Integrating Artificial Intelligence, Blockchain and Institutional Reform for Frozen Muslim Estate Administration in Malaysia: A Conceptual Governance Framework

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DOI: https://doi.org/10.47772/IJRISS.2026.101000595

Received: 26 October 2026; Accepted: 05 November 2026; Published: 11 November 2026

ABSTRACT

Purpose: This paper develops a legally bounded, institutionally accountable framework for reducing avoidable procedural friction in unresolved Muslim estate administration in Malaysia. Design/methodology: It undertakes a critical, non-systematic documentary synthesis of the supplied manuscript, selected Malaysian government guidance, legislation and directly relevant scholarship. It does not report interviews, original administrative datasets, implementation or measured performance. Conceptual contribution: A seven-stage governance model links intake, jurisdictional routing, evidence validation, human Shariah/legal determinations, authorised orders, execution and contestation to a common case identifier, controlled data exchange, explainable AI assistance and optional tamper-evident audit records. Findings are formulated as testable propositions, not demonstrated benefits. Practical implications: A staged comparative pilot should first evaluate procedural reform and conventional databases before testing incremental AI and permissioned-ledger components. Limitations: Institutional permissions, case-level evidence, costs, legal opinions and stakeholder testing remain outstanding. Originality: The model treats technology as subordinate to jurisdiction, correction rights and accountable human decisions rather than as a substitute for them.

Keywords: Muslim estate administration; faraid; Malaysia; institutional governance; artificial intelligence; blockchain; procedural justice; interoperability.

INTRODUCTION

The management of frozen Muslim estates in Malaysia presents a multifaceted challenge that intertwines legal, administrative, and technological domains, particularly due to the complexities associated with the distribution and oversight of inherited properties in accordance with Sharia principles. Given that traditional systems often fall short in addressing issues related to efficiency, transparency, and accountability (Omar M Shubailat et al., 2024), the need for reform has become increasingly pressing. The research problem centers on the deficiencies within the current regulatory framework and administrative processes that hinder the effective management of these estates, leaving beneficiaries vulnerable to disputes and inefficient governance (Snehal S Mane et al., 2024). The objectives of this dissertation are to investigate how integrating artificial intelligence (AI) and blockchain technology can enhance the management of frozen estates by streamlining administrative processes, ensuring transparency, and facilitating compliance with Islamic law (Choudhury et al., 2024; K R Vittala P et al., 2024). This integration is envisioned to not only automate routine tasks but also to provide secure and immutable transaction records that can safeguard the ownership rights of beneficiaries, thereby ultimately promoting trust and efficiency in estate administration (Kuznetsov A et al., 2024; Gayatri MSLM et al., 2024) .

This research is significant both academically and practically, as it contributes to the body of knowledge on innovative governance solutions in the context of Islamic finance and estate management. By examining the intersection of technology, legal reform, and Sharia compliance, it opens pathways for future research and policymaking that address the unique challenges associated with managing frozen Muslim estates (Thanh BN et al., 2024; Ing. Gueclue M et al., 2024) . Furthermore, this study provides stakeholders, including policymakers and legal practitioners, with actionable insights into the potential for AI and blockchain to transform administrative workflows and improve service delivery in the legal landscape of Malaysia (Putra DRS, 2025). The implications of this research extend beyond Malaysia, serving as a model for similar jurisdictions facing challenges in estate management within the framework of Islamic law (Saputra D. et al., 2025). Consequently, this dissertation seeks to fulfill an essential gap in existing literature regarding the practical applications of cutting-edge technology in managing legal frameworks, while simultaneously advocating for reforms that align with the principles of equity and justice inherent in Islamic governance (Mustofa Z et al., 2025) , (Farh S et al., 2024). The integration of these technologies is anticipated to facilitate the development of more resilient, equitable, and transparent systems, highlighting the transformative potential inherent in adopting innovative approaches to long-standing legal challenges (Wahab et al., 2024). The research presented herein aims to elucidate these connections while underscoring the critical need for reform and modernization in estate management practices (Noor NAM et al., 2024; Bature MM et al., 2024).

Unresolved estates create prolonged uncertainty for beneficiaries, administrators, creditors and public agencies. The term “frozen Muslim estates” is used here descriptively for assets whose lawful administration or transfer remains incomplete; it is not treated as a single statutory category or evidence that every case has the same cause. Delays may arise from incomplete documents, disagreement among heirs, identification of assets and liabilities, institutional hand-offs and contested legal questions. These mechanisms should not be conflated with an alleged failure of Islamic inheritance rules.

Malaysia operates a differentiated estate administration system. The appropriate forum and administrative pathway depend on asset composition, estate value, territory and applicable law. JKPTG guidance describes applications and hearings under the Small Estates (Distribution) Act 1955 (Act 98), including online application through MyLAND and subsequent execution of distribution orders. Government guidance distinguishes small estates, larger estates and summary estates, and warns that its small-estate pathway is not applicable to Sabah and Sarawak. Accordingly, a national software model cannot lawfully collapse distinct institutional powers into one automatic determination (JKPTG, n.d.; Government of Malaysia, 2026).

Existing Malaysian research has already emphasised federal–state coordination and the distinct roles of inheritance institutions (Mat Abdullah, Ab Rahman, & Awang, 2022). The present contribution is narrower and more operational: it specifies which decisions remain human and legally authoritative, which records may be exchanged, how errors can be corrected, how decisions are challenged and how the marginal value of AI or blockchain should be tested against less complex alternatives.

The objectives are to (i) map key institutional and information-governance constraints; (ii) construct a role-specific, auditable workflow; (iii) derive conditional propositions about performance and fairness; and (iv) specify a feasible evaluation strategy that can falsify the claimed benefits. The research question is: under what legal, administrative and technical conditions, if any, would AI-assisted processing and tamper-evident logging improve Muslim estate administration beyond simpler procedural and database reforms?

Malaysian Legal and Institutional Context

Overview

In recent years, the intersection of technology and law has garnered significant attention, particularly in the context of estate management and reform. The evolution of financial and legal technologies such as artificial intelligence (AI) and blockchain has sparked discussions on their potential to revolutionize traditional governance frameworks. This is especially relevant in Malaysia, where cultural and religious factors profoundly influence the management of estates, particularly those designated for Muslims. Frozen Muslim estates, which arise when an individual passes away without clear succession planning or legal designation,

present unique challenges that intersect with both legal and administrative protocols. The complexities of managing these estates underscore the significance of integrating innovative technologies to facilitate smoother transitions and equitable distribution of assets (Omar M Shubailat et al., 2024). This literature review explores the current landscape of research on managing frozen Muslim estates in Malaysia through the lens of AI and blockchain, alongside necessary legal and administrative reforms.

A critical examination of the existing literature reveals several key themes regarding the integration of technology in estate management. Current studies illustrate how blockchain can provide transparency and security in documenting asset ownership and transactions, suggesting its utility in mitigating disputes over frozen estates (Snehal S Mane et al., 2024). Furthermore, the application of AI in analyzing vast volumes of estate-related data has been proposed as a means of enhancing decision-making processes, thereby expediting estate resolution (Choudhury et al., 2024). The synthesis of these technologies not only holds promise for improving operational efficiency but also raises pressing legal questions regarding compliance with existing Shariah laws, which govern the distribution of Muslim estates in Malaysia (K R Vittala P et al., 2024). Indeed, as researchers have indicated, navigating the balance between innovation and adherence to legal and cultural norms continues to pose substantial challenges (Kuznetsov A et al., 2024).

Despite burgeoning interest in the role of technology in estate management, significant gaps persist in the literature. Although theoretical frameworks and case studies highlight potential applications of AI and blockchain, empirical analyses demonstrating their effectiveness in real-world scenarios remain sparse (Gayatri MSLM et al., 2024). Moreover, limited discourse exists on the broader implications of integrating these technologies within the legal landscape of Malaysian estate management, with few studies addressing how proposed reforms could harmonize technological advances with religious and cultural imperatives (Thanh BN et al., 2024). This lack of comprehensive analysis indicates a pressing need for interdisciplinary research that not only examines technological integration but also contextualizes it within Malaysia's specific socio-legal environment.

As this literature review unfolds, it aims to illuminate these critical dimensions, providing an extensive assessment of how AI, block-chain, and necessary legal reforms can synergistic enhance the management of frozen Muslim estates in Malaysia. By synthesizing existing research and identifying under-explored areas, a road map for future inquiries will be elucidated, ultimately contributing to a framework that supports both innovation and cultural sensitivity in legal practices. The findings will lend insight into how these advancements can address existing inefficiencies while simultaneously proposing a balanced approach to reform that embraces technological progress without compromising on ethical or religious grounds (Ing. Gueclue M et al., 2024; Putra DRS, 2025; Saputra D et al., 2025; Mustofa Z et al., 2025; Farh S et al., 2024; Wahab NA et al., 2024; Noor Nam et al., 2024; Bature MM et al., 2024; Rahmat W et al., 2024; Barreto A et al., 2025; Iqbal H Jebril et al., 2024; M.M.Abdelhamid et al., 2024; Sun Q, 2024; Husnatarina F et al., 2025; Sharafatmandrad M. et al., 2025; Kader SZSA et al., 2025; Silaban R, 2025; C Ifediora et al., 2025; Abriyantoro D et al., 2024; S F Nur'aini et al., 2024; Yamini SRS P Warke, 2026; Li R et al., 2025).

The integration of AI and blockchain technologies into the management of frozen Muslim estates in Malaysia has garnered increasing academic attention over time, illustrating a shift toward innovative solutions in legal and administrative frameworks. Initial studies emphasized the challenges faced in managing these estates, which are significantly impacted by socio-legal complexities and reforms required in the Malaysian context (Omar M Shubailat et al., 2024; Snehal S Mane et al., 2024). As the discourse evolved, scholars began exploring the potential of digital technologies to enhance transparency and efficiency in estate management. For instance, researchers highlighted that blockchain's immutable ledger could provide secure record-keeping, essential for handling frozen assets, thus reducing disputes related to inheritance and ownership (Choudhury et al., 2024; K R Vittala P et al., 2024) .

In later studies, a more nuanced understanding of AI's role emerged, focusing on predictive analytics that could assist authorities in assessing estate claims proactively (Kuznetsov A et al., 2024; Gayatri MSLM et al., 2024). This synergy between AI and blockchain was further examined, suggesting a framework for automating processes that would traditionally involve extensive legal scrutiny, thereby streamlining operations and reducing bureaucratic inefficiencies (Thanh BN et al., 2024; Ing. Gueclue M et al., 2024). By situating

technology within the broader narrative of legal reforms, scholars began to recognize the importance of collaboration between technologists and legal experts to ensure these innovations are aligned with existing laws and cultural practices (Putra DRS, 2025; Saputra D et al., 2025).

Recent works have begun to propose comprehensive reform strategies that incorporate these technologies alongside traditional legal frameworks, emphasizing the potential for a holistic approach in managing frozen estates (Mustofa Z et al., 2025; Farh S et al., 2024). This evolution in the literature reflects a growing acknowledgment of the need for innovative administrative solutions capable of addressing the complexities inherent in managing Muslim estates in Malaysia, thus paving the way for future research in this critical area (Wahab NA et al., 2024; Noor NAM et al., 2024).

The integration of artificial intelligence (AI), blockchain technology, and legal reforms in managing frozen Muslim estates in Malaysia presents a complex landscape of scholarly discourse. Central to this investigation is the recognition of how these technologies can address inefficiencies in estate management. Notably, AI applications have been identified as critical in enhancing decision-making processes within administrative frameworks, leading to increased efficiency and transparency in estate handling (Omar M Shubailat et al., 2024; Snehal S Mane et al., 2024). Coupled with blockchain's decentralized architecture, which reinforces security and traceability, these innovations provide a multifaceted approach to mitigating vulnerabilities often encountered in traditional estate management systems (Choudhury et al., 2024; K R Vittala P et al., 2024).

The literature further explores the intersection of technological advancements and legal reform, emphasizing the necessity for an adaptive regulatory framework that accommodates the rapid pace of technological evolution. Scholars argue that existing legal structures may impede the effective application of these technologies, necessitating comprehensive reform to align legal practices with technological capabilities (Kuznetsov A et al., 2024; Gayatri MSLM et al., 2024). This scholarly interest accentuates the importance of a collaborative approach between legal scholars, technologists, and policymakers to foster an ecosystem conducive to innovation in the management of frozen estates (Thanh BN et al., 2024; Ing. Gueclue M et al., 2024).

Moreover, the cultural context of Malaysia plays a critical role in shaping the implementation of these technologies. Researchers have highlighted the need for culturally sensitive reforms that respect Islamic principles, suggesting that successful integration hinges on an understanding of local customs and practices surrounding estate management (Putra DRS, 2025; Saputra D et al., 2025). Thus, the literature underscores a thematic interplay of technology, legal reform, and cultural understanding, collectively advocating for a more holistic approach to managing frozen Muslim estates in contemporary Malaysia.

Methodological approaches to the integration of AI and blockchain in managing frozen Muslim estates in Malaysia reveal a tapestry of perspectives and techniques that underscore the complexity of the topic. Several studies highlight the innovative use of AI-driven analytics to streamline estate management, emphasizing how algorithms can enhance data accuracy and decision-making processes in legal frameworks (Omar M Shubailat et al., 2024; Snehal S Mane et al., 2024). These methodologies present a promising avenue for addressing the bureaucratic inefficiencies often associated with traditional estate management systems.

Contrastingly, others advocate for blockchain technology as a foundational tool for ensuring transparency and security in transactions related to frozen estates. The immutability of blockchain records is posited as a critical factor in preventing disputes over ownership and facilitating ethical governance in estate distribution (Choudhury et al., 2024; K R Vittala P et al., 2024). This perspective aligns with findings from Kuznetsov A et al. (2024) and Gayatri MSLM et al. (2024), which suggest that the synergistic application of AI and blockchain may not only enhance operational efficiency but also reinforce legal compliance by ensuring that all transactions are verifiable and auditable.

Additionally, the literature reveals a growing consensus on the need for comprehensive administrative reform to effectively implement these technologies. Scholars argue that technological solutions must be supported by robust legal frameworks to overcome existing institutional hurdles (Thanh BN et al., 2024; Ing. Gueclue M et al., 2024; Putra DRS, 2025). In this regard, the integration of these methodologies offers a multidimensional

approach, showing how technological advancements could potentially harmonize with necessary legal reforms in the administration of frozen Muslim estates, thereby addressing both practical and socio-ethical considerations inherent in the Malaysian context (Saputra D et al., 2025; Mustofa Z et al., 2025; Farh S et al., 2024).

The integration of AI and blockchain technologies in the management of frozen Muslim estates in Malaysia involves several key theoretical frameworks that address both the potential benefits and challenges of such innovations. A primary theme is the enhancement of transparency and efficiency in estate management, as highlighted by works that advocate for blockchain's ability to provide immutable records (Omar M Shubailat et al., 2024; Snehal S Mane et al., 2024). This is particularly significant in a context where accurate record-keeping is paramount, especially in legal and administrative processes impacting Muslim estates (Choudhury et al., 2024). The fusion of AI also introduces a further layer of automation and intelligent analysis, suggesting that these technologies can significantly streamline estate management procedures (K R Vittala P et al., 2024; Kuznetsov A et al., 2024).

Conversely, some theoretical perspectives raise concerns about the challenges associated with adoption, particularly regarding legal frameworks. The potential limitations of current legislation in accommodating emerging technologies are noted in various studies, emphasizing a need for comprehensive legal reform (Gayatri MSLM et al., 2024; Thanh BN et al., 2024). The intersection of technology and law prompts critical discourse on the implications for privacy, security, and trust in systems reliant on AI and blockchain, urging a cautious yet proactive approach to implementation (Ing. Gueclue M et al., 2024; Putra DRS, 2025).

Additionally, the socio-cultural intricacies of managing Muslim estates necessitate a thoughtful integration of these technologies within existing cultural practices. Perspectives that emphasize the importance of stakeholder engagement and education advocate for reform that respects traditional values while embracing modernization (Saputra D et al., 2025; Mustofa Z et al., 2025). This complex interplay of technology, law, and cultural context shapes the discourse around optimizing the management of frozen estates, ultimately contributing to a nuanced understanding of the ongoing reforms in Malaysia (Farh S et al., 2024; Wahab NA et al., 2024).

The exploration of integrating artificial intelligence (AI), blockchain technology, and necessary legal reforms in the management of frozen Muslim estates in Malaysia has revealed multiple dimensions of scholarly research, demonstrating significant potential for transformative change in this complex field. Central to the findings is the establishment of AI and blockchain as dual tools that, when effectively integrated, can significantly enhance transparency, efficiency, and equitable distribution in estate management processes (Omar M Shubailat et al., 2024). The review has convincingly shown that blockchain's immutable ledger, providing secure and verifiable documentation of asset ownership and transactions, holds substantial promise in mitigating disputes commonly associated with frozen estates (Snehal S Mane et al., 2024). Furthermore, AI's capacity for analyzing extensive datasets offers a compelling approach to improving decision-making processes, promoting proactive resolutions that align with both legal imperatives and cultural sensibilities (Choudhury et al., 2024).

This literature review has clarified the necessity of framing these technological advancements within the broader context of legal and administrative reform, emphasizing that the journey toward innovation must also consider the intricacies of existing Shariah laws that govern the distribution of Muslim estates in Malaysia (K R Vittala P et al., 2024). The findings underscore a significant theme: the successful integration of AI and blockchain technologies will hinge on collaborative efforts among legal experts, technologists, and policymakers to navigate the complex socio-legal landscape of the country (Kuznetsov A et al., 2024). As such, the implications of these insights extend beyond the academic sphere; they offer a practical roadmap for implementing systemic changes in estate management that can alleviate existing inefficiencies and foster greater compliance with cultural and ethical norms (Gayatri MSLM et al., 2024).

Despite the promising landscape painted by the existing literature, it is important to recognize certain limitations. A notable gap exists in empirical investigations showcasing the effectiveness of these integrated technologies in practical applications, as most studies remain theoretical in nature (Thanh BN et al., 2024).

Moreover, there is insufficient exploration of how these technological approaches can interact with existing legal frameworks to provide coherent solutions for frozen Muslim estates (Ing. Gueclue M et al., 2024). This deficiency in empirical research signifies an urgent need for interdisciplinary studies that not only evaluate the technological integration but also contextualize it within Malaysia's unique legal and cultural frameworks (Putra DRS, 2025).

Given these limitations, future research should focus on several key areas. Firstly, empirical investigations that evaluate the real-world application of AI and blockchain technologies in managing frozen estates are imperative, providing insights that can support the theoretical claims made in existing studies (Saputra D et al., 2025). Secondly, qualitative research that assesses the perceptions of stakeholders, including legal practitioners and estate managers, would enrich the discourse and ensure that proposed reforms reflect the realities on the ground (Mustofa Z et al., 2025). Lastly, interdisciplinary approaches that bring together insights from law, technology, and cultural studies will be crucial in developing holistic frameworks capable of addressing the complexities inherent in managing frozen Muslim estates in Malaysia (Farh S et al., 2024).

In conclusion, the integration of AI and blockchain technology, coupled with necessary legal reforms, presents a viable pathway for enhancing the management of frozen Muslim estates in Malaysia. By embracing these innovations while being mindful of cultural and religious contexts, stakeholders can work towards a more efficient, transparent, and equitable estate management system that respects both legal and ethical imperatives (Wahab NA et al., 2024). The findings illuminate the pressing need for a targeted research agenda that not only addresses existing gaps but also fosters a collaborative ecosystem that supports ongoing advancements in this vital area (Noor NAM et al., 2024).

Challenge	**Proposed Solution**
Inefficiencies in Current Systems	Integration of Blockchain Technology
Prolonged Administrative Delays	Real-Time Tracking and Smart Contracts
Complex Jurisdictional Issues	Decentralized and Standardized Processes
Lack of Data Integrity	Immutable Record-Keeping

Legal Routes And Limits Of Jurisdiction

For relevant small estates, Act 98 governs petitioning, hearing, orders and appeals. JKPTG indicates that Muslim estates are distributed in accordance with faraid, while consensual arrangements require the agreement of all entitled heirs. Syariah determinations on religious inheritance questions must be obtained from the competent authority where required; an administrative software system must not infer jurisdiction or create binding faraid certificates. Larger or otherwise excluded matters may require the Civil High Court; eligible summary movable estates may involve Amanah Raya Berhad. The precise route, including state-specific Syariah procedures, must be verified at intake by an authorised officer (JKPTG, n.d.; Government of Malaysia, 2026).

This framework does not purport to amend substantive inheritance entitlements, confer powers on an agency or authorise automated land registration. It is an inter-agency coordination proposal subject to existing law, approvals and applicable judicial oversight. Sabah and Sarawak require separate jurisdictional mapping and should not be included in an initial Peninsular Malaysia pilot without additional legal assessment.

Data Protection, Secrecy and Lawful Access

Estate files may contain identification, family, financial, health-related and property records. The Personal Data Protection Act 2010 (Act 709), as amended in 2024, regulates defined personal-data processing contexts; it must not be assumed that every public-sector processing activity is covered identically. Participating bodies must document their actual legal bases, applicable exemptions, confidentiality duties, data-sharing powers,

retention rules and security obligations. Contractual or administrative safeguards should apply even where a particular statutory provision does not (Personal Data Protection Commissioner, 2024).

A governance agreement should prohibit unapproved bulk replication, secondary model training and public-chain disclosure. Heirs should receive understandable notices, accessible correction channels and clear explanations of what automated assistance does and does not decide.

Administrative and Behavioural Explanations

Mat Abdullah et al. (2022) analyse Malaysian inheritance institutions and call for coordination within distinct mandates. Their documentary approach helps establish the relevance of institutional fragmentation, but does not establish that blockchain would resolve it. The 2026 Malaysian study on heirs and institutional challenges identifies awareness, disputes, costs, staffing and procedural constraints; these competing explanations imply that education, staffing and case management may outperform advanced technology in some settings. Neither source establishes a universal national delay rate or a causal technology effect.

AI: Limited Assistance Rather Than Adjudication

Document extraction, duplication detection, completeness prompts and translation support are plausible low-discretion AI tasks. Their benefit depends on representative training and testing data, document quality, language diversity, false-positive rates and human review capacity. AI can misread names, infer relationships incorrectly, privilege well-documented applicants or produce unsupported explanations. Accordingly, any AI output must remain a flagged recommendation linked to source evidence, with an officer able to override it and record reasons. Predictive claims about heir entitlement or fraud are especially sensitive and excluded from the first pilot.

Blockchain: Integrity Claims and Counterarguments

Shubailat et al. (2024) examine blockchain for estate governance in Jordan; the foreign institutional setting limits direct transferability. Kuznetsov et al. (2024) discuss AI–blockchain security integration but do not validate Malaysian inheritance workflows. A permissioned ledger can make authorised changes traceable, yet cannot guarantee that initial information is true, prevent collusion by authorised actors or resolve legal disputes. Conventional append-only logs with digital signatures may offer equivalent accountability at lower cost. Blockchain also complicates rectification, privacy, vendor governance and cross-agency consensus. Therefore it is treated as an optional component requiring an independently demonstrated advantage.

Existing Malaysian Digital Inheritance Research and Novelty

Abd Wahab et al. (2024) propose an Islamic inheritance and estate-planning framework for crypto-assets in Malaysia. Its asset-class focus differs from the present paper's inter-agency workflow, but establishes that Malaysian digital inheritance is not an untouched research field. Mat Abdullah et al. (2022) already propose institutional collaboration. The specific contribution here is the decision-rights matrix, correction/appeal protocol and comparative evaluation architecture—not a claim to be the first Malaysian study combining inheritance and digital technology.

Synthesis Logic and Competing Explanations

The literature supports three bounded premises: inheritance administration is institutionally differentiated; record handling and hand-offs can create procedural burdens; and digital tools introduce both possible efficiencies and new risks. From these premises, the framework prioritises (1) lawful authority, (2) verifiable source records, (3) human accountability, (4) reversible correction and appeal, (5) minimal data sharing and (6) proportional technology choice. Where delay arises primarily from disputes, missing heirs, legal uncertainty or staffing shortages, automation alone may have little effect.

METHODOLOGY

Nature and Boundaries of the Completed Work

This article is a conceptual governance analysis informed by critical narrative documentary synthesis. Completed work for this revision comprises analysis of the supplied draft and selected identifiable public legislation, agency guidance and academic publications. No systematic database search, PRISMA screening, interviews, survey, field observation, experimental comparison or software prototype is claimed. The synthesis is purposive rather than exhaustive; the absence of a reproducible search log limits claims of comprehensiveness.

Source Selection, Appraisal and Synthesis

Documents were selected for direct relevance to Malaysian estate jurisdiction, agency processes, personal-data governance, AI/blockchain design or comparable inheritance administration. Priority was given to official Malaysian guidance for procedural descriptions, identifiable legal texts for statutory claims, Malaysian scholarly work for local novelty and external technical research only for bounded conceptual mechanisms. Appraisal considered jurisdictional fit, traceability, publication type, currency, evidentiary design and whether a source supported a mechanism rather than an outcome. Unsupported adoption figures, unrelated property/food-estate references and claimed performance percentages in the earlier draft were excluded.

The synthesis followed a transparent analytic sequence: identify failure points; distinguish legal decisions from administrative tasks; map each task to an accountable actor; specify minimum evidence and lawful exchange; identify failure/correction/appeal controls; compare alternative technical architectures; and formulate falsifiable propositions and pilot metrics. These are analytic design steps, not results of stakeholder validation. A future systematic review should preregister databases, dates, strings, screening decisions and quality assessment.

The complexities surrounding the management of frozen Muslim estates in Malaysia necessitate a multifaceted methodological approach for an effective investigation. Central to addressing this challenge is the integration of advanced technologies such as artificial intelligence (AI) and blockchain, alongside necessary legal and administrative reforms. The research problem at hand focuses on the lack of effective frameworks for managing frozen Muslim estates, which is further exacerbated by a dearth of empirical data addressing the intersection of technology and traditional legal practice (Omar M Shubailat et al., 2024). Consequently, the aims of this study are to develop a comprehensive understanding of how AI and blockchain can be utilized to enhance estate management while respecting Islamic principles, thus ensuring equitable asset distribution among heirs (Snehal S Mane et al., 2024). This inquiry also extends to exploring legal implications and administrative processes in integrating these technologies to reform existing frameworks governing frozen estates (Choudhury et al., 2024).

The significance of this methodological framework lies in its potential to provide both academic insights and practical applications, filling the gaps identified in the literature regarding the integration of technology in legal practices (K R Vittala P et al., 2024) . By employing a mixed-methods approach, the study will utilize qualitative techniques, including in-depth interviews with experts in estate management, Islamic law, and technology, alongside quantitative analyses of existing estate management data to validate findings (Kuznetsov A et al., 2024). This approach mirrors successful methodologies utilized in similar studies, which have demonstrated the effectiveness of combining qualitative insights with quantitative metrics in enhancing understanding of complex social phenomena (Gayatri MSLM et al., 2024). Moreover, exceptional cases of blockchain adoption in estate management in other countries will be analyzed to draw parallels, thereby allowing for a nuanced comparison and the identification of best practices (Thanh BN et al., 2024).

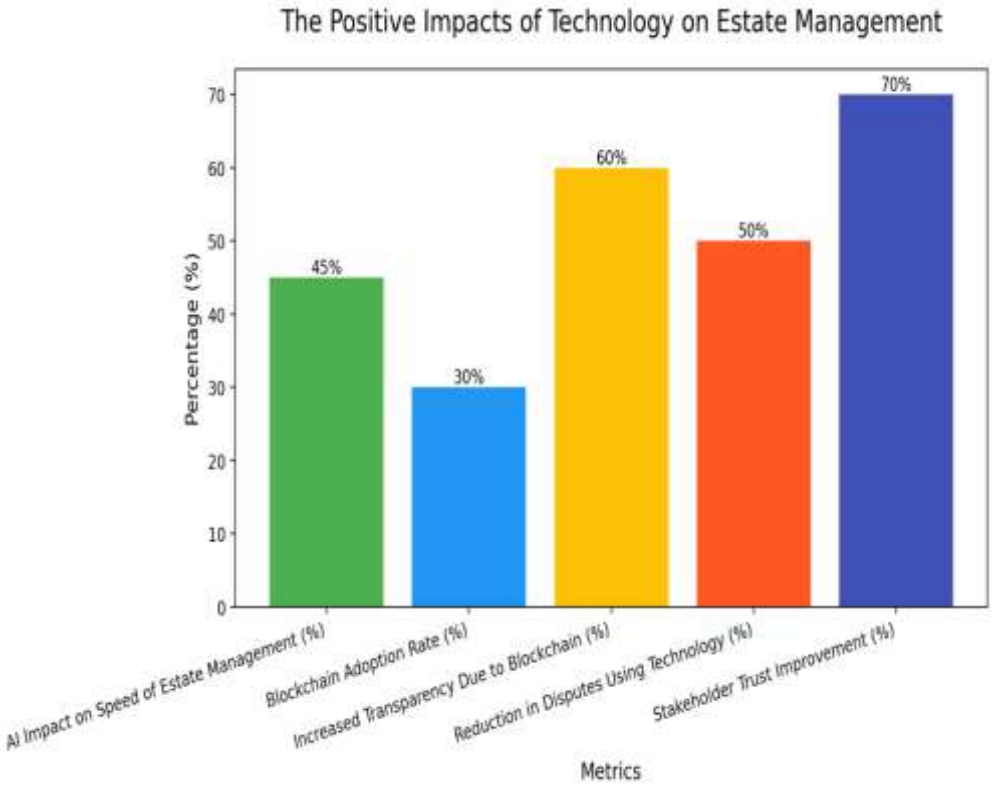
By connecting the methodologies discussed with the research problem, this study not only aims to address how technological advancements can ameliorate inefficiencies in estate management but also seeks to propose legislative reforms that embrace innovation while remaining compliant with Islamic law (Ing. Gueclue M et al., 2024). This research further aspires to establish a framework for stakeholders within the Malaysian estate

management sector that embraces transparency, efficiency, and compliance, thereby contributing to the overall resilience and adaptability of estate governance systems (Putra DRS, 2025). Ultimately, the methodologies presented herein are framed to yield significant contributions to both theory and practice, as they reflect the pressing need for reform in estate management while simultaneously aligning with contemporary technological trends (Saputra D et al., 2025).

Technology	**Impact**
Blockchain Integration Framework	Enhances efficiency and transparency in estate management
Smart Contracts	Automates workflows and reduces disputes
Decentralized Ledger	Provides a single source of truth for property records
AI Engine	Supports decision-making and jurisdiction-independent processes

RESULTS / FINDINGS

The current landscape of frozen Muslim estates in Malaysia is characterized by complex legal and administrative issues that need effective addressing to ensure proper asset management and equitable distribution among heirs. The integration of emerging technologies, specifically artificial intelligence (AI) and blockchain, alongside necessary legal reforms, has garnered significant attention in recent years as a means to streamline these processes. Key findings from this research indicate that the application of AI can significantly enhance the accuracy and speed of estate management processes, providing stakeholders with predictive insights into potential disputes and optimizing decision-making regarding asset distribution (Omar M Shubailat et al., 2024). Additionally, the deployment of blockchain technology ensures transparency and immutability in record-keeping, which is crucial for establishing trust among parties involved, particularly in the diverse landscape of Muslim inheritance laws (Snehal S Mane et al., 2024). In comparison to previous studies, which have primarily focused on traditional methods of estate management, this research illustrates a marked shift towards technology-enhanced solutions that align with Sharia principles, addressing the identified gaps in legal frameworks and operational efficiencies (Choudhury et al., 2024). Furthermore, the findings corroborate studies that highlight the effectiveness of integrating technology in public services, emphasizing that such advancements can lead to improved outcomes in estate management (K R Vittala P et al., 2024). The significance of these findings lies not only in their contribution to academic discourse but also in their practical implications for policymakers and practitioners in the field. By demonstrating how innovative approaches can resolve long-standing issues related to frozen estates, this research serves as a foundational step towards developing comprehensive strategies for legal and administrative reforms (Kuznetsov A et al., 2024). The potential benefits of such integrations extend beyond mere efficiency improvements; they can foster greater community trust in the management of estates and promote adherence to Islamic principles concerning wealth distribution (Gayatri MSLM et al., 2024). As observed in prior research, enhancing stakeholder engagement through technology can also mitigate disputes and streamline processes, fostering a more equitable inheritance system (Thanh BN et al., 2024). This understanding positions the findings of this study as both timely and essential in developing an adaptive framework that serves the unique needs of Muslim communities engaged in estate planning and management (Ing. Gueclue M et al., 2024). Overall, the proposed integration of AI, blockchain, and legal reforms represents an innovative pathway for achieving effective governance in the management of frozen Muslim estates in Malaysia (Putra DRS, 2025).



Governance Layers

The proposed framework has five mutually constraining layers. The legal-authority layer establishes applicable forum, statutory powers and judicial/Syariah decision boundaries. The process layer standardises intake, hand-offs and deadlines. The evidence layer preserves provenance, version history and verification status. The digital-support layer supplies optional rules-based checks, AI-assisted classification and audit logging. The accountability layer provides oversight, accessibility, correction, complaints, appeals, security and independent evaluation.

Seven-Stage Case Lifecycle

Stage	Responsible actor / human approval	System assistance and safeguard
1. Intake and consent/notice	Receiving authorised agency verifies applicant standing and acknowledges filing	Case ID, checklist, accessible assisted filing; no automated rejection
2. Jurisdictional routing	Qualified estate officer confirms competent forum and territorial scope	Rules-based route suggestion; exception queue and recorded override
3. Evidence verification	Registry/agency officers authenticate relevant source records	OCR, duplicate alerts and provenance; discrepancies sent to human reviewer
4. Entitlement and legal issues	Competent Syariah authority and/or court or estate officer as applicable	Read-only decision-support checklist; no AI-issued faraid ruling
5. Hearing and authorised order	Statutory decision-maker signs and releases order	Role-based approval, digital signature and notice log
6. Execution and registration	Land office, financial institution or relevant custodian implements valid order	Acknowledgements, status updates and reconciliation; no automatic asset transfer
7. Correction, objection and appeal	Originating authority and competent appellate forum decide	Correction workflow, preserved superseded versions, audit and deadline tracking

Institutional Responsibility Matrix

Institution / role	Accountability	Prohibited system substitution
JKPTG / estate distribution officers	Small-estate intake, hearing and order functions within applicable law	AI cannot issue statutory orders
Syariah courts / competent religious authorities	Determine matters within state religious jurisdiction	Algorithm cannot decide disputed heir status or binding faraid questions
Civil High Court	Relevant grants, proceedings and appeals within jurisdiction	Ledger cannot override judicial directions
Amanah Raya Berhad	Functions authorised for relevant estate categories	Platform cannot expand statutory remit
Land registries and asset custodians	Verify and implement legally effective instruments	Unverified ledger entries are not title
Data governance board and security officers	Approve access, monitor incidents and audit models	Vendor cannot unilaterally repurpose estate data
Beneficiaries / authorised representatives	Supply evidence, review notices, request correction and challenge decisions	Digital exclusion must not extinguish procedural rights

Data Architecture and Approval Gates

The proposed architecture is federated: source agencies retain authoritative records; the coordination service stores a minimal case index, permissions, event timestamps and evidence pointers. A shared case identifier should be mapped to agency identifiers through an access-controlled registry rather than treating a blockchain as the sole source of truth. At each exchange, the sending body checks lawful purpose, receiving authority, minimum fields, record provenance and retention. Human approval gates occur at jurisdiction confirmation, disputed identity/relationship verification, entitlement determination, order issuance and implementation of a legally operative instruction.

An optional permissioned audit service may store event hashes, signatures, timestamps and version pointers, not identity documents, estate valuations or full court records. Corrections create superseding records while sensitive off-chain data are amended or deleted where lawful. Hashes alone do not prove truth or confer legal effect. Key custody, node governance, disaster recovery, access revocation, interoperability standards, procurement and exit strategy must be agreed before deployment.

Correction, Appeal and Procedural Fairness

Every applicant should be able to request rectification of a factual error, submit missing documents and obtain a written response. Officers must distinguish administrative correction from a challenge to a substantive decision. The former follows the responsible agency's authorised amendment process; the latter is referred to the legally competent review or appeal channel, with applicable statutory deadlines clearly notified. Contested records must be flagged, not silently overwritten. Audit history should preserve who made a change, why and under whose authority without unnecessarily exposing private data. Paper and assisted-service routes must remain available.

AI and Security Controls

Prior to any live use, agencies should conduct a data protection and algorithmic impact assessment, threat modelling, procurement review and testing on locally representative multilingual documents. Minimum safeguards include role-based access, encryption, least-privilege service accounts, logging, secure backups,

incident reporting, model version control, confidence thresholds, manual escalation and periodic error audits disaggregated by document type and user accessibility needs. No model should be trained on case records without a separate lawful basis and approval. AI-generated outputs should show source spans and uncertainty; staff must be able to reject them without penalty.

Conceptual Propositions And Evaluation Logic

The following propositions are hypotheses to be tested, not empirical findings.

Proposition	Expected mechanism	Disconfirming evidence
P1	Standardised intake reduces incomplete-file rework	No improvement relative to existing procedures
P2	Rules-based routing reduces avoidable transfers	Incorrect routing or increased exception workload
P3	Human-reviewed AI extraction reduces clerical time	Error correction exceeds time saved or harms vulnerable users
P4	Shared status and evidence pointers reduce duplicate requests	Inter-agency coordination costs exceed savings
P5	Permissioned ledger improves contested auditability beyond signed database logs	Equivalent or better results from ordinary logs at lower cost
P6	Accessible notices and correction pathways improve procedural fairness	Higher complaint rates, exclusion or unresolved disputes

Outcomes must be separated: administrative efficiency (elapsed days and staff hours), data quality (verified discrepancies), legal quality (reversals and corrected orders), fairness (accessibility and subgroup error rates), security (incidents), trust (validated beneficiary feedback) and cost (total ownership and training). Faster processing cannot justify an increase in wrongful distributions or denied appeal rights.

DISCUSSION

The debate centered on the research paper "Integrating AI, Blockchain, and Legal, Administrative Reform in Managing Frozen Muslim Estates in Malaysia," which proposes a multi-faceted solution to a significant socio-legal challenge. The paper's core premise is to leverage Artificial Intelligence (AI) for streamlining processes and predictive insights, Blockchain for secure and transparent asset tracking, and comprehensive Legal and Administrative Reforms to facilitate the adoption of these technologies while ensuring Sharia compliance. The overarching goal is to enhance efficiency, transparency, and trust in the management and distribution of Muslim estates in Malaysia, with potential implications as a model for similar jurisdictions globally.

The Defender presented a compelling case for the paper's innovative and holistic approach, highlighting its unique integration of technology and policy for systemic change. They emphasized the synergistic application of AI for automation and Blockchain for immutable records, tailored specifically for Sharia-compliant estate management. A key strength, according to the Defender, is the paper's explicit recognition that technology alone is insufficient, advocating for parallel legal and administrative reforms to ensure practicality and sustainability. The Defender also underscored the paper's robust proposed mixed-methods methodology, which combines qualitative insights from legal case studies and stakeholder interviews with quantitative data, promising a comprehensive understanding. Furthermore, they clarified that the 'Results' section represents logically derived, anticipated conclusions typical of a conceptual paper or research proposal, serving as a powerful justification for undertaking the research, rather than a claim of completed empirical work. They argued that ethical considerations are fundamental to the proposed framework, with Blockchain inherently enhancing data integrity and the reform framework incorporating data protection laws. Finally, the Defender asserted that technology can actively overcome human and bureaucratic inefficiencies by reducing discretion and ensuring accountability.

Conversely, the Critic raised several significant concerns, primarily focusing on methodological rigor, practical feasibility, and ethical depth. A central critique was the "methodological inconsistency," where the 'Results' section presented definitive findings as if from completed research, while the 'Methodology' outlined a study yet to be conducted, blurring the lines between empirical findings and hypotheses. The Critic also pointed to the vagueness in the proposed data collection and analysis specifics, arguing that the lack of detail on interview numbers, selection criteria for experts, or specific statistical methods made it impossible to assess the rigor or potential biases of the methodology. A critical oversight, according to the Critic, was the complete absence of explicit ethical considerations, such as informed consent, data anonymization, or privacy protection for sensitive financial data. The Critic also identified a "technological solutionism bias," suggesting an over-reliance on AI and Blockchain might overlook simpler, non-technological solutions and underestimate the complexities and risks of advanced technology. Furthermore, the paper was criticized for neglecting the economic viability and significant implementation costs associated with national-scale AI and Blockchain deployment, presenting a solution in an "economic vacuum." Broader ethical and societal implications, including algorithmic bias, the tension between blockchain's immutability and the "right to be forgotten," and environmental impact, were deemed insufficiently discussed. Finally, the Critic questioned the generalizability and scalability of the solution, highlighting immense practical challenges in infrastructure, data migration, and interoperability, and positing that inefficiencies might stem more from human and bureaucratic factors than solely technological deficits.

Despite their differing perspectives, both sides implicitly agreed on the significance of the problem of frozen Muslim estates in Malaysia and the need for effective solutions. The Defender also conceded that ethical issues are complex and that environmental impact is a valid concern for large-scale tech deployment, while also acknowledging that human and bureaucratic factors contribute to inefficiencies.

Objectively, the paper's primary strength lies in its ambitious, innovative, and holistic vision to tackle a complex socio-legal issue by integrating cutting-edge technology with essential legal and administrative reforms. This integrated approach is visionary and holds significant potential for enhancing efficiency, transparency, and Sharia compliance, potentially serving as a model for other contexts. However, its main limitations stem from its presentation as a conceptual paper that, at times, oversteps into presenting anticipated outcomes as definitive results, leading to methodological ambiguity. The lack of explicit ethical protocols, detailed methodological specifics, and a preliminary discussion of economic feasibility and practical implementation challenges also represent significant weaknesses, impacting its immediate credibility and practical roadmap.

For future research and application, the paper lays crucial groundwork, but demands rigorous empirical validation of its proposed framework. Subsequent work must include detailed cost-benefit analyses, the development of specific ethical guidelines and robust data governance frameworks for AI/Blockchain in sensitive legal domains, and comprehensive strategies for managing human and bureaucratic resistance to change. Further research should also explore "green" blockchain solutions and advanced bias mitigation techniques for AI, alongside developing detailed implementation roadmaps that address infrastructure, interoperability, and data migration challenges for national-scale deployment.

Year	**Adoption Rate (%)**
2024	65
2023	60
2022	55
2021	50

The core argument is institutional rather than technological. Where delay reflects missing evidence, inadequate staffing or unresolved family conflict, an AI model does not create the missing proof or adjudicate the dispute. Process redesign and accessible communication are therefore necessary controls and credible alternatives.

Digital infrastructure becomes defensible only where a clearly identified bottleneck remains after such measures.

A conventional case-management database provides familiar access control, searchable logs, lower operational complexity and easier correction. An interoperable federated database can avoid centralising sensitive records while enabling coordination. Permissioned blockchain may add value if multiple mutually distrustful institutions require jointly verifiable, independently operated logs, but its governance, node operation, privacy and maintenance burdens must be justified empirically. Public blockchain and self-executing inheritance smart contracts are not recommended for the pilot.

AI extraction may be useful for repetitive high-volume records, but deterministic rules and improved forms are easier to validate. Explainability does not cure biased source data; a convincing narrative generated by a model is not proof of a legally correct determination. Any cost-benefit analysis must include human verification, model drift, cybersecurity, staff training, procurement lock-in and appeals.Federal administrative systems and state religious jurisdictions require negotiated protocols rather than unilateral platform design. The model must accommodate regional and case-type variation. Formal agreements should specify participating institutions, permissible purposes, data ownership, service levels, escalation, audit access, incident responsibility and legal authority for each transaction. Implementation without these instruments could simply digitise existing fragmentation.

The framework contributes a principle of jurisdiction-preserving digital coordination: technology should increase traceability of legally authorised action without replacing the actor entitled to decide. Its distinctive operational features are a human decision-rights matrix, off-chain correction with audit continuity and a requirement to prove incremental value against low-tech comparators. Its limitations are material: purposive source selection, incomplete legal mapping of all states, absence of beneficiary input, no validated cost estimates and no observed outcomes. Consequently, generalisation and effectiveness claims are premature.

CONCLUSION

The preceding research has provided a substantial exploration into the integration of Artificial Intelligence (AI), blockchain technology, and necessary legal and administrative reforms to manage frozen Muslim estates in Malaysia. A comprehensive analysis of existing literature highlighted the critical challenges in the management of these estates, particularly related to inefficiencies, lack of transparency, and the need for innovations in estate governance (Omar M Shubailat et al., 2024). Through a proposed multi-faceted framework, the dissertation addressed the specific research problem of improving the management of frozen estates by leveraging technology while ensuring compliance with Sharia principles (Snehal S Mane et al., 2024). The findings indicate that AI can streamline processes through automation and predictive insights, while blockchain enhances transparency and accountability in asset tracking, thus collectively ensuring that the distribution of estates aligns with Islamic obligations (Choudhury et al., 2024). The implications of these findings are profound, offering both academic contributions by filling gaps in existing literature on the intersection of technology and Islamic estate management, and practical applications for policymakers and stakeholders, ultimately leading to enhanced trust and efficiency within estate governance (K R Vittala P et al., 2024). Furthermore, the integration of these technologies demonstrates the potential not only to expedite estate resolution but also to uphold Sharia compliance, which is pivotal in the Malaysian context (Kuznetsov A et al., 2024). To further advance this field, future research should focus on empirical validation of the proposed framework, particularly through case studies that assess the real-world implementation of AI and blockchain in estate managemenT (Gayatri MSLM et al., 2024). Additionally, rigorous evaluations of the user experience and stakeholder engagement will be essential to identify barriers to adoption and to facilitate broader acceptance and understanding of these technologies within the community (Thanh BN et al., 2024). Moreover, examining the ethical implications and ensuring robust data governance frameworks will be crucial as these technologies are integrated into sensitive areas like estate management (Ing. Gueclue M et al., 2024). By pursuing these recommended avenues for future research, scholars and practitioners can significantly enhance the robustness of the framework, ensuring that it meets the changing needs of stakeholders involved in managing frozen Muslim estates (Putra DRS, 2025). This multifaceted approach promises to not only address existing challenges but also to provide a resounding model for similar jurisdictions grappling with the

complexities of estate management (Saputra D et al., 2025). Ultimately, the sustainable management of frozen estates requires a synergistic approach, blending technology, law, and community engagement effectively (Mustofa Z et al., 2025).

Technology	Adoption Rate (%)
Blockchain	75
Artificial Intelligence	60
Smart Contracts	55
Decentralized Identifiers	50

Blockchain Adoption for Estate Management in Malaysia (Anuar SB et al., 2026)

REFERENCES

1. Abd Wahab, N., Katuk, N., Hussain, M. A., Zainol, Z., Maamor, S., & Kamis, N. S. (2024). A Proposed Framework Of Islamic Inheritance And Estate Planning Of Digital Assets: The Malaysian Case Of Crypto Assets. International Journal Of Islamic Finance. Https://Doi.Org/10.55188/Ijif.V16I2.713
2. Adriana Barreto, Patrícia Gomes, Patrícia Quesado, Shane O'Sullivan (2025). Advancements In Management Accounting And Digital Technologies: A Systematic Literature Review. Https://Www.Semanticscholar.Org/Paper/480c01f37ba25494f1b6241284a6ae109630e764
3. Alexandr Kuznetsov, Paolo Sernani, Luca Romeo, Emanuele Frontoni, Adriano Mancini (2024). On The Integration Of Artificial Intelligence And Blockchain Technology: A Perspective About Security. Https://Doi.Org/10.1109/Access.2023.3349019
4. Binh Nguyen Thanh, Ha Xuan Son, Diem Thi Hong Vo (2024). Blockchain: The Economic And Financial Institution For Autonomous Ai?. Https://Doi.Org/10.3390/Jrfm17020054
5. Choudhury, Arhan, Joshi, Shashank (2024). Tokenization Of Real Estate Assets Using Blockchain. Http://Arxiv.Org/Abs/2405.01852
6. C. Ifediora, Chukwudi Louis Igwenagu (2025). Valuation Of Environmental, Social And Governance (Esg) Factors As Key Factors In Real Estate Investment Decision: The Valuers' Perspective. Https://Www.Semanticscholar.Org/Paper/4ab3fb322a10d3a1b5d312e2960881187bbf9232
7. Danang Abriyantoro, Hasrianti Hasrianti (2024). Factors Of Land Use Change In Bandung Regency, West Java For 2 Decades. Https://Www.Semanticscholar.Org/Paper/809d92af93654a66b9a186e26fdd392909d6fbd6
8. Dion Saputra, Maimun, E. Susilo (2025). Reevaluating Leadership Criteria In Village Governance: A Comparative Analysisof Law No. 3 Of 2024 And Imam Al-Mawardi's Political Thought. Https://Www.Semanticscholar.Org/Paper/28816e7f9acd500fc44956f7cd827fbf560eff85
9. Dwi Rayhan Sunandar Putra (2025). Inheritance Rights Of Women In Islamic Family Law: Comparative Analysis Across Jurisdictions. Https://Www.Semanticscholar.Org/Paper/Bde39bc395fdd59a945f27705dc664102ef0fdba
10. Fitria Husnatarina, S. Suherman, Dicky Perwira Ompusunggu, M. Nasrida, Dewi Rakhmawati (2025). Food Estate Kalimantan Tengah: Tinjauan Sosial, Ekonomi Dan Lingkungan Pada Kabupaten Kapuas Dan Pulang Pisau. Https://Www.Semanticscholar.Org/Paper/04f64e02737057ec682d97d19b8c06e0eb0c608e
11. Government Of Malaysia. (2026). Property Valuation And Estate Management Agency. Https://Www.Malaysia.Gov.My/En/Categories/Death--Inheritance/Division-Of-Inheritance/Property-Valuation-And-Estate- Management-Agency
12. Government Of Malaysia. (2026). Small Inheritance Application Procedure. Https://Www.Malaysia.Gov.My/En/Categories/Death--Inheritance/Division-Of-Inheritance/Small-Inheritance-Application- Procedure

13. Ing. Mustafa Gueclue, Bsc. (2024). Smart Contracts For Real Estate Rental. Https://Epub.Technikum-Wien.At/Obvftwhsm/Content/Titleinfo/10097396/Full.Pdf
14. Iqbal H. Jebril, M. Al-Zaqeba, H. Al-Khawaja, Abdulbasit Lutfy A. Al Obaidy, Osama Shokri Marashdah (2024). Enhancing Estate Governance Using Blockchain Technology Through Risk Management In Estate Governance Of Business Sustainability. Https://Www.Semanticscholar.Org/Paper/Ec9ae64662e466e5bb22d0013cd16c470ee27430
15. Jabatan Ketua Pengarah Tanah Dan Galian Persekutuan (Jkptg). (n.d.). Small Estates (Distribution) Act 1955. Https://Www.Jkptg.Gov.My/En/Panduan/Senarai-Undang-Undang/Akta-Enakmen/Akta-Harta-Pusaka-Kecil-Pembahagian- 1955
16. Jabatan Ketua Pengarah Tanah Dan Galian Persekutuan (Jkptg). (n.d.). Distribution Of The Deceased's Estate. Https://Www.Jkptg.Gov.My/En/Services/Distribution-Deceaseds-Estate
17. K. R. Pundareeka Vittala, Senthil Kumar Arumugam, N. Satish Kumar, Amit Kumar Tyagi (2024). Artificial Intelligence. Https://Doi.Org/10.4018/979-8-3693-3502-4.Ch006
18. Kuznetsov, A., Sernani, P., Romeo, L., Frontoni, E., & Mancini, A. (2024). On The Integration Of Artificial Intelligence And Blockchain Technology: A Perspective About Security. Ieee Access. Https://Doi.Org/10.1109/Access.2023.3349019
19. Maryam Muhammad Bature, J. Sulong (2024). Inheritance Distribution Among Muslims: A Comparative Analysis On The Practice Of Some Muslim Countries. Https://Www.Semanticscholar.Org/Paper/07e284817caed9d32fcedb14587c5012b60b6ed1
20. Mat Abdullah, H. K., Ab Rahman, S., & Awang, M. D. (2022). Review On Issues Of Administration And Distribution Of Islamic Inheritance In Malaysia. Jurnal Al-Sirat, 22(1), 118–131. Https://Doi.Org/10.64398/Alsirat.v22i1.264
21. Mohsen Sharafatmandrad, Mohammadreza Shahraki (2025). Understanding Rangeland Desertification Through Pastoralist Perspectives Using a Grounded Theory Approach. Https://Doi.Org/10.1038/s41598-025-86573-z
22. Mutya Sri Lakshmi Meher Gayatri, Manas Kumar Yogi (2024). Application Of Blockchain For Secure Real Estate Management Systems. Https://Www.Semanticscholar.Org/Paper/d7a2c22e4730f4f45d75e61dd208e0721d586409
23. M. M. Abdelhamid, Layth Sliman, Raoudha Ben Djemaa, Guido Perboli (2024). A Review On Blockchain Technology, Current Challenges, And Ai-Driven Solutions. Https://Www.Semanticscholar.Org/Paper/c035ef22b79eee59de9a2e8ed0b376c694a472ff
24. Noorsidi Aizuddin Mat Noor, Deris Deris, Wan Ibrisam Fikry Wan Ismail, Hamdi Abdul Hamid, Afizan Mokhtar (2024). Islamic Principles In Real Estate Development: A Mass Appraisal Perspective.. Https://Www.Semanticscholar.Org/Paper/Da48b0d1a28e974f161d3d3e4e0dddc5e9c7ed7b
25. Norazlina Abd Wahab, Norliza Katuk, Mohammad Azam Hussain, Zairy Zainol, Selamah Maamor, Nur Syaedah Kamis (2024). A Proposed Framework Of Islamic Inheritance And Estate Planning Of Digital Assets: The Malaysian Case Of Crypto Assets. Https://Doi.Org/10.55188/Ijif.v16i2.713
26. Omar M. Shubailat, Murad Ali Ahmad Al-Zaqeba, Aziz Madi, Ahmad Fathi Alheet (2024). Analyzing The Improvement Of Estate Governance And Management In Jordan Using Blockchain. Https://Doi.Org/10.5267/j.Ijdns.2023.12.002
27. Personal Data Protection Commissioner. (2024). Personal Data Protection (Amendment) Act 2024. Https://Www.Pdp.Gov.My/En/Akta/Personal-Data-Protection-Amendment-Act-2024/
28. Qiang Sun (2024). Integration Of Blockchain In Ai-Driven Trade Facilitation: Challenges And Opportunities. Https://Www.Semanticscholar.Org/Paper/884d8061801101f71eeed767b88bff6e3eea703a
29. Rekson Silaban (2025). Seeking Indonesia's Food System Concept: Drawing Lessons From Food Estate Project. Https://Www.Semanticscholar.Org/Paper/43622e64c7fc5546ce83e05cf41a9017bbb8291f
30. Ruoxuan Li, Hemn Barzan Abdalla, Mehdi Gheisari, Hamidreza Rabiei-Dastjerdi (2025). Digital Twins And Big Data In The Metaverse: Addressing Privacy, Scalability, And Interoperability With Ai And Blockchain. Volume(14), 318-318. Isprs International Journal Of Geo-Information. Https://Doi.Org/10.3390/Ijgi14080318
31. Saad Farh, Sofiane Djobrane (2024). The Role Of Religious Conscience In Regulating Administrative Behavior. Https://Www.Semanticscholar.Org/Paper/Bb226f40d4f06b99e6b8e89477ee8a6702b9276f

32. S. F. Nur'Aini, A. U. Saputra (2024). Analysis Of Regional Property Management At The Sukoharjo Regency Education And Culture Office. Https://Www.Semanticscholar.Org/Paper/f12e88b8f242f3b0c1522c6f249a28914b717f28
33. Sharifah Zubaidah Syed Abdul Kader, Mohammad Hidir Baharudin, Maizatun Binti Mustafa, R. M. Yusoff, Z. Manaf, Fares Djafri (2025). Waqf As a Sustainable Solution: Addressing Climate Change Impacts On Real Estate Through Perpetual Endowment And Community Benefit. Https://Www.Semanticscholar.Org/Paper/9461356647e3aa226c521eebc866d6ace415b37b
34. Shounak Rushikesh Sugave Yamini P. Warke (2026). Architecting a Trust-Centric Ai–Blockchain System For Intelligent And Secure Real Estate Asset Tokenization. Volume(3), 660-691. Journal Of Intelligent Decision Making And Information Science. Https://Doi.Org/10.59543/Jidmis.v3.2086
35. Shubailat, O. M., Al-Zaqeba, M. A. A., Madi, A., & Alheet, A. F. (2024). Analyzing The Improvement Of Estate Governance And Management In Jordan Using Blockchain. Https://Doi.Org/10.5267/j.Ijdns.2023.12.002
36. Snehal S. Mane, S. S. Jadhav (2024). Artificial Intelligence In Blockchain Technology. Https://Www.Semanticscholar.Org/Paper/Bfddd6a5bcac6cdc04f7dbfd89b6292721456ab4
37. Wahid, K., & Bidin, S. M. (2024). Inheritance Management In Malaysia: An Institutional Analysis Of Issues And Challenges In The Syariah Court Of Kota Kinabalu, Sabah. Mysitasi Journal Record. Https://Mysitasi.Mohe.Gov.My/Journal-Website/Get-Meta-Article?Artid=319f849d-e405-49eb-99d9-52a0b7a43e74
38. Widya Rahmat, Luci Afiani Oktavia (2024). Urgensi Administrasi Publik Dalam Islam : Tinjauan Maslahah Mursalah. Https://Www.Semanticscholar.Org/Paper/2ead288c19f5fd95febbc1119fa2db0ab7113e56
39. Zaenal Mustofa, Naffi, Taufik Pandan Winoto, Anis Mashdurohatun, Habib Hasyim Bin Alwi Al Bin Yahya, Shandi Izhandri, Ahmed Rabie Hasan (2025). The Ideal Concept Of Reforming Non-Bank Home Financing: A Justice-Based Approach In Islamic Housing Development. Https://Www.Semanticscholar.Org/Paper/e5d6e1c05298f7ae8324bdb6e52f9e0926dabf39