

The Digital Waqif Mechanism: Protocol-Layer Intent Preservation in Tokenised Islamic Endowment

A Falah OS™ Technical and Institutional Whitepaper

Companion paper to *Faraid Tokenisation and Distribution* (Falah OS Working Paper Series)

Prepared in ASA (American Sociological Association) author-date format.

Author. Jauhari Che Wan, Falah OS™ / Falah Consultancy Limited (UK Co. No. 16433902), London and Kuala Lumpur.

Correspondence. [insert institutional address and email]

Word count. [insert on final submission]

Funding / conflicts. The author is founder of Falah OS™, the system described. This is disclosed as a material conflict; the paper is written as a design-science proposal, not an independent evaluation.

ABSTRACT

Waqf scholarship has concentrated on the endowment corpus and on the trustee who administers it. The endower — the *waqif* — largely disappears from the analytical frame at the moment of endowment. This paper argues that the disappearance is not a doctrinal necessity but an artefact of paper-era record-keeping, and that its consequences are measurable: unenforced conditions, dormant assets, weak reporting, and eroded donor trust across major waqf jurisdictions. Using a design-science approach, the paper specifies a *Digital Waqif Mechanism* — a protocol-layer construct in which the waqif's declaration (*sighah*) is recorded as a machine-readable, cryptographically anchored intent object that persists as an enforceable constraint on trustee behaviour for the life of the endowment. The mechanism is situated within Falah OS™, an infrastructure layer comprising a decentralised identity service, a Shariah rules engine, and a shared ledger. The paper further specifies the mechanism's interface with tokenised *faraid*, showing that waqf and inheritance govern non-overlapping asset events — lifetime dedication versus post-mortem devolution — and that the boundary between them is computable at the point of the one-

third bequest limit. The contribution is architectural rather than empirical: a falsifiable specification, a set of Shariah and legal constraints it must satisfy, and an evaluation protocol for pilot deployment.

Keywords: waqf, waqif, Islamic social finance, tokenisation, distributed ledger, faraid, institutional trust, digital governance

1. INTRODUCTION

Every plumbing system has a component nobody photographs. The taps are visible, the reservoir is visible; the pressure-regulating valve that determines whether either behaves as designed sits in a cupboard. In the institution of *waqf* — the Islamic perpetual endowment — the taps are the beneficiaries (*mawquf 'alayh*), the reservoir is the endowed corpus (*mawquf*), and the regulator is the endower (*waqif*), whose stipulated conditions are supposed to govern flow indefinitely. The classical jurists were emphatic on this last point: the conditions of the waqif carry the force of the text of the Lawgiver. Yet in contemporary practice, the regulator is welded shut and painted over at installation. The waqif signs a deed and exits the system.

This paper takes that exit as its problem statement. It asks a narrow engineering question with wide institutional consequences: **what would it take to keep the waqif's declaration live, legible, and enforceable for the entire life of an endowment, without granting the waqif or the waqif's heirs any residual claim over the corpus that Shariah has already extinguished?**

The question is timely for three reasons. First, waqf assets are being digitised at speed but not being *re-architected*; scanning a deed into a PDF preserves the document and none of its executability. Second, the tokenisation of Islamic estate assets — the subject of this paper's companion volume on *faraid* — creates a shared ledger substrate on which lifetime dedication and post-mortem devolution can finally be reasoned about as a single asset lifecycle rather than two disconnected bureaucracies. Third, the trust deficit in waqf administration is now well documented rather than merely alleged, with governance inefficiency, limited public confidence, and restricted participation recurring as findings across jurisdictions and methodologies.

The paper proceeds as follows. Section 2 reviews the literature on waqf governance and on blockchain applications to Islamic social finance, identifying a consistent gap: the technology literature optimises the *nazir's* workflow and the *donor's* onboarding, while leaving the *waqif's persisting authority* unmodelled. Section 3 sets out the theoretical frame — principal-agent theory under a modified principal, *maqasid al-Shariah* as an objective function, and polycentric governance as the coordination model. Section 4 states the

design-science method and its evaluation criteria. Section 5 specifies the Digital Waqf Mechanism. Section 6 specifies its interface with tokenised faraid. Section 7 addresses Shariah objections. Section 8 addresses regulatory reception in three jurisdictional families. Section 9 states limitations and a research agenda.

2. LITERATURE REVIEW

2.1 The Governance Diagnosis

The empirical literature on waqf administration converges on a small number of failure modes: poor asset utilisation, opacity, and non-standardised reporting. In Malaysia, where waqf falls under state rather than federal jurisdiction and each State Islamic Religious Council (MAIN/SIRC) is designated sole trustee of all waqf property within its state, these failures acquire a structural dimension. Research on Malaysian SIRC governance structures and on mandatory reporting practice has documented reporting gaps sustained by the absence of a uniform disclosure standard (Mahadi et al. 2018; Masruki, Hussainey, and Aly 2018). Comparative work across jurisdictions reaches similar conclusions from different starting points (Aziz and Ali 2018).

Two consequences matter for this paper. First, fragmentation: because waqf is governed solely by state religious councils while adjacent charitable activity is overseen by federal regulators operating to different standards, oversight is inconsistent and donor trust is exposed to terminological confusion in public appeals. Second, dormancy: substantial portions of waqf land remain undeveloped, attributed variously to management capacity, absent development mechanisms, and non-strategic location. Dormancy is the visible symptom; the invisible cause is that nobody with standing is asking why.

2.2 The Technology Response

A dense and rapidly growing literature proposes distributed ledger technology as the remedy. The claims are consistent: immutable records, real-time traceability, purpose-locked funds, and automated distribution via smart contracts. Recent framework papers synthesise these into integrated governance models spanning blockchain, artificial intelligence, and Islamic fintech, validated across Malaysian, Indonesian, Emirati, and Saudi cases. Legal-gap analyses of Malaysian waqf digitisation find that existing state waqf enactments, read alongside data protection and computer crimes legislation, do not adequately regulate digital instruments, and call for a harmonised digital governance model across states.

This literature is correct in diagnosis and incomplete in design. Its dominant use of the ledger is as a **transparency instrument**: a better filing cabinet with a tamper-evident lid.

Transparency is necessary but not sufficient. A perfectly transparent record of a trustee ignoring a waqif's stipulated condition is still a record of the condition being ignored. What the literature has not specified is the *enforcement primitive* — the mechanism by which a stipulated condition becomes an executable precondition rather than a documented aspiration.

2.3 Instrument Innovation and the Silent Waqif

Indonesia's Cash Waqf Linked Sukuk (CWLS) is the most instructive live case. Cash waqf collected through designated Islamic financial institutions is placed by the national waqf board, as *nazir*, into sovereign Shariah securities; returns fund social programmes while the corpus is returned to contributors at maturity for temporary structures. Critical assessments identify low uptake relative to potential and a structure dependent on a single investment instrument, limiting long-run flexibility (Laila et al. 2025).

Note what the waqif does in this design: deposits, and waits. The literature describes this approvingly — the waqif participates in social benefit "without direct involvement in administration." That framing conflates two very different things: *freedom from operational burden*, which is desirable, and *absence of standing*, which is not. A shareholder is free from operational burden and retains standing. The waqif has been given the former by being denied the latter.

Meanwhile, the fiqh literature makes clear that the waqif's declaration is doing far more work than a deposit slip. In cash waqf specifically, perpetuity attaches to the benefit rather than the physical substance, and the waqif must weigh the risk of capital depletion across different usufruct-extraction routes — investment and *qard hasan* carrying the highest risk, *istibdal* and the financing of existing waqf property the lowest — and choose between temporary and irrevocable dedication accordingly (Azrai Azaimi Ambrose and Abdullah Asuhaimi 2021). AAOIFI's Shari'ah Standard No. 60 on Waqf, which superseded Standard No. 33, confirms that perpetuity is not a condition of validity and that waqf may be limited by term or condition, terminating on maturity or occurrence.

These are risk-tolerance and time-horizon elections. They are precisely the class of instruction that modern systems represent as configuration and that waqf systems currently represent as prose in a drawer.

2.4 The Gap

The literature contains: (a) a governance diagnosis, (b) a transparency remedy, and (c) a fiqh literature establishing that the waqif's election is substantively rich. It does not contain a specification for **rendering that election machine-enforceable at the protocol layer, with an accountability path that survives the waqif's death and does not resurrect a proprietary claim**. That specification is this paper's contribution.

3. THEORETICAL FRAMEWORK

3.1 Agency Under a Departed Principal

Standard agency theory assumes a principal capable of monitoring, sanctioning, and re-contracting (Jensen and Meckling 1976). Waqf presents a degenerate case: the principal alienates the asset irrevocably, retains no residual claim, and eventually dies. The agent — the nazir — then faces beneficiaries who are typically diffuse, unorganised, and in many designs unaware of the specific conditions attached to the benefit they receive.

This is not weak governance. It is governance with the monitoring function structurally vacated. Agency costs in waqf are therefore not a management failing to be exhorted away; they are the predicted equilibrium of the institutional form as currently implemented. Any intervention that does not restore a monitoring function is treating symptoms.

The mechanism proposed here does not restore the *principal*. It restores the *principal's specification* as an autonomous artefact, and it distributes the monitoring right — not the ownership right — across parties who remain present: beneficiaries, the supervisory religious authority, and where the waqif has so designated, a nominated observer.

Analogy. A living will performs the same manoeuvre in medicine. The patient is unconscious and has no operative authority. The document does not restore their authority; it constrains the clinician's discretion in their absence, and grants standing to a named proxy to object. The proxy cannot direct treatment for their own benefit. They can only assert that the specification is being violated.

3.2 Maqasid as Objective Function

The design is constrained by *maqasid al-Shariah* — the higher objectives of Islamic law — treated here not as rhetorical framing but as the objective function against which trade-offs are resolved. Where efficiency and preservation of the corpus conflict, preservation governs. Where transparency and preservation of beneficiary dignity conflict, dignity governs, which has direct consequences for what the mechanism publishes about individual recipients (Section 5.5).

3.3 Polycentric Governance

Waqf governance is empirically polycentric: overlapping authority across religious councils, land registries, financial regulators, and courts, with no single point of control (cf. Ostrom 1990). Recent syntheses of public-sector blockchain deployment find the same pattern — distributed authority, inter-organisational coordination, and layered accountability — and find that designs assuming a single controlling authority fail on contact with it.

The design implication is decisive and is the reason this paper does not propose a global waqf chain. **The mechanism must be sovereign-configurable: the protocol defines the invariants; each jurisdiction's authority defines the parameters.** A Selangor deployment and a Qatari deployment must be able to disagree on *madhhab*, on permissible *istibdal* triggers, and on disclosure thresholds, while remaining interoperable at the record layer.

4. METHOD

The paper follows design-science research (Hevner et al. 2004): the artefact is the contribution, evaluated against a stated problem and explicit criteria, rather than a hypothesis tested against data. Three inputs inform the design:

1. **Doctrinal analysis** of the *arkan* (pillars) of waqf and of AAOIFI Shari'ah Standard No. 60, establishing the invariants the artefact must not violate.
2. **Comparative institutional review** of Malaysian state-trustee governance, Indonesian nazir-plus-sovereign-instrument governance, and English charitable-trust governance, establishing the parameter space.
3. **Systems analysis** of the Falah OS component set, establishing what is already available at the protocol layer.

Evaluation criteria. The artefact is judged on five criteria, stated in advance and operationalised in Section 9: (E1) doctrinal admissibility under at least two *madhahib*; (E2) enforceability of at least one waqif-stipulated condition without human intervention; (E3) non-resurrection of proprietary claim by waqif or heirs; (E4) legal recognisability by an incumbent trustee authority without statutory amendment; (E5) beneficiary-observable accountability without disclosure of individual beneficiary identity.

5. THE DIGITAL WAQIF MECHANISM

5.1 Position in the Stack

Falah OS™ is positioned as protocol-layer infrastructure for the Islamic economy — TCP/IP rather than an application. The Digital Waqif Mechanism is a module over five existing components:

Component	Function in this mechanism
	Decentralised identity; binds the waqif's declaration to a verifiable identity

Ummah ID	that outlives any single institution
RAMZ Engine	Shariah rules engine; evaluates each proposed trustee action against madhhab-configured rules
Core Ledger	Shared record of asset state, dedication events, and action history
iBaaS Gateway	Connectors to banking, land registry, and payment rails
SovereignKit SDK	Jurisdictional parameterisation by the incumbent authority

The mechanism adds one primitive: the **Waqif Intent Object (WIO)**.

5.2 The Waqif Intent Object

The WIO is the *sighah* rendered as structured, signed, machine-readable data. It is created once, at dedication, and is thereafter immutable except through a governed amendment path (Section 5.6).

Its fields are the classical pillars, made explicit:

- **Waqif identity** — Ummah ID reference plus capacity attestation (legal majority, soundness of mind, ownership of the asset, absence of creditor prejudice).
- **Mawquf** — the dedicated asset, its class (immovable, cash, shares, corporate, usufruct, moral right), and its valuation basis.
- **Mawquf 'alayh** — beneficiary class specification. Expressed as *predicates*, not as a name list: "students enrolled at institutions within district X demonstrating financial need per threshold Y." Predicates survive generational turnover; name lists do not.
- **Term** — perpetual or time-bound, with termination condition where bounded. Standard No. 60's confirmation that perpetuity is not a validity condition is what makes this field admissible rather than heretical.
- **Usufruct-extraction policy** — the waqif's election across the risk spectrum: permitted investment contracts, prohibition or permission of *qard hasan* deployment, capital-preservation floor.
- **Istibdal policy** — whether substitution is permitted, under what triggers, subject to whose approval.
- **Distribution cadence and reinvestment ratio** — what proportion of yield is disbursed

versus capitalised.

- **Observer designation** — an optional named party with standing to raise a formal objection. Explicitly *not* a beneficiary and explicitly holding no claim.

Analogy. The WIO is a smart contract's constructor arguments, written by someone who will not be present at any subsequent call. Everything the endowment will ever need to know about the endower's intent must be in that constructor, because there is no second chance to ask.

5.3 The Enforcement Primitive

The mechanism's core claim is that **the WIO functions as a precondition, not as documentation**. Every proposed trustee action — a disbursement, an investment reallocation, a substitution, a change of beneficiary class — is submitted to RAMZ, which evaluates it against three layers in order:

1. **Invariants.** Non-negotiable doctrinal constraints. The corpus is not alienable outside a valid *istibdal* path. Yield may not be diverted to a class outside the specified predicate. Violations are rejected, not flagged.
2. **Waqif parameters.** The WIO's elections. An investment in an instrument outside the waqif's permitted contract set is rejected even where doctrinally permissible in general.
3. **Jurisdictional parameters.** The incumbent authority's configuration via SovereignKit: madhhab selection, disclosure thresholds, approval quorums.

Actions passing all three execute and are recorded. Actions failing any layer are rejected with a machine-readable reason code, and the rejection itself is recorded. **The rejection log is the accountability artefact.** Current systems produce no record of the disbursement that should not have happened but did; this produces a record of the disbursement that was attempted and refused.

Analogy. A modern payments system does not ask a bank to remember not to overdraw an account. The ledger refuses the transaction. Waqf governance has been running on the honour system in a domain where every other class of fiduciary infrastructure moved to refusal decades ago.

5.4 Preservation of the Corpus Under Cash Waqf

Cash waqf presents the sharpest technical problem, since perpetuity attaches to benefit rather than substance and the corpus is exposed to depletion through the very act of extracting usufruct. The mechanism handles this with an explicit **capital-preservation floor** in the WIO: a nominal or index-linked value below which yield may not be disbursed and must instead be capitalised. Where the waqif has elected a temporary structure with

capital return, the maturity obligation is a ledger-level lien on the corpus rather than an operational reminder.

This does not eliminate the risk that the literature identifies. It makes the waqif's risk election explicit at the moment they are competent to make it, and it makes the breach of that election detectable by parties other than the party who breached it.

5.5 Dignity-Preserving Transparency

Transparency claims in this literature routinely under-specify *transparency to whom, of what*. Publishing individual beneficiary identities to satisfy donor curiosity converts a recipient of right into an object of surveillance, and is inconsistent with the maqasid constraint stated in Section 3.2.

The mechanism therefore separates three disclosure planes:

- **Public plane.** Aggregate flows, corpus value, rejection counts, and category-level distribution. Verifiable by anyone.
- **Supervisory plane.** Full transaction detail, available to the incumbent authority and auditors.
- **Beneficiary plane.** Each beneficiary sees their own entitlement and the predicate under which they qualify, and nothing about others.

Cryptographic commitments allow the public plane to prove that aggregate figures reconcile to underlying records without revealing them.

5.6 Governed Amendment and the *Istibdal* Path

An immutable specification governing a mutable world eventually becomes an obstacle to the objective it was written to serve — the endowed shop in a district that no longer has customers, the school in a village that no longer has children. Classical fiqh anticipated this with *istibdal*. The mechanism implements it as the single governed amendment path:

1. **Trigger.** A condition defined in the WIO or in jurisdictional parameters (asset unproductive for n periods; beneficiary class extinct; expropriation).
2. **Proposal.** The nazir submits a substitution with valuation evidence.
3. **Review.** RAMZ evaluates doctrinal admissibility; the incumbent authority applies its approval quorum; the designated observer, if any, may lodge objection.
4. **Execution and record.** The substitution executes against the corpus record, retaining the original WIO in full as the governing intent. The asset changes. The specification does not.

That last distinction is the whole design in one line. Substitution of substance is permitted; substitution of purpose is not.

6. INTERFACE WITH TOKENISED FARAIID

The companion paper specifies tokenised *faraid* — the algorithmic computation and distribution of Islamic inheritance shares. The two mechanisms share the Core Ledger and divide the asset lifecycle cleanly:

	Waqif Mechanism	Faraid Mechanism
Triggering event	Lifetime dedication	Death
Owner's role	Active elector	None; shares are fixed by revelation
Discretion	Broad, within invariants	Effectively nil
Asset destination	Perpetual dedication, out of estate	Fixed fractional shares to heirs

The critical property is that **an asset validly dedicated as waqf during life is not in the estate at death**. The faraid engine must therefore treat waqf-dedicated assets as already-excluded, not as assets to be apportioned. On a shared ledger this exclusion is not a reconciliation exercise between two registries; it is a property of a single record.

Three boundary cases require explicit handling, and they are where most real disputes will arise:

(a) Death-bed dedication (*marad al-mawt*). Dedication made during final illness is treated in classical fiqh as functionally testamentary and therefore constrained by the one-third bequest limit. The mechanism flags dedications occurring within a jurisdictionally configured window before death, or under a recorded terminal diagnosis, for the one-third test rather than admitting them automatically.

(b) The one-third boundary generally. Where a dedication is testamentary in character, the faraid engine computes the estate, computes one-third, and tests the dedication against it. The excess — not the whole — falls back into the distributable estate unless heirs ratify. This is arithmetic, and arithmetic is exactly what these two engines are for.

(c) Family waqf (*waqf zurri*). Dedication benefiting the founder's descendants before eventual charitable devolution sits precisely on the seam. It is recognised in some Malaysian

states and treated cautiously in others, historically because it has been used to keep property out of faraid distribution. The mechanism does not resolve this; it makes the position *configurable per jurisdiction and auditable per instrument*, so that a family waqf is either admissible under the local authority's parameters or is refused at creation rather than litigated at death.

Analogy. Waqf and faraid are allocation and deallocation in the same memory model. Waqf is a lifetime commitment of a block to a permanent purpose; faraid is the deterministic reclamation of everything still held at process termination. The bugs occur at the boundary — in blocks committed so close to termination that it is unclear which regime owns them. Every serious system defines that boundary explicitly. Waqf administration has left it to be argued about afterwards.

7. SHARIAH CONSIDERATIONS AND ANTICIPATED OBJECTIONS

Objection 1: This resurrects the waqif's ownership, which waqf extinguishes. It does not. The WIO confers no claim on corpus or yield, no power of revocation, and no benefit. It confers specification and, through the observer designation, standing to object. Ownership and standing are separable; trust law has separated them for centuries.

Objection 2: The nazir's *ijtihad* is being displaced by code. Only within the parameters the waqif was entitled to set and the authority chose to enforce. Where the waqif was silent, discretion remains with the nazir. The mechanism narrows discretion exactly where the waqif spoke — which is where classical doctrine already narrowed it.

Objection 3: A token is not a valid *mawquf*. Correct, and the mechanism does not claim otherwise. The token is a *record of* the dedicated asset, not the asset. Standard No. 60's treatment of waqf over moral and financial rights extends the admissible asset class, but the design principle stands independently: the ledger is a registry, not a substitute for the underlying property, and the underlying property remains subject to the land code or corporate registry that actually governs it.

Objection 4: Immutability conflicts with *maslahah*. Addressed by the governed amendment path (5.6). Immutability applies to the record of intent; adaptability applies to the asset through *istibdal*.

Objection 5: Cross-madhab conflict. Handled by configuration rather than by adjudication. Falah OS's Community Edition is madhab-agnostic; the enforcing parameters are set by the sovereign authority, not by the protocol. The protocol takes no position on which school is correct — a design constraint, not a diplomatic evasion.

8. REGULATORY RECEPTION

Malaysia. Waqf falls under state jurisdiction; the SIRC is sole trustee. The mechanism must therefore be deployed *as an instrument of the SIRC*, never as a parallel trustee. Its value proposition to a council is the reporting standardisation the literature identifies as absent, plus a defensible audit trail. The identified legal gaps in regulating digital tools under current enactments are real, but the mechanism is designed to sit inside existing trusteeship rather than to require new statutory authority — criterion E4.

Indonesia. A nazir-centred model with a national board and an established sovereign-instrument channel. The mechanism's natural entry is as nazir-side infrastructure improving the waqif-facing specification of CWLS-type products, addressing the single-instrument rigidity the critical literature identifies (Laila et al. 2025).

England and Wales / Gulf. In England, waqf is typically constituted as a charitable trust and is subject to charity regulation; the WIO maps onto trust deed and objects clauses, and the rejection log maps onto trustee-duty evidence. In several Gulf jurisdictions, awqaf authorities are centralised and better placed to adopt at scale, with the corresponding risk that centralisation reproduces the monitoring vacuum at a higher altitude.

9. LIMITATIONS, EVALUATION, AND RESEARCH AGENDA

Limitations. The artefact is unvalidated in deployment. Design-science contributions of this type routinely fail at the point where an incumbent authority declines to cede any part of its discretion to a rules engine — and that failure would be political, not technical. The mechanism also assumes an identity layer with sufficient adoption to bind a declaration durably, which is currently a stronger assumption in some jurisdictions than others. It does nothing about waqf land whose title is defective before any of this begins, which is a substantial share of the dormant stock.

Evaluation protocol. A pilot should test the criteria of Section 4 directly: E1 by scholarly panel review across at least two madhahib; E2 by instrumented rejection of a deliberately non-compliant proposed action; E3 by legal opinion on residual claim; E4 by adoption without statutory amendment in one state; E5 by beneficiary survey on perceived accountability against a disclosure-plane audit.

Research agenda. Four open questions. (1) Does explicit waqif specification increase dedication volume, or does specification burden suppress it? (2) Does the rejection log change nazir behaviour, or merely document it? (3) What is the correct default when a waqif's predicate becomes unsatisfiable and no observer survives? (4) Does polycentric

parameterisation produce interoperability or a set of mutually unintelligible national forks — the failure mode that has consumed comparable standardisation efforts elsewhere?

10. CONCLUSION

The waqf institution did not fail because Muslims stopped endowing. It has underperformed because the person with the clearest view of what an endowment was for is the one person the system stops listening to first. Digitisation to date has photographed that problem in higher resolution. The mechanism specified here proposes something narrower and more useful: keep the specification live, make it a precondition rather than a memory, distribute the right to object without redistributing the right to own, and define the boundary with inheritance in arithmetic rather than in litigation.

The valve goes back in the cupboard, where it belongs. It simply has to still work.

REFERENCES

[Verify all pagination, DOIs, and author name order against the source of record before submission. Entries marked † were surfaced during research for this draft and confirmed to exist; entries marked ‡ are standard works cited from the author's standing knowledge and require verification of edition and pagination.]

† Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). *Shari'ah Standard No. 60: Waqf*. Manama: AAOIFI. (Supersedes Shari'ah Standard No. 33.)

† Azrai Azaimi Ambrose, Azniza Hartini, and Fadhilah Abdullah Asuhaimi. 2021. "Cash Waqf Risk Management and Perpetuity Restriction Conundrum." *ISRA International Journal of Islamic Finance* 13(2):162–76.

† Aziz, Abdul, and Jamal Ali. 2018. "A Comparative Study of Waqf Institutions Governance in India and Malaysia." *Intellectual Discourse* 26(2):1229–46.

‡ Beck, Roman, Christoph Müller-Bloch, and John Leslie King. 2018. "Governance in the Blockchain Economy: A Framework and Research Agenda." *Journal of the Association for Information Systems* 19(10):1020–34.

‡ Hevner, Alan R., Salvatore T. March, Jinsoo Park, and Sudha Ram. 2004. "Design Science in Information Systems Research." *MIS Quarterly* 28(1):75–105.

‡ Jensen, Michael C., and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics*

3(4):305–60.

† Kaharuddin, Kaharuddin, et al. 2025. "Integrating Blockchain Technology into Waqf Governance: Enhancing Transparency and Accountability in Sharia Finance for Achieving SDGs."

† Laila, Nisful, Raditya Sukmana, Dwi Irianti Hadiningdyah, and Ismi Rahmawati. 2025. "Critical Assessment on Cash Waqf-Linked Sukuk in Indonesia." *Qualitative Research in Financial Markets* 17(4):849–79.

‡ Liu, Yue, Qinghua Lu, Liming Zhu, Hye-Young Paik, and Mark Staples. 2021. "A Systematic Literature Review on Blockchain Governance." *Journal of Systems and Software* 197:111576.

† Mahadi, Rosnia, Nur Khairunnisa Sariman, Raman Noordin, Rasid Mail, and Nor Sarah Abd Fatah. 2018. "Corporate Governance Structure of State Islamic Religious Councils in Malaysia." *International Journal of Asian Social Science* 8(7):388–95.

† Masruki, Rosnia, Khaled Hussainey, and Doaa Aly. 2018. "Mandatory Reporting Issues in Malaysian State Islamic Religious Councils (SIRC): Evidence from Interviews." *Journal of Engineering and Applied Sciences* 13:2092–97.

‡ Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Falah OS™ Working Paper Series. Draft for scholarly and regulatory review.