



International Digital Hajj and Umrah Verification and Protection System: Online Service Model Based on Digital Identity, Dynamic or Code, Digital Holographic Authentication, and Cross-Border Pilgrim Verification

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ABSTRAK

The organization of Hajj and Umrah is facing new developments due to digital transformation, increased cross-border mobility, the need to protect pilgrims, and demands for service transparency. The third amendment to Law Number 8 of 2019 through Law Number 14 of 2025 explicitly places technological advancements, the dynamics of Hajj and Umrah management at both national and international levels, and the need to improve guidance, services, and protection for pilgrims as part of the considerations for legal changes. On the other hand, Saudi Arabia has developed the Nusuk Hajj digital platform, which allows prospective pilgrims to create accounts, upload documents, fill out applications, go through verification, choose categories, top up e-wallets, select service providers, book packages, and review itineraries digitally. This situation shows that the digitalization of Hajj management has evolved from merely providing information to becoming an integrated digital service and transaction mechanism. This community service proposal develops the International Digital Hajj and Umrah Verification and Protection System (IDHUVPS) model as an additional layer of protection that connects pilgrim identities, document verification, dynamic QR codes, digital holographic authentication, health protection, payments, verification of Hajj and Umrah proxies, complaints, as well as Indonesia-Saudi Arabia data interoperability. This model is not meant to bypass visa requirements, quotas, permits, or applicable Sharia regulations, but is designed as a digital governance model that can be developed through collaboration among authorities.

INTRODUCTION

Digital transformation has become an important part of organizing Hajj and Umrah services. The third amendment to Law Number 8 of 2019 through Law Number 14 of 2025 states that the development of law, societal needs, the dynamics of Hajj and Umrah management at the national and international levels, as well as technological advancements are key reasons for changing regulations. Therefore, the digitalization of Hajj and Umrah services can no longer be seen just as a technical issue, but also as a matter of law, public protection, data security, transparency, and cross-border governance.

On the Saudi Arabian side, the official Nusuk Hajj platform has provided mechanisms for account creation, document uploads, application filling, application verification, category selection, e-wallet top-up, service provider selection, package selection, package booking, and itinerary review. This system shows that pilgrims already have a digital space to interact directly with the Hajj service ecosystem.

However, this development can still be further improved from the perspective of protecting cross-country pilgrims. The model proposed in this activity is not meant to replace Nusuk Hajj, but rather to build an interoperability and protection layer that connects the pilgrims' identities from their home countries with the service systems in the destination country. Nusuk Hajj itself explains that individual packages can include flights, accommodation, transportation, meals, guidance for pilgrims, payment, as well as verification of documents needed for visas. Therefore, this research and service effort is aimed at developing a digital protection layer that allows pilgrims to access information and verify every stage of service more easily.

For umrah services, the official Nusuk Umrah platform also offers individual packages that can include flights, accommodation, transportation, various payment methods, as well as document and requirement verification. The official Nusuk Umrah rules also require users to create an account and keep their credentials and personal data used in the system secure.

This fact shows that the development of Hajj and Umrah services is moving towards a digital self-service model, but self-service must still be within the framework of legal compliance. Pilgrims cannot use digital technology to bypass visas, permits, quotas, health checks, or other requirements mandated by the respective country.

Therefore, the concept used in this proposal is 'Self-Service, Not Self-Violation,' meaning pilgrims can manage their own trips and documents through a digital system, but the entire process must still comply with Indonesian law, Saudi law, visa regulations, quotas, permits, security, health, and Sharia rules.

IMPLEMENTATION AND METHODS

The activities are carried out using a participatory digital governance approach.

Activity stages:

Stage 1 – Identification

Identifying the issues faced by pilgrims regarding:

- Documents;
- Visas;

- Payments;
- Travel;
- Health;
- Proxy Rituals (Badal);
- Complaints;
- Digital Security.

Stage 2 - Education

The community is given an understanding of how to use official platforms and the risks of using unverified agents or parties.

Stage 3 - Simulation

Participants go through a simulation:

Create Account → Upload Document → Verification → Package → Payment → QR Verification → Digital Hologram → Complaint.

Stage 4 - Evaluation

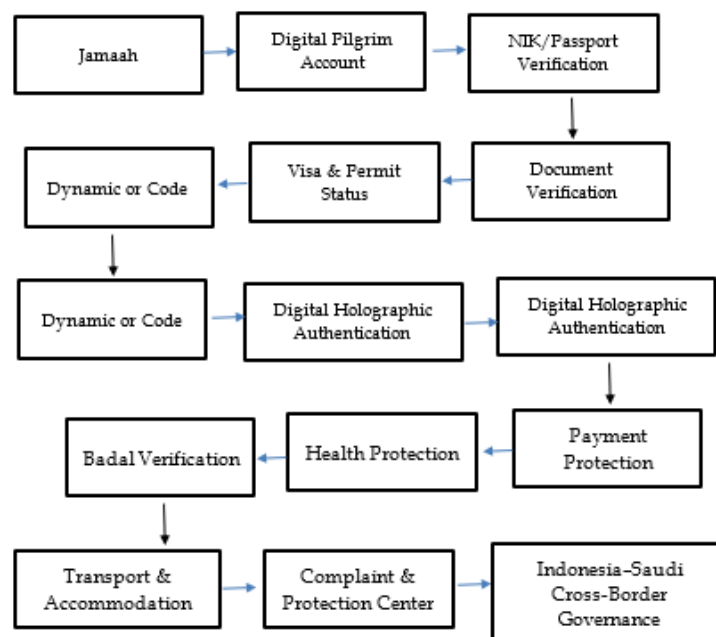
Evaluation is conducted using pre-tests and post-tests.

Indicators:

Indicator	Before	After
Visa understanding	low/medium/high	Measured
Understanding permits	low/medium/high	Measured
QR verification capabilities	low/medium/high	Measured
Understanding data protection	low/medium/high	Measured
Badal understanding verified	low/medium/high	Measured
Ability to use digital services	low/medium/high	Measured

RESULTS AND DISCUSSION

Model Digital Yang Diusulkan



The model places the congregation as the main users of the system, but all legal authority still rests with the authorized authorities.

Model Novelty

The novelty of the proposal is not in creating a new Hajj app because Saudi Arabia already has Nusuk Hajj. The novelty lies in the integrated protection architecture, which includes:

1. Digital Pilgrim Identity;
2. Dynamic QR Authentication;
3. Digital Holographic Authentication;
4. Verified Badal Hajj;
5. Verified Badal Umrah;
6. Health Protection Layer;
7. Payment Transparency;
8. Cross-Border Complaint System;
9. Indonesia–Saudi Data Interoperability;
10. Digital Consumer Protection.

Thus, this study tries to develop the concept of 'digital pilgrimage governance' from just a digital service into a digital protection ecosystem.

Proposed Figure 1. International Hajj–Umrah Digital Compliance Architecture

Pilgrim → Digital Account → Identity Verification → Visa/Permit Verification → Flight Verification → Accommodation Verification → Insurance Verification → Financial Readiness → Emergency Contact → Provider Verification → Institutional Review → Digital Signature → QR Credential → Cross-Border Verification → Pilgrimage

Proposed Figure 2. Compliance Status

Status	Meaning	Action
● VERIFIED	All applicable requirements verified	Credential issued
● REVIEW	Additional verification needed	Human review
● NOT VERIFIED	One or more mandatory requirements not satisfied	Credential not issued

Proposed Figure 3. Anti-Fraud Chain

Verified Identity → Verified Provider → Verified Payment → Verified Visa → Verified Ticket → Verified Accommodation → Verified Insurance → Verified Emergency Contact → Verified Pilgrim

Proposed Novelty Statement

The novelty of this research lies in proposing an interoperable, role-based, cryptographically verifiable Hajj-Umrah compliance credential that integrates Indonesian and Saudi institutional verification while preserving the independent legal authority of immigration, pilgrimage, health and security institutions.



Figure 1. International Digital Hajj and Umrah Verification & Protection System (IDHUVPS)

Online Service System

Every pilgrim gets a personal digital account. The whole process is done online:
Registration → Document Upload → Verification → Validation → Hologram Authentication → Qr Code → Travel → Saudi Verification → Monitoring

Dashboard jemaah:

Requirements	Status
Identitas/Passport	✓ VERIFIED
Visa/Permit	✓ VERIFIED/VALID
Tickets	✓ VERIFIED
Hotels/Accommodations	✓ VERIFIED

Requirements	Status
Health documents	✓ VERIFIED
Insurance	✓ VERIFIED
Dana/financial readiness	✓ VERIFIED
Emergency contacts	✓ REGISTERED
Hajj/Umrah Requirements	✓ COMPLETE
QR Code	● ACTIVE
Digital Hologram	● AUTHENTIC

Digital hologram

Setelah seluruh persyaratan sah diverifikasi, sistem memberikan **Digital Holographic Certificate**.

Example display:

International Hajj & Umrah Digital Verification Verified Pilgrim

- Verification ID: IHUV-2026-XXXXXX
- Identity: Verified
- Travel Documents: Verified
- Health Requirements: Verified
- Financial Readiness: Verified
- Accommodation: Verified
- Status: **Active**

Digital Hologram Authenticated Scan or Code to Verify

The hologram is made dynamic, so it's not just a hologram image that can be copied. When the QR Code is scanned, the server checks the authenticity of the credential, its validity period, and its revocation status.

QR Code sebagai bukti digital

Pilgrims do not need to bring all documents for initial examination. It is enough to show:

QR CODE + DIGITAL ID

Petugas memindai QR Code dan sistem menampilkan:

✓ **VERIFIED**

atau apabila ada masalah:

⚠ **Document Incomplete**

atau:

⛔ **Credential Invalid/Revoked**

However, this system should be positioned as a proposed digital verification tool, not as a replacement for visas, Hajj permits, passports, or decisions by the Saudi authorities.

24-hour online services

The platform can also provide:

- Document Submission and Checking;
- Document Deficiency Notifications;
- Official Payments If Available;
- Ticket Verification;
- Accommodation Verification;
- Health Information;
- Travel Information;
- Emergency Button;
- Contact With Representatives/Consular;
- Reporting Lost Documents;
- Travel Status Changes;
- Multilingual Help Center.

Emergency Protection

One important innovation in the journal is the Emergency Protection Module. If a pilgrim experiences:

- Losing Their Passport;
- An Accident;
- Illness;
- Losing contact with the group;
- Travel issues;
- Other emergencies, the pilgrim can press:

Emergency Assistance

The system then sends the minimum information needed to the authorized parties according to their authority and the user's approval.

Security principles

Since the system handles passports, health, financial, and identity information, the journal must include:

Privacy by Design, Data Minimization, Encryption, Multi-Factor Authentication, Role-Based Access Control, Audit Trail, Consent Management, Credential Revocation, Anti-Fraud QR Verification

So the officers can't automatically see all the personal data of the pilgrims. They only get the data they need for their inspection duties.

Institutional model

The journal concept can use the model:

Jemaah



International Digital Platform



Authorized Indonesian Institutions



Authorized Saudi Authorities



Immigration / Hajj-Umrah Verification / Relevant Service Providers

With the principle:

One Pilgrim - One Digital Account - One Verified Credential - One Dynamic QR Code.

Main research innovation

The article will highlight Digital Hologram + Dynamic QR + International Online Verification + Digital Pilgrim Account as the main innovations.

CONCLUSION AND RECOMENDATION

Changes in Indonesian regulations through Law Number 14 of 2025 show that the organization of Hajj and Umrah must be able to respond to legal developments, community needs, international dynamics, and technological advancements. At the same time, the official Nusuk Hajj system has shown developments in digital services covering accounts, documents, verification, payments, service providers, packages, bookings, and itineraries. Therefore, the IDHUVPS model is aimed not at replacing the official system, but at strengthening pilgrim protection through digital identities, dynamic QR codes, holographic authentication, badal verification, health protection, payment transparency, and complaint mechanisms.

The concept of a self-managed pilgrimage in this proposal should be understood as enhancing the pilgrims' ability to manage information and services digitally, not as a right to ignore visas, quotas, permits, health rules, security, or Sharia regulations.

So, the resulting model can serve as a foundation for developing an International Digital Hajj and Umrah Governance Model that positions technology as a tool for transparency, pilgrim protection, and cross-border accountability.

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