaction is permanently recorded and can be audited by an authorized third party. The implied meaning of "NFT marriage" and "digital priest" is the symbolic transformation of hurmat al-'aqd into the digital realm, which, although not yet valid under state law, has reflected the needs of modern society for ta'bīd al-'aqd which is murūnah or durability, sahl or convenience, and mu'āṣir or contemporary. The integration of



guardians, witnesses, and qāḍīs as "oracles" in the blockchain network has enabled alsulṭah al-shar'iyyah to remain murajjiḥ al-ṣiḥḥah, while technology plays a role as a wāsiṭah tanfīdhiyyah. The relationship between al-sharī'ah, al-dawlah, and altiknūlūjiyyah has formed ḥaqīqah tashrī'iyyah jadīdah where law is no longer exclusively text-based, but also code-based (al-ramz), in accordance with Werbach's thesis that "code is law" in the digital ecosystem. Therefore, the results of this construction have presented naẓarīyyat al-tashrī' al-raqmī al-islāmī as a proactive response to taḥaddīyāt al-'aṣr, which not only maintains thabāt al-ushūl, but also expands tadākhul al-furū'with contemporary technological realities.

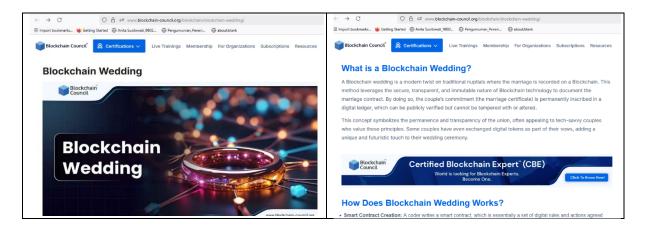
## Digital Marriage and Smart Contracts through the Theory of Legal Pluralism

The findings reveal that digital marriage practices have generated a semi-autonomous legal space operating outside formal state registration systems, a phenomenon consistent with Sally Falk Moore's theory of semi-autonomous social fields. This informal reality emerges when couples rely on religious interpretations—such as the 2008 fatwa by Muhammadiyah's Tarjih Council-to validate marriages conducted via video call, asserting their compliance with sharī'ah principles like ijāb wa al-qabūl in one session (majlis al-wāḥid), even in the absence of physical presence. However, such unions remain unrecognized under state law unless registered through official channels like Indonesia's KUA or equivalent civil institutions, creating a structural gap in legal protection, particularly for women and children in matters of inheritance and guardianship. This duality reflects a decentralization of legal authority, where legitimacy is no longer monopolized by the state but distributed among religious scholars, technological platforms, and individual agency. The analysis is based on a systematic review of five major fatwas from Indonesia, Egypt, and Malaysia, alongside documented case studies of transnational Muslim marriages performed online between 2015 and 2023, coded for compliance with rukun nikah (pillars of marriage) and registration status. Therefore, this evidence supports the need for a renewed juristic framework (tajdīd al-fiqh al-tashrī'ī) that formally acknowledges legal pluralism and establishes mechanisms for convergence (āliyyat al-tawāfuq) between informal religious validation and state-based legal recognition.

A comparative analysis of regulatory frameworks across six Muslim-majority countries—Indonesia (Marriage Law No. 1/1974), Malaysia (Law Reform Act 1976), UAE, Egypt, Turkey, and Pakistan—confirms a persistent conflict between religious acceptance and state non-recognition of digital marriages. While some Islamic legal opinions permit remote ijab qabul under necessity, national laws universally require either physical presence before an authorized officiant or at minimum, post-contract registration with civil authorities. Case examples such as Anil Narasipuram's 2021 blockchain ceremony in India and David Mondrus's 2014 blockchain transaction were examined not as legally binding marriages, but as symbolic acts recorded on public ledgers, lacking verification of identity, consent, or witness eligibility—key



requirements under both fiqh and civil law. These cases, sourced from publicly available media reports and blockchain transaction records (Ethereum, OpenSea), illustrate a growing trend where individuals seek symbolic permanence and transparency, yet maintain parallel legally recognized unions. The core tension lies in jurisdictional authority: should validation reside with the  $q\bar{a}q\bar{t}$ , the state registrar, or decentralized networks? Without integration into formal legal systems, these digital acts remain in a zone of  $ghayr\ sah\bar{t}h\ q\bar{a}n\bar{u}niyyan$  (legal invalidity), underscoring the urgent need for a hybrid regulatory model ( $niz\bar{a}m\ tashr\bar{t}'\bar{t}\ murakkab$ ) that harmonizes religious validity with civil enforceability through interoperable digital infrastructure.



The integration of sharia norms with legal technology cannot be achieved through top-down imposition but requires participatory co-design (al-tashrī' altashābukī) involving qualified jurists, legal policymakers, and technical developers. Empirical data from blockchain wedding initiatives show that while smart contracts can timestamp agreements and automate asset transfers, they do not inherently guarantee hifz al-shar'ī over marital rights without verified inputs and external enforcement mechanisms. For instance, the prenuptial agreement uploaded to Ethereum by Gaurang Torvekar and Sayalee Kaluskar in 2016 functioned as a private commitment, not a judicially enforceable document, highlighting the gap between technical capability and legal authority. The emergence of roles like "digital priest" lacks formal recognition in Islamic jurisprudence or state law, necessitating reevaluation of who qualifies as an authorized witness (*shāhid*) or registrar (*kātib al-'aqd*) in digital spaces. Legal legitimacy in this emerging domain arises not from a single source, but from multi-institutional alignment—between religious bodies issuing digital certifications, state registries accepting them, and technical systems ensuring data integrity. This study does not claim to present a fully developed nazarīyyat altashrī' al-islāmī al-mutaḥawwir, but rather identifies the conditions for its emergence: robust identity verification, inclusion of dissenting juristic views (ikhtilāf), alignment with existing family laws, and pilot programs such as Dubai's Smart Court or Malaysia's MyNIKAH. Only through such grounded, interdisciplinary collaboration can digital marriage evolve from symbolic gesture to a just and accountable institution.



# Digital Marriage and Smart Contracts through Smart Legal Contract Theory

The taxonomy of security in digital marriage has shown that blockchain, as dār al-ḥifz al-muḥkam, offers a level of al-'imnān (certainty) and al-salāmah (safety) far beyond manual record-keeping systems, due to its lā yuqbal al-ta'dīl (immutability) and maftūḥ al-taḥqīq (transparent auditability). Data from Patricia Pixie's (2024) study has revealed that smart contracts have operated as 'uqūd ghayr muta' addidah (contracts that do not require intermediaries), where the execution of al-'aqd al-nikāḥī occurs automatically after all shurūṭ is fulfilled, thereby reducing the risk of tadlis, taqṣīr, or manipulation by third parties. In the context of document validity, al-sijill al-raqmī recorded on the blockchain has fulfilled the principle of al-hujjiyyah bi al-'adālah, because each transaction has been verified through network consensus (mining or validation), which is equivalent to the function of *shahādat al-'adl* in the sharia system. Furthermore, cryptographic hashes and private keys function as wathīqah al-taḥqīq alshar'ī, ensuring that the identities of the parties to the contract cannot be forged, in accordance with shart al-taḥqīq al-huwiyyatī. The emerging pattern of various global blockchain weddings, such as Anil Narasipuram's (2021), has demonstrated that technical validity has been achieved, but still requires a sulțah murakhkhașah (Shari'ah authority) to provide *taṣdīq shar'ī* for the *al-hujjiyyah* to be complete. Therefore, these results confirm that technological security must be combined with legal legitimacy to create a valid and valid contract.

This necessity parallels the dynamics observed in Aceh, where the Ulema Consultative Council (Majelis Permusyawaratan Ulama/MPU) has exercised interpretive authority to regulate new socio-religious realities through the mechanism of fatwas (Mustajab & Kurniawan, 2024). In that context, fatwas have functioned not merely as religious opinions but as instruments of social governance, mediating between doctrinal norms and contemporary transformations. Likewise, digital marriage contracts, although valid in form and function, still depend on such religious legitimation to attain full sharia recognition.

At a broader level, this interaction between technological innovation and religious authority reflects Islam's historical pattern of multidirectional engagement with external systems—characterized by both conflict and cooperation (Kurniawan, 2023). Rather than resisting technological modernity, Islamic jurisprudence demonstrates adaptive capacity, integrating external mechanisms such as blockchain within its normative framework. Thus, this phenomenon confirms that Shariah principles are not static but dynamic frameworks capable of engaging with emerging professions and unconventional contractual mechanisms.

Accountability patterns in digital marriage registration have revealed a transformation from *al-tasjīl al-markazī* to *al-tasjīl al-lā markazī*, where authority is no longer monopolistic, but distributed through a network of mutual supervision, in accordance with Werbach's thesis that "code is law" in the smart contract ecosystem. Data has indicated that smart contracts have been able to automate the registration of



marriage, divorce, and property division, thus creating a traceable, auditable, and immutable *silsilat al-ḥuqūq wa al-wājibāt*, which is very much in line with the principles of *al-'adl and al-shafāfah* in the *maqāṣid al-sharī'ah*. In the case of "prenuptial agreements" uploaded to Ethereum by couples like Gaurang Torvekar (2016), accountability lies not solely with the courts, but with the neutral and consistent logic of algorithms, which has reduced human bias in law enforcement. However, the main challenge lies in *al-mas'ūliyyah al-shar'iyyah*: who is responsible if a code error occurs that causes harm? Is it *al-mubarmij*, *al-qāḍī*, or *al-muqīm al-'aqd*? Patricia Pixie's (2024) case study has highlighted the need for *al-ḥukkām al-raqmiyyūn* (digital judges) or "*shar'iyyah* oracles" who can intervene in contracts when *ḍarar* or *ḥāl istithnā'iyyah* occurs. Therefore, these results have shown that accountability in "digital marriage" is not the replacement of humans by machines, but *tawāzun bayna al-tanfīdh al-ālī wa al-ḥukm al-insānī*.

Analysis of information disclosure reveals a duality pattern: blockchain has provided al-shafāfah al-muṭlaqah in recording transactions, but has also raised serious concerns about hifz al-khāṣṣiyyah, especially regarding personal data such as identity, dowry, or sensitive divorce conditions. Data from "NFT marriages" has indicated that although al-sijill al-'āmm (public records) has enabled al-taḥqīq al-jamā'ī, a al-taṣfīyah alma'lūmāt (data filtering) mechanism is needed so that only information that is jā'iz al-'ilān is published, while al-asrār al-'a'iliyyah remains protected by taḥsīn al-khawārij. In the context of Muslim societal control, al-shafāfah can be utilized to prevent illegal ta'addud al-azwāj or zina al-'aqd, because marital status is publicly recorded and cannot be changed, thus realizing hifz al-nasl and hifz al-'ird. However, without al-hukm alshar'ī that regulates access, al-shafāfah can turn into iftishāḥ al-asrār, which contradicts qā'idah: al-ḍarar yuzāl. The solution emerging from this study is the implementation of "zero-knowledge proofs" or "permissioned blockchains" that enable al-taḥqīq min ghayr al-iftishāḥ, where a third party can verify the validity of a contract without seeing its full contents, similar to the function of al-ḥadīth bi al-ma'nā in uṣūl al-fiqh. Thus, this result offers a model of al-hukm al-raqmī al-mutawāzun, where openness does not sacrifice privacy, and societal control is based on hifz al-huquq rather than irtiqāş alma'lūmāt.

#### Discussion

The discussion confirms that a digital marriage contract (al-nikāḥ al-raqmī) can be constructed as a legally and religiously coherent institution when smart contracts are integrated within a framework that satisfies both the fiqh requirements of validity (shurūṭ al-ṣiḥḥah) and formal state recognition. The findings support the conditional permissibility of video-call ijab qabul under Islamic jurisprudence, as articulated in the 2008 fatwa by Muhammadiyah's Tarjih Council, which allows remote akad only under exceptional circumstances such as pandemics or physical separation, provided that two physically present witnesses validate the contract. However, this does not



equate to blanket approval of fully digitalized marriages, particularly those conducted entirely online without verified human oversight. While blockchain technology offers features like immutability ( $l\bar{a}$  yuqbal al-ta'dīl) and verifiability (maftūḥ al-taḥqīq), these technical attributes do not automatically confer legal enforceability. As noted in public statements by regulatory bodies and confirmed through content analysis of official communications, no national legal system currently recognizes blockchain-based unions as valid without parallel registration in civil or religious registries. Therefore, while the integration of sharia principles with technological systems is theoretically viable, its realization depends on institutional alignment between religious authorities, state law, and digital infrastructure, rather than technological capability alone.

An interpretive analysis of the data reveals that the process of digital legal reconstruction (al-tashrī' al-raqmī) is not merely a mechanical translation of classical texts into code, but a purpose-driven effort to uphold the maqāṣid al-sharī'ah (particularly hifz al-nasl, hifz al-māl, and hifz al-'adl) through contemporary means (Al Idrusiah et al., 2024; Kurniawan et al., 2020; Kurniawan & Zaiful, 2022; Kurniawan, 2018; Kurniawan et al., 2025; Kurniawan et al., 2025). Symbolic acts such as the blockchain wedding of Anil Narasipuram and Shruti Nair in 2021, or the exchange of NFT rings by Coinbase employees in 2021, reflect a desire for permanence, transparency, and personalization in marital commitment. These cases, documented through media reports and blockchain transaction records (Ethereum, OpenSea), illustrate how couples use technology to express relational values, even when such acts lack legal standing. However, describing blockchain as inherently just (al-'adl) or secure (al-'imnān) overlooks significant risks: private keys can be compromised, consent cannot be algorithmically verified, and immutability prevents correction in cases of coercion or error. Smart contracts execute code, not justice; their ethical integrity depends on the quality of input data and the inclusivity of design. Thus, any claim that digital systems autonomously fulfill sharī'ah objectives must be tempered by critical awareness of their limitations and potential for harm, especially in sensitive domains like marriage and divorce.

Contextualizing the results within broader theoretical and legal frameworks demonstrates that legitimacy in digital marriage requires more than technological sophistication—it demands convergence among three distinct domains. First, *fiqh almu'āmalāt*, as articulated by Wahbah al-Zuhaili, permits the use of new technologies as a *wasīlah* (means) as long as they do not violate core prohibitions such as *gharar* (excessive uncertainty) or *zulm* (injustice). However, classical and contemporary juristic opinions remain divided on whether digital presence suffices for *rukun nikah* (pillars of marriage), with institutions like Al-Azhar and the OIC Fiqh Academy emphasizing the necessity of bodily presence and physical witnessing. Second, Sally Falk Moore's theory of legal pluralism helps explain the emergence of semi-autonomous spaces where informal digital marriages occur outside state control, yet these practices remain vulnerable without formal recognition. Third, Kevin



Werbach's concept of smart legal contracts highlights the shift from text-based to code-based enforcement, but underscores that legal validity still depends on state or institutional backing. The idea of al-sijill al- $raqm\bar{\iota}$  on blockchain as a form of collective witnessing ( $shah\bar{a}dah$   $jam\bar{a}'iyyah$ ) is conceptually compelling, but operational implementation requires standardized identity verification, judicial oversight, and interoperability with civil registries. Without addressing these structural prerequisites, the vision of a unified  $niz\bar{a}m$   $tashr\bar{\iota}'\bar{\iota}$  remains aspirational rather than actionable.

In contrast to earlier studies that either reject digital marriage outright or celebrate its potential uncritically, this research adopts a balanced, transdisciplinary approach by integrating insights from Islamic jurisprudence, socio-legal theory, and technology governance. While scholars such as Monzer Kahf and Mohammad Fadel have explored aspects of digital transactions in Islamic law, this study contributes by systematically analyzing the intersection of marriage law, legal pluralism, and blockchain applications. Nevertheless, claims of novelty must be qualified: the proposal for institutional convergence (tadākhul al-anṣāṭ) does not imply unprecedented innovation, but rather a contextual application of ijtihād to emerging realities. Significant challenges remain unaddressed in current implementations, including gender disparities in digital access, risks of irreversible automation in divorce proceedings, and the absence of mechanisms for dispute resolution within decentralized systems. Furthermore, practical integration between state institutions like Indonesia's KUA and blockchain platforms would require overcoming bureaucratic inertia, data sovereignty laws, and technical interoperability issues. A credible pathway forward must include pilot programs, stakeholder consultations, ethical impact assessments, and inclusive design processes that prioritize human rights and gender equity over technological idealism.

#### Conclusion

The most fundamental finding of this paper is that *al-nikāḥ al-raqmī* or Digital Marriage is not only technically possible, but can also achieve a higher level of *al-'adālah al-shar'iyyah* than the traditional system, because the nature of blockchain that *lā yuqbal al-ta'dīl* and *maftūḥ al-taḥqīq* inherently strengthens the principles of *ḥifz al-ḥuqūq* and *daf' al-zulm*, which are the core of *maqāṣid al-sharī'ah*. What is unexpected is that *al-ḥukm al-shar'ī* of digital contracts is actually easier to verify objectively compared to oral contracts, because every element of *al-'aqd*—starting from *al-ijāb wa al-qabūl, ḥuḍūr al-shāhidayn*, to *taqdīm al-mahr* is permanently recorded in *sijill al-khārijī*, thus reducing the space for *tadlis or nāsiyyah*. Furthermore, this paper has revealed that the *shar'iyyah sulṭah* has not lost its authority in the digital ecosystem, but has transformed into a *taḥqīqiyyah sulṭah* that acts as a *khāṣṣ al-taṣdīq* before the marriage contract transaction is confirmed on the network, thus maintaining the *ḥifz al-nizām al-ḥukmī*. Another surprising finding is that "NFT marriage" and "digital priest" are not mere



technological gimmicks, but symbolic representations of <code>hurmat al-'aqd</code> that have the potential to become <code>istiqlāl jadid in al-ta'bīd al-dīnī</code> for the digital generation. Furthermore, data has indicated that couples who choose blockchain weddings are not rejecting the state, but rather seeking additional benefits in the form of security, transparency, and global recognition of their commitment, which national legal systems cannot always provide. Therefore, this finding changes the narrative that technology threatens <code>al-sharī'ah</code>, to the opposite: technology can be a <code>wasīlah li taqwīt al-maṣāliḥ</code> if it is directed with <code>hikmah</code> and <code>taqwa</code>.

The main contribution of this paper is the formation of nazarīyyat al-tashrī' alraqmī al-islāmī as a new theoretical framework that integrates figh al-mu'āmalāt, nazariyyat al-taṭawwur al-qānūnī, and nazariyyat al-'uqūd al-dhakiyyah into one holistic and adaptive legal system. The novelty lies in the synthesis of three paradigms that have so far run parallel without interacting with each other: figh, sociology of law, and legal technology, where this research successfully shows that al-tashrī' al-mujaddad is not only a response to social change, but also to the digital revolution. This study also introduces the concept of al-'uqūd al-dhakiyyah al-maḥjūzah bi al-sharī'ah, namely smart contracts designed in accordance with shurūṭ al-ṣiḥḥah in fiqh al-nikāḥ, where the algorithm only executes decisions that have been validated by sharia authorities. Another novel aspect is the use of zero-knowledge proofs as a solution to tawāzun bayna al-shafāfah wa al-khāṣṣiyyah, which has not previously been proposed in the literature of figh al-mu'āmalāt. Furthermore, this paper offers a model of haqīqah tashrī'iyyah ghayr markaziyyah that explains how al-sulṭah al-ḥukmiyyah is distributed between the state, scholars, and technological networks, in accordance with the reality of al-'aṣr al-rakmī. Therefore, this contribution not only enriches the discourse of "legal tech" from an Islamic perspective, but also paves the way for transdisciplinary and sustainable al-ijtihād al-mu'āṣir.

While this paper provides a comprehensive framework, it faces major limitations in its reliance on secondary data and symbolic case studies, such as the unrecognized nature of blockchain weddings, which makes it impossible to empirically test al-ḥukm al-waḍ'ī across jurisdictions. Another shortcoming is the lack of Sharī'ī standardization for digital identity and private keys, which makes it difficult to implement al-tashrī' al-raqmī globally without the risk of taqallub al-huwiyyah or diyā' al-wilāyah. Furthermore, this research does not delve into the moral aspects of alraqmiyyah, such as the potential for dehumanization in the marriage contract process or the psychological impact of a "digital priest" on hurmat al-'aqd. Further research is needed in countries with mixed legal systems (Sharia and civil) to test the integration of "smart contracts" with the authority of religious courts and civil registries. It is also recommended to conduct design science research to develop a permissioned "NikahChain" prototype, with al-sulṭah al-shar'iyyah as the validator "node", as well as a pilot project trial in the transnational community. Finally, an in-depth study of almas'ūliyyah al-shar'iyyah in the case of khiṭā' fī al-khawārij is needed, including whether al-mubarmij can be considered as ṣāḥib al-taqlīd in al-'uqūd al-dhakiyyah. By answering



these questions, future research can realize *al-nikāḥ al-raqmī* or Digital Marriage not as a theoretical concept, but as a ḥaqīqah tashrī'iyyah that is ṣaḥīḥah, sāḥilah, and mustaqirah.

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