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Harmonization of National and International Law in the Utilization of AI for the Organization of Hajj A Collaborative Study Between the Governments of Indonesia and Saudi Arabia in Hajj Technology Systems

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Abstract: The annual Hajj pilgrimage presents significant logistical challenges, increasingly addressed through Artificial Intelligence (AI) by the Kingdom of Saudi Arabia, often in collaboration with countries like Indonesia, which sends the largest contingent of pilgrims. This study examines the complex legal landscape surrounding the use of AI in Hajj organization, focusing on the need for harmonization between Indonesian national law (including Law No. 27/2022 on Personal Data Protection and Law No. 8/2019 on Hajj/Umrah), Saudi Arabian law (including the Personal Data Protection Law and SDAIA AI guidelines), and relevant international frameworks (AI ethics, data protection, human rights). Using a qualitative methodology based on secondary data analysis, this paper identifies key AI applications in Hajj, analyzes existing Indonesia-Saudi collaborative efforts, and evaluates points of conflict and convergence between the respective legal regimes. Findings highlight significant challenges in areas such as cross-border data transfer, sensitive data processing, algorithmic bias, and accountability. The study concludes by recommending pathways towards legal harmonization to ensure ethical, rights-respecting, and efficient AI deployment in managing the Hajj, fostering continued collaboration between Indonesia and Saudi Arabia.

Keyword: Artificial Intelligence, Legal Harmonization, International Law.

Abstrak: Ibadah haji tahunan menghadirkan tantangan logistik yang signifikan, yang semakin ditangani melalui Kecerdasan Buatan (AI) oleh Kerajaan Arab Saudi, sering kali bekerja sama dengan negara-negara seperti Indonesia, yang mengirimkan kontingen jemaah haji terbesar. Studi ini mengkaji lanskap hukum yang kompleks seputar penggunaan AI dalam organisasi haji, dengan fokus pada perlunya harmonisasi antara hukum nasional Indonesia (termasuk Undang-Undang No. 27/2022 tentang Perlindungan Data Pribadi dan Undang-Undang No. 8/2019 tentang Haji/Umrah), hukum Arab Saudi (termasuk Undang-Undang Perlindungan Data Pribadi dan pedoman AI SDAIA), dan kerangka kerja internasional yang relevan (etika AI, perlindungan data, hak asasi manusia). Dengan menggunakan metodologi kualitatif berdasarkan analisis data sekunder, makalah ini mengidentifikasi aplikasi AI utama dalam

haji, menganalisis upaya kolaboratif Indonesia-Saudi yang ada, dan mengevaluasi titik-titik konflik dan konvergensi antara masing-masing rezim hukum. Temuan menyoroti tantangan signifikan di berbagai bidang seperti transfer data lintas batas, pemrosesan data sensitif, bias algoritmik, dan akuntabilitas. Studi ini diakhiri dengan rekomendasi jalur menuju harmonisasi hukum untuk memastikan penerapan AI yang etis, menghormati hak asasi manusia, dan efisien dalam mengelola haji, serta mendorong kolaborasi berkelanjutan antara Indonesia dan Arab Saudi.

Kata Kunci: Kecerdasan Buatan, Harmonisasi Hukum, Hukum Internasional.

INTRODUCTION

The Hajj, the annual Islamic pilgrimage to Mecca, Saudi Arabia, stands as a fundamental pillar of Islam, obligatory for all Muslims who are physically and financially able to undertake the journey at least once in their lifetime. It represents one of the largest and most complex annual human gatherings globally, presenting immense organizational challenges related to logistics, accommodation, transportation, crowd management, health services, and security. In recent years, the Kingdom of Saudi Arabia (KSA), as the custodian of Islam's holiest sites, has increasingly turned to advanced technologies, particularly Artificial Intelligence (AI), to navigate these complexities and enhance the pilgrimage experience. AI applications are being deployed across various facets of Hajj management, including sophisticated algorithms for crowd control and safety monitoring, AI-driven traffic management systems, drone surveillance for logistics and inspection, and innovative digital health initiatives aimed at providing timely care to pilgrims.

Indonesia holds a unique position in this context, consistently sending the largest national contingent of pilgrims to the Hajj each year. The Indonesian government bears a significant constitutional and legal responsibility to organize, guide, serve, and protect its citizens undertaking the pilgrimage, a duty mandated by national legislation such as Law No. 8 of 2019 concerning the Implementation of Hajj and Umrah. This responsibility has led to a long-standing and evolving cooperative relationship between the governments of Indonesia and Saudi Arabia in managing the intricate details of the Hajj. Recently, this collaboration has extended into the technological realm, reflecting the broader trend of digitalization in Hajj administration.

However, the deployment and integration of AI technologies in Hajj management, especially when involving bilateral cooperation and the exchange of pilgrim data between Saudi Arabia and Indonesia, operate within a notably fragmented and complex legal landscape. Significant differences and potential conflicts exist between Indonesian national laws, such as the comprehensive Personal Data Protection Law (PDP Law No. 27/2022), Saudi Arabian national laws, including its own Personal Data Protection Law (PDPL) and AI guidelines issued by the Saudi Data and Artificial Intelligence Authority (SDAIA), and the evolving body of international norms and principles governing AI ethics, cross-border data protection, human rights, and religious freedom. This legal fragmentation poses considerable challenges, creating potential for legal uncertainty, operational hurdles, and significant ethical dilemmas concerning pilgrim privacy, algorithmic bias, data security, and accountability. Consequently, the need to explore pathways towards harmonizing these disparate legal frameworks becomes paramount to ensure that AI is utilized responsibly, ethically, and effectively in the context of Indonesia-Saudi Hajj collaboration.

METHOD

This research employs a qualitative methodology centered on the analysis of secondary data sources. These sources include national legislation from Indonesia and Saudi Arabia, official government reports and policy documents, guidelines from international organizations, relevant academic literature, and reputable news articles detailing AI applications and bilateral cooperation in Hajj management. The analytical approach involves comparative legal analysis to identify points of conflict and convergence, alongside an evaluation of the legal and ethical issues arising from AI deployment in this specific cross-jurisdictional context, ultimately aiming to identify potential pathways for legal harmonization. The subsequent part of this study is structured to address the core analysis by evaluating the challenges and opportunities for harmonization through the identification of legal conflicts and points of convergence, as well as by discussing their implications. Finally, it presents the conclusions drawn from the analysis and offers recommendations for policymakers and stakeholders to promote the development of a more harmonized legal environment for the use of AI in the organization of Hajj.

RESULT AND DISCUSSION

The increasing use of AI and the deepening technological collaboration between Indonesia and Saudi Arabia for Hajj management occur against the backdrop of distinct national legal systems and evolving international norms. This juxtaposition creates both significant challenges and potential opportunities for harmonization. This section analyzes the specific points of friction and synergy between the relevant legal frameworks, explores the resulting legal and ethical implications, and identifies potential pathways toward greater alignment.

Points of Conflict and Convergence

A comparative analysis of the Indonesian PDP Law and the Saudi PDPL, alongside their respective approaches to AI governance, reveals several areas where harmonization efforts are most needed:

1. Cross-Border Data Transfer Regimes: Both Indonesia and Saudi Arabia regulate the transfer of personal data outside their borders, drawing inspiration from international models like GDPR and Convention 108+. Both recognize the concepts of requiring adequate protection in the recipient jurisdiction or implementing appropriate safeguards like Standard Contractual Clauses (SCCs). This shared conceptual foundation provides a basis for negotiation. However, potential conflicts arise. Indonesia requires the recipient country's protection level to be "equal to or higher than" its PDP Law, or mandates safeguards/consent. Saudi Arabia allows transfers based on adequacy decisions (list pending), appropriate safeguards (SCCs, BCRs, certifications), or specific exemptions, but critically adds the condition that transfers must not compromise KSA's national security or vital interests. This national security caveat, potentially subject to broad interpretation, could clash with Indonesian requirements if invoked to restrict data flows deemed necessary under Indonesian law or pilgrim service agreements. Uncertainty is compounded by the lack of a published KSA adequacy list and potential differences in the preferred types or specific clauses of safeguards (e.g., KSA-issued SCCs vs. Indonesian requirements). Despite these hurdles, the successful WHO digital health card pilot demonstrates that practical interoperability using agreed-upon standards is achievable.
2. Sensitive Data Definitions and Processing: Both legal frameworks identify similar categories of data as sensitive (or "specific" in Indonesian law), including health, biometric, and genetic data, requiring heightened protection. This aligns with international practice. Minor differences in listed categories exist (e.g., Indonesia explicitly includes

'children's data', KSA includes 'tribal origin') but seem manageable. A more significant potential conflict lies in the legal basis for processing: Saudi Arabia explicitly prohibits using 'legitimate interest' as a basis for processing sensitive data, whereas Indonesia's PDP Law allows legitimate interest as a general basis, and its specific application to sensitive data might require clarification or differ, impacting justifications for processing critical Hajj data like pilgrim health information.

3. Consent Mechanisms: Both systems recognize consent as a key legal basis for data processing. However, the precise requirements for obtaining valid, explicit consent (granularity, information provided, ease of withdrawal) might differ subtly between the two laws and their implementing regulations, potentially creating compliance complexities for systems needing consent under both jurisdictions.
4. DPO and DPIA Requirements: Both the Indonesian PDP Law and the Saudi PDPL incorporate GDPR-like accountability mechanisms, requiring the appointment of Data Protection Officers (DPOs) and the conduct of Data Protection Impact Assessments (DPIAs) under certain conditions, particularly for high-risk processing involving sensitive data or large-scale monitoring. This reflects a shared understanding of risk management principles. However, the specific thresholds or triggers (e.g., interpretation of "large scale," specific types of processing mandating a DPIA) might differ, potentially leading to situations where an activity requires these measures under one law but not the other.
5. AI-Specific Regulations: A clear divergence exists in the current approach to governing AI itself. Indonesia is actively moving towards establishing binding, comprehensive AI regulations covering ethics, safety, and liability. In contrast, Saudi Arabia currently relies on non-binding "soft law" instruments like SDAIA's AI Ethics Principles and Generative AI Guidelines. While both countries acknowledge the need for AI-specific governance and draw on international principles, this asymmetry in regulatory approach (hard vs. soft law) creates uncertainty and potential for future divergence in compliance expectations and liability frameworks for collaborative AI systems.

Table 1. Comparative Analysis of Indonesian PDP Law and Saudi PDPL Provisions Relevant to Hajj AI Systems

Feature	Indonesian PDP Law (No. 27/2022)	Saudi PDPL & Regulations
Legal Basis (Pilgrim Data)	Consent, Contract, Legal Obligation, Vital Interest, Public Interest, Legitimate Interest	Consent, Contract, Legal Obligation, Vital Interest, Public Interest (Health), Statistical/Research, Legitimate Interest (Excludes Sensitive Data)
Sensitive Data Definition	Health, Biometrics, Genetics, Children's Data, Finance, Criminal Records, other sensitive data by law	Ethnic/Tribal Origin, Beliefs, Health, Biometrics, Genetics, Credit Data, Criminal Records
Cross-Border Transfer Mech.	Adequacy (Equal/Higher Protection), Appropriate Safeguards (e.g., SCCs), Explicit Consent. Reporting required	Adequacy Decision (List Pending), Appropriate Safeguards (SCCs, BCRs, Certifications), Exemptions. Subject to National Security/Vital Interests condition. Transfer Risk Assessment required
Key Data Subject Rights	Informed, Access, Rectification, Erasure, Restrict Processing, Object (incl. automated decisions), Portability, Withdraw Consent, Complain, Compensation	Informed, Access, Rectification, Erasure, Restrict Processing, Object, Portability
DPO Threshold	Public Interest Processing, Large-Scale Systematic Monitoring, Large-Scale Sensitive/Crime Data	Public Entity (Large Scale), Primary Activity = Large-Scale Regular Monitoring, Core Activity = Sensitive

Feature	Indonesian PDP Law (No. 27/2022)	Saudi PDPL & Regulations
	Processing	Data Processing
DPIA Threshold	High Risk to Data Subject	High-Risk Processing Activities (Implied, details likely in regulations)
Breach Notification	To Authority & Data Subject (Timeline likely in implementing regulations)	Within 72 hours to SDAIA; Without Undue Delay to Data Subject (if high risk)

Legal and Ethical Implications

The interplay between these legal frameworks and the practical deployment of AI in Hajj generates significant legal and ethical implications that demand careful consideration:

1. Data Sovereignty vs. Operational Needs: National data protection laws assert jurisdiction over citizens' data, reflecting principles of data sovereignty However, the effective operation of sophisticated, potentially life-saving AI systems in the transnational Hajj environment often necessitates the seamless flow and integration of data across borders. This creates a fundamental tension between maintaining national control over data and enabling the technological collaboration required for optimal Hajj management, particularly when dealing with restricted data categories or countries of concern under broader geopolitical frameworks. Harmonization efforts must navigate this complex balance.
2. Pilgrim Privacy and Surveillance: The use of AI for crowd monitoring, facial recognition, location tracking, and other surveillance techniques during Hajj significantly heightens privacy risks for millions of pilgrims. While deployed for legitimate purposes like safety and security, such pervasive monitoring can infringe upon the fundamental right to privacy (UDHR Art 12, ICCPR Art 17). There is a risk of function creep, where data collected for one purpose (e.g., crowd flow) might be repurposed without adequate justification or oversight. Furthermore, the awareness of being constantly monitored can create a "chilling effect," potentially inhibiting pilgrims' freedom of expression or association, even within the context of religious observance. Ensuring transparency about data collection, adhering strictly to principles of necessity and proportionality, implementing robust safeguards, and providing avenues for redress are critical to mitigate these risks in line with international human rights standards and AI ethics principles.
3. Data Security and Breach Risks: Concentrating and sharing vast amounts of sensitive pilgrim data (health, biometric, financial, travel details) across international systems dramatically increases the potential impact of data breach. A successful cyberattack could expose the personal information of millions, leading to identity theft, fraud, discrimination, or even physical harm. The cross-jurisdictional nature complicates breach response, requiring coordinated notification efforts under potentially differing legal timelines and requirements (as seen in Table 1). Both Indonesia and Saudi Arabia recognize this risk, with Indonesia enhancing protection for Siskohat data following past misuse and both laws imposing breach notification duties. Harmonized security standards and coordinated incident response protocols are essential.
4. Algorithmic Bias and Discrimination: AI systems are susceptible to inheriting and amplifying biases present in their training data or design. In the Hajj context, AI used for resource allocation (e.g., accommodation, transport), risk assessment (e.g., health screening), security profiling, or even service personalization could inadvertently discriminate against pilgrims based on nationality, ethnicity, gender, age, or socioeconomic status. Such biases could lead to unfair treatment, exclusion from services, or disproportionate scrutiny, violating principles of non-discrimination (UDHR Art 2,

ICCPR Art 2 & 26) and fairness central to AI ethics. Rigorous bias detection and mitigation strategies, along with diverse and representative training data, are crucial.

5. Accountability and Liability: Determining responsibility when an AI system malfunctions or causes harm presents a significant challenge, often referred to as the "accountability gap". If a collaborative Indonesia-Saudi AI system used for Hajj management—perhaps coordinating logistics or providing health advice—makes an error leading to injury, financial loss, or violation of rights, assigning liability becomes complex. Which entity (Indonesian agency, Saudi agency, technology vendor) is responsible? Under which country's legal framework should redress be sought? Existing national laws and bilateral MoUs may not adequately address liability allocation for jointly operated or deeply integrated AI systems. This lack of a clear, overarching governance framework specifically designed for such collaborative systems complicates not only liability but also dispute resolution and consistent ethical oversight across the system's lifecycle.
6. Impact on Spiritual Experience: A unique ethical consideration in the Hajj context is the potential impact of technology on the pilgrimage's spiritual essence.nOver-reliance on digital tools, constant connectivity facilitated by apps and Wi-Fi, or the feeling of being under pervasive surveillance could distract pilgrims from their devotional focus and diminish the sense of sanctity and communal spiritual experience. AI systems must be designed and deployed with cultural and religious sensitivity, aiming to enhance rather than intrude upon the spiritual journey.
7. Alignment with Islamic Principles: Ensuring that AI applications align with the objectives of Islamic law (Maqasid al-Shari'ah) and broader Islamic ethical values is a critical challenge. This involves addressing concerns about AI's potential lack of contextual understanding, the risk of biased interpretations if used for religious guidance, maintaining human agency in religious decision-making, and ensuring the technology serves justice and community well-being. Collaboration involving religious scholars alongside technologists and legal experts is vital.

These legal and ethical risks associated with AI are significantly amplified in the Hajj context. The sheer scale of the event, the inherent vulnerability of pilgrims (many elderly, in unfamiliar surroundings, performing physically demanding rituals), the sensitivity of the data involved, the high stakes associated with safety and religious fulfillment, and the cross-jurisdictional complexity all contribute to a situation where AI failures or misuse could have exceptionally severe and widespread consequences.

Pathways Towards Harmonization

Addressing the challenges posed by the fragmented legal landscape requires proactive efforts towards harmonization. Several potential pathways can be pursued, ranging from comprehensive agreements to more incremental approaches:

1. Bilateral Hajj Technology Agreement: The most direct route would be for Indonesia and Saudi Arabia to negotiate a specific, comprehensive bilateral agreement dedicated to governing the use of AI and the sharing of data for Hajj purposes. Such an agreement could establish mutually agreed-upon standards for data protection (drawing from both PDP Law and PDPL, potentially elevating standards to meet the stricter aspects of each), define clear mechanisms for cross-border data transfers (e.g., mutually recognized SCCs tailored for Hajj data), articulate shared AI ethics principles (referencing UNESCO/OECD), establish frameworks for allocating liability, and create joint oversight mechanisms.
2. Adoption of International Standards: Leveraging existing international standards and principles offers a crucial pathway, providing neutral ground and established best practices.

a) *Data Protection:* Both countries could formally commit to adhering to the core principles of Convention 108+ for Hajj data processing. They could adopt or adapt internationally recognized SCCs (potentially based on Convention 108+ models) or agree on requirements for Binding Corporate Rules (BCRs) for technology providers operating in both jurisdictions. Achieving a mutual recognition of GDPR-level protection as adequate would significantly streamline transfers.
b) *AI Ethics:* A joint declaration committing to the implementation of core UNESCO and OECD AI principles in all collaborative Hajj AI projects would provide a strong ethical foundation.
c) *Technical Standards:* Utilizing globally recognized technical standards for data formats (like the WHO's IPS for health data), security protocols (e.g., ISO 27001, already adopted by Indonesia's Siskohat), and system interoperability is essential for practical collaboration and can be mandated within bilateral agreements.

3. Mutual Recognition / Adequacy: Indonesia and Saudi Arabia could undertake a formal mutual assessment of each other's data protection laws (PDP Law and PDPL) specifically in the context of Hajj data processing. A finding of mutual adequacy, even if limited to this specific sector, could significantly simplify and legitimize cross-border data flows between their respective Hajj authorities and systems.
4. Joint Governance Mechanisms: Establishing a dedicated Joint Indonesia-Saudi Hajj Technology Committee or Task Force could provide an ongoing forum for overseeing collaboration. This body could be tasked with developing shared operational protocols, monitoring compliance with agreed standards, addressing emerging ethical concerns related to new AI applications, facilitating technical coordination, and serving as a first point of contact for dispute resolution. Input or observer status from relevant international bodies (e.g., WHO for health data, OIC, UNESCO/OECD AI bodies) could lend further expertise and legitimacy.
5. Capacity Building and Knowledge Sharing: Continued investment in technical assistance, joint training programs (as envisaged in the SDAIA MoU), and regular exchanges of best practices between relevant Indonesian agencies (Kominfo, BSSN, MoRA, BPH) and Saudi counterparts (SDAIA, Ministry of Hajj and Umrah, Ministry of Health) are crucial for building mutual understanding and trust regarding AI governance, data protection implementation, and cybersecurity capabilities. Participation in international forums like the Global Partnership on AI (GPAI) or OECD.AI can also facilitate shared learning.
6. Focus on Specific Use Cases (Incrementalism): Given the complexity of achieving comprehensive harmonization across all potential AI applications immediately, a pragmatic, incremental approach may be more feasible. Harmonization efforts could initially focus on specific, high-priority collaborative projects, such as the digital health care initiative. Tailored agreements addressing the specific data flows, standards, and governance needs of each project could be developed first. Success and lessons learned in these targeted areas can then build the trust and momentum needed for tackling broader harmonization challenges later. This approach aligns with the practical collaboration already underway.
7. Multi-stakeholder Dialogue: Harmonization efforts should not be confined to government-to-government discussions. Engaging technology providers (who develop and operate the AI systems), civil society organizations (representing pilgrim rights and privacy concerns), and religious scholars (to ensure alignment with Islamic values) in the dialogue is essential for developing practical, ethically sound, and publicly trusted solutions.

Leveraging international principles and standards (UNESCO, OECD, Convention 108+, WHO/ISO) provides a particularly valuable strategy. These frameworks offer neutral reference points and technical foundations that can help bridge differences between the

national legal approaches of Indonesia and Saudi Arabia, depoliticizing negotiations to some extent and grounding them in widely recognized best practices.

CONCLUSION

The integration of Artificial Intelligence into the management of the Hajj pilgrimage holds significant promise for enhancing the safety, efficiency, and overall experience for millions of pilgrims undertaking this profound religious duty. Saudi Arabia's substantial investments in AI applications, ranging from crowd and traffic management to health services and digital platforms like Nusuk, demonstrate a clear commitment to leveraging technology. Indonesia, as the largest contributor of pilgrims, shares a vital interest in ensuring these technologies are deployed effectively and responsibly, leading to growing technological collaboration between the two nations, exemplified by initiatives like the joint digital health card pilot.

However, this study reveals that the use of AI in the Hajj, particularly within the context of Indonesia-Saudi collaboration, operates within a complex and fragmented legal and ethical landscape. Key differences exist between Indonesia's legal framework—characterized by the comprehensive PDP Law nearing full enforcement and evolving AI-specific regulations—and Saudi Arabia's approach, which features a robust PDPL alongside currently non-binding AI ethics guidelines and a notable emphasis on national security in data transfer rules. International principles on AI ethics, data protection, and human rights provide important benchmarks but lack universal binding force. This fragmentation creates significant harmonization challenges, particularly concerning cross-border data transfers, the processing of sensitive pilgrim data, ensuring algorithmic fairness, establishing clear lines of accountability for AI systems, and mitigating potential negative impacts on pilgrim privacy and the spiritual nature of the Hajj. The risks associated with AI are amplified in the high-stakes Hajj environment due to the scale, sensitivity, and cross-jurisdictional nature of the operations.

Legal and ethical harmonization is, therefore, not merely a desirable goal but a fundamental necessity for the sustainable, effective, and rights-respecting deployment of AI in collaborative Hajj management. Achieving greater alignment is crucial for ensuring the consistent protection of pilgrims' fundamental rights—including privacy, non-discrimination, and freedom of religion—regardless of which jurisdiction's system is processing their data. While harmonization requires careful negotiation to balance national sovereignty and regulatory autonomy with the demands of international cooperation and technological interoperability, it is ultimately a prerequisite for building the legal certainty and mutual trust needed to unlock the full potential of AI collaboration for improving Hajj safety, efficiency, and the pilgrim experience. Success in this specific context could also serve as a valuable model for broader digital cooperation between Indonesia and Saudi Arabia.

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