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Governing AI-Supported Decisions: A Maqasid-Shura Decision-Escalation Model for Madrasahs

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Abstract. This study analyses the use and role of artificial intelligence (AI) in managerial decision-making at madrasahs and formulates governance mechanisms to determine the circumstances under which AI-assisted decisions require human review and more in-depth ethical consideration. This study employs a qualitative approach using a case study design at MAN 1 Bojonegoro, East Java, involving 15 participants comprising the headteacher, teachers, academic coordinators and system operators. Data were collected through semi-structured interviews, non-participant observation and document analysis, and were subsequently analysed thematically through triangulation and member checking. The findings indicate that AI enhances administrative efficiency, real-time reporting, learning analytics and early warning functions; however, decision-making authority remains with human actors based on the level of consequences of the decision. Islamic values, particularly amanah and shura, serve as governing principles through responsible data management, consultation and ethical consideration. Based on these findings, this study developed the Maqasid-Shura Decision-Escalation (MSDE) analytical model, formulated on the basis of empirical findings and comprising five stages: AI-assisted evidence, human verification, consequence classification, Maqasid-Shura escalation, and accountable authorisation and feedback. This research contributes to the management of Islamic education by offering a testable governance proposition to integrate AI, human accountability and Islamic ethical principles into decision-making in madrasahs. However, the model still requires further validation in contexts beyond this single case study.

Keywords: AI governance, Decision Escalation, Madrasah Management, Maqasid Al-Shariah, Shura

Abstrak. *Penelitian ini menganalisis penggunaan dan peran kecerdasan buatan (AI) dalam pengambilan keputusan manajerial di madrasah serta merumuskan mekanisme tata kelola untuk menentukan kondisi ketika keputusan berbantuan AI memerlukan peninjauan manusia dan pertimbangan etis yang lebih mendalam. Penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus di MAN 1 Bojonegoro, Jawa Timur, dengan melibatkan 15 partisipan yang terdiri atas kepala madrasah, guru, koordinator akademik, dan operator sistem. Data dikumpulkan melalui wawancara semiterstruktur, observasi nonpartisipan, dan analisis dokumen, kemudian dianalisis secara tematik melalui triangulasi dan member checking. Hasil penelitian menunjukkan bahwa AI meningkatkan efisiensi administrasi, pelaporan waktu nyata, analitik pembelajaran, dan fungsi peringatan dini, tetapi kewenangan pengambilan keputusan tetap berada pada aktor manusia berdasarkan tingkat konsekuensi keputusan. Nilai Islam, khususnya amanah dan shura, berfungsi sebagai prinsip pembatas tata kelola melalui pengelolaan data yang bertanggung jawab, konsultasi, dan pertimbangan etis. Berdasarkan temuan tersebut, penelitian ini mengembangkan model analitis Maqasid-Shura Decision-Escalation (MSDE) yang dirumuskan berdasarkan temuan empiris dan*

terdiri atas lima tahap, yaitu bukti berbantuan AI, verifikasi manusia, klasifikasi konsekuensi, eskalasi Maqasid-Shura, serta otorisasi yang akuntabel dan umpan balik. Penelitian ini berkontribusi pada manajemen pendidikan Islam dengan menawarkan proposisi tata kelola yang dapat diuji untuk mengintegrasikan AI, akuntabilitas manusia, dan prinsip etika Islam dalam pengambilan keputusan madrasah. Namun, model tersebut masih memerlukan validasi lebih lanjut pada konteks di luar studi kasus tunggal ini.

Kata Kunci:*Tata Kelola AI, Eskalasi Keputusan, Manajemen Madrasah, Maqasid Al-Shariah, Syura*

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INTRODUCTION

Artificial intelligence (AI) has evolved from merely a specialised technology into an organisational capability that is increasingly influencing planning, monitoring, communication and decision-making in the field of education (Chen dkk., 2020; Dai dkk., 2025). In an educational context, AI can automate routine processes, identify patterns in institutional and student data, generate recommendations, and support personalised learning (Ahmad dkk., 2024). These functions can enhance organisational efficiency and responsiveness, whilst simultaneously altering the distribution of authority as managerial judgements become increasingly influenced by algorithmic outputs. This issue is becoming increasingly significant in Islamic educational institutions, where the effectiveness of management must remain aligned with moral responsibilities, spiritual objectives and accountability to stakeholders.

Research on digital transformation in madrasahs indicates that technology can enhance administrative efficiency, transparency, access and the quality of education when supported by coherent leadership and organisational readiness (Mahsusi dkk., 2024). Recent studies have expanded this discussion to include AI-based knowledge management, digital leadership, institutional readiness, and quality assurance (Ahmadi dkk., 2026; Hussen, 2024; Pranata, 2024). Empirical studies in the context of Islamic education also indicate that AI-assisted analysis of values, reporting, and curriculum management can support institutional operations, whilst educators' interpretation and organisational oversight remain essential (Isnaeni, 2024; Pohan & Pohan, 2025). With these developments, managerial issues are no longer limited to the decision to adopt AI, but also encompass how AI outputs are verified, regulated and translated into accountable institutional decisions.

The wider literature on responsible AI consistently emphasises transparency, fairness, privacy, accountability, the human role, and safety (Adams dkk., 2023; Akgun & Greenhow, 2022; Nguyen dkk., 2023). UNESCO also emphasises human-centred governance and institutional responsibility, rather than technological autonomy (Holmes & Miao, 2023), whilst the NIST AI Risk Management Framework emphasises governance and risk management throughout the AI lifecycle (Tabassi, 2023). However, these principles do not automatically clarify who should verify AI outputs, which decisions can be treated as routine processes, when consultation is required, or who holds the final authority. In an educational context, these questions have significant implications, as algorithm-based decision-making can redistribute authority and raise issues regarding accountability and procedural justice (Wang, 2024).

For madrasahs, responsible AI governance also has a distinctive normative dimension. Amanah calls for responsible data management and decision-making; shura emphasises the importance of consultation when individual judgement is insufficient; whilst maqasid al-shariah provides a framework for weighing up benefits, risks and educational objectives. Contemporary Islamic scholarly studies on AI are beginning to link these principles to human oversight and accountable digital governance (Biabdillah dkk., 2026; Wahyunisa & Aminullah, 2025). Kosmanto dkk, (2026) also demonstrate that AI-based management of Islamic education can strengthen data-driven decision-making whilst upholding Islamic values. However, existing research still provides only limited insight into the organisational processes by which AI outputs are translated into decisions carrying institutional authority, particularly when the consequences of such decisions are significant.

This research addresses this issue by developing the *Maqasid-Shura Decision-Escalation* (MSDE) model as a mechanism for AI-assisted decision governance. This model takes into account the *Human-in-the-Loop* (HITL) approach, responsible AI governance, and the conceptual development of *Human-in-the-Loop* from an Islamic perspective (Ahmed & Sarwer, 2022). The MSDE model uses the level of a decision's consequences as the basis for the escalation of human oversight, through the verification of AI outputs and the classification of decisions into low-consequence, consultative, and high-consequence decisions. High-consequence decisions require a Maqasid-Shura review and human authorisation. Thus, amanah, shura and maqasid al-shariah serve as guiding principles for the verification, escalation and accountability of decisions.

The conceptual contribution of MSDE lies in determining when human oversight needs to be escalated and how ultimate responsibility can be identified. While HITL emphasises the importance of human involvement, MSDE proposes an escalation mechanism at the decision-making level, ranging from professional monitoring and verification to collective ethical review as decision consequences increase. The model is presented as an analytical proposition grounded in empirical evidence, rather than as a previously implemented institutional protocol or a universally validated framework. Accordingly, this study addresses four questions: (1) How are AI-supported systems used in managerial decision-making in madrasahs? (2) How do institutional actors verify and interpret AI-generated information? (3) What conditions necessitate escalation from routine AI assistance to collective ethical review? and (4) How can *amanah*, *shura*, and *maqasid al-shariah* be operationalised as governance mechanisms to support responsible AI decision-making?

METHODS

This study employed a qualitative approach using a single-case study design at MAN 1 Bojonegoro, East Java, Indonesia, to examine AI-supported management within an institutional and religious context (Creswell & Poth, 2017). The research location was selected purposively as it had been using an integrated digital system for over a year, had introduced AI-supported administrative and educational functions, documented the integration of technology, and allowed for the researcher's ongoing involvement in the field. In this study, an 'AI-supported system' refers to an application that provides automated processing, anomaly detection, machine learning analytics, early warning indicators and managerial reporting. The system generates data, alerts, patterns or recommendations, whilst actions with consequences remain within human authority. Therefore, this study focuses on the use and governance of AI within organisations, rather than on a technical audit of algorithms or model performance.

Table 1. Profile of Research Participants (N = 15)

Category	Number	Code	Role in AI-Supported Decision-Making
Madrasah Principal	1	KM-01	Institutional policy and final decision authority
Teachers	8	GR-01–GR-08	AI-assisted learning and student monitoring
Academic Coordinators	3	KA-01–KA-03	Curriculum, academic planning, evaluation
System Operators	3	OS-01–OS-03	Digital system operation and data management
Total	15		

Participants were selected through purposive sampling from institutional roles directly involved in AI-assisted decision-making. This study involved 15 participants, comprising one headteacher, eight teachers, three academic coordinators and three system operators, each with at least two years' experience at the institution and who gave their consent after receiving an explanation of the research (Table 1). Data were collected over a three-month period through semi-structured interviews lasting 60-90 minutes, non-participant observation, and document analysis. The interviews explored the use of AI, its benefits, risks, Islamic values, and specific decision-making episodes; the observations examined the processes of reviewing, discussing, modifying, and escalating AI outputs; whilst policies, planning documents, system documentation, and evaluation reports were used as supporting sources for triangulation.

The data were analysed thematically following the six stages outlined by (Braun & Clarke, 2006) familiarisation, coding, theme development, review, definition and reporting. The audit trail links the MSDE stages with evidence of coding relating to AI outputs, human verification, the distinction between routine and sensitive decisions, Maqasid-Shura consultation, and human authorisation. Themes and categories were cross-checked against data from interviews, observations and documents. Data validity was strengthened through triangulation, *member checking*, field engagement and *peer debriefing*, whilst ethical considerations included participant consent, identity coding, confidentiality, secure data storage and institutional authorisation.

RESEARCH FINDINGS AND DISCUSSION

Results

AI as Decision-Support Infrastructure: Efficiency without Delegating Final Authority

AI is used primarily as a support infrastructure for decision-making, rather than as an autonomous decision-maker. Its applications include administrative automation, real-time reporting, learning analytics, as well as predictive and early-warning functions. The automation of attendance tracking, grade management, timetabling and data consolidation reduces repetitive tasks, whilst automatic validation and anomaly detection help to identify data errors. OS-02 explains: *"In the past, when the system was still manual, I had to work overtime almost every day to enter and verify data. Now, with the AI system, data entry is carried out automatically from various sources, and the system can even detect errors or data anomalies that might be overlooked by humans."*

In the academic sphere, learning analytics and predictive indicators are used to identify pupils who require intervention based on patterns of attendance, participation and marks. KA-01 explains:

> *"With predictive analytics, we can identify students at risk of a decline in academic performance or dropping out even before the signs become apparent. Last semester, the system identified 23 students who required specific intervention based on their attendance, participation and grades. After we provided intensive support, 21 of them successfully improved their academic performance. Without AI, we might only have realised there was a problem when it was already too late."*

The findings of the observation indicate that AI outputs are used as a basis for professional verification and follow-up, rather than as automatic decisions. This pattern forms the basis for the researchers' synthesis regarding the differentiation of decision consequence levels within the MSDE model, although this classification has not yet become a formal protocol in madrasahs.

Islamic Ethical Safeguards as Operational Control Points

The second major finding concerns the operationalization of Islamic ethical values. Participants did not describe ethics only as a general commitment; they linked specific values to concrete management practices. Amanah was associated with responsible data handling, accuracy, access control, and the obligation to answer for decisions made with technological assistance. Shura appeared in coordination and decision processes where AI-generated information was discussed collectively rather than accepted automatically. Teachers also emphasized content filtering and spiritual balance, particularly when AI was used in instructional preparation or recommendation. These practices indicate that Islamic values functioned as control points that constrained how far automation could extend. *GR-05:*

> *"We are very careful to ensure that AI technology does not replace Islamic values in our education. Every content generated or recommended by the AI system must go through a filter based on Islamic principles. We also ensure that interaction with technology does not reduce students' time for tafakkur (reflection) and dzikir (remembrance of Allah). Technology is a tool, not a goal our main goal remains to form insan kamil (complete human beings) who have faith and piety."*

A religious studies teacher summarized this boundary clearly: AI-generated or AI-recommended content had to pass through an Islamic-value filter, and technology was understood as a tool rather than the educational goal. Interviews and meeting observations also showed consultation around matters carrying institutional or ethical implications. These are direct field findings. The organization of these practices into a distinct Maqasid-Shura escalation stage is a second-order researcher synthesis that connects Islamic-value filtering, consultation, consideration of benefit and harm, and retained human authority. Thus, the data support the constituent practices, whereas the formal label and sequential placement of 'Maqasid-Shura review' are model formulations developed through cross-theme analysis

Governance Vulnerabilities: Readiness, Infrastructure, and Policy

The third major finding is that responsible AI use is constrained by institutional readiness. Participants repeatedly identified unstable connectivity, limited server capacity, budget pressure, uneven digital literacy, resistance to change, privacy concerns, and the absence of comprehensive formal AI policies. These barriers are not peripheral technical issues; they affect whether human oversight can function. When staff lack AI literacy, verification may become superficial. When infrastructure is unstable, managers may rely on incomplete or delayed data. When accountability is unclear, the presence of an AI recommendation can blur responsibility rather than strengthen it.

Leadership commitment and collaboration were the strongest enabling conditions. The principal's support influenced infrastructure priorities, professional development, and the willingness of teachers and coordinators to experiment with AI-assisted processes. Participants also emphasized peer mentoring, staff involvement in system adjustment, parent socialization, and

consultation with religious figures. This collaborative orientation helped convert AI implementation from a technical project into an organizational change process. It also created a social foundation for shura. Consultation was not added after the technology was introduced but formed part of the institution's approach to adaptation.

The Maqasid-Shura Decision-Escalation Governance Model

A cross-thematic synthesis has resulted in the Maqasid-Shura Decision-Escalation (MSDE) governance model, comprising five stages: AI-assisted evidence provision, human verification, classification of decision consequences, Maqasid-Shura review, and accountable authorisation and feedback. Interviews, observations and documents support the practice of utilising AI outputs, human verification, and the retention of final authority with humans. Meanwhile, the classification of consequences and the escalation mechanism are the result of the researchers' synthesis based on the differences in the handling of routine, consultative and high-consequence decisions. Thus, MSDE is an analytically based model grounded in empirical evidence, rather than a formal protocol that has been implemented at MAN 1 Bojonegoro.

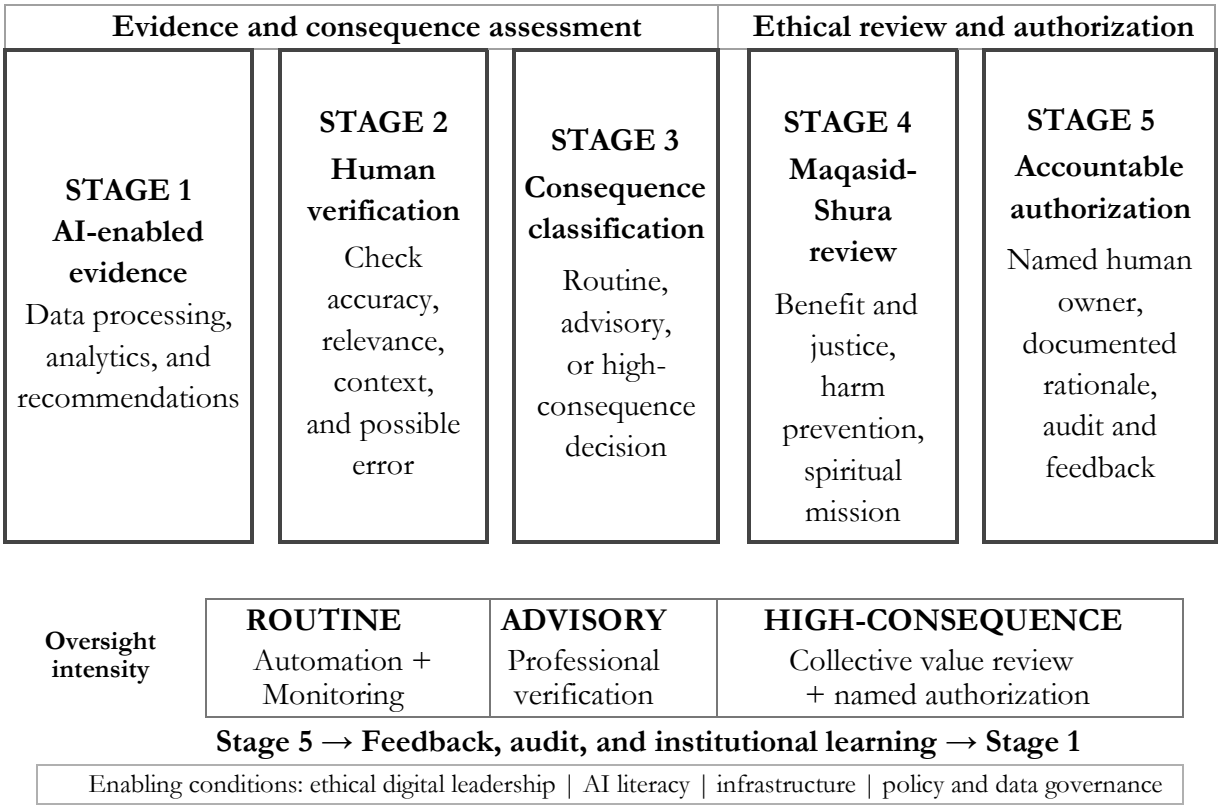


Figure 1. Maqasid-Shura Decision-Escalation (MSDE) Governance Model

Based on this framework, the researchers have identified three levels of oversight: 'routine' for routine decisions requiring automation and monitoring; 'advisory' for decisions requiring professional verification; and 'high-consequence' for decisions requiring collective ethical review and clear human authorisation. The differentiation of consequence levels and the incorporation of consultation practices, Islamic value screening, and benefit-risk considerations into the MSDE stages are the results of the researchers' analysis; they are not formal classifications or procedures that have been implemented at MAN 1 Bojonegoro. Pupils' rights, disciplinary issues, sensitive personal data, religious content, and high-impact institutional decisions are positioned as examples of escalation triggers proposed within the model. Thus, MSDE is an analytical model grounded in empirical evidence, whilst the sequence of five stages, three levels of supervision, and its escalation

mechanisms remain conceptual formulations that need to be tested and refined through research within a broader institutional context.

Discussion

AI-Supported Decision Governance and the Reconfiguration of Institutional Authority

The use of artificial intelligence (Artificial Intelligence/AI) in madrasah management relates not only to the efficiency of information processing, but also to the relationship between technological capabilities and human authority in decision-making. A study conducted by (Hussen, 2024) shows that artificial intelligence (AI) can strengthen institutional knowledge management processes, whilst (Pranata, 2024; Riyanto, 2026) emphasise the importance of digital leadership and governance capacity. In this context, the results generated by AI do not automatically constitute final decisions; rather, they must be verified and interpreted whilst taking the institutional context into account. AI can help identify problems, reveal patterns and support managerial judgement; however, the quality of decisions remains dependent on professional judgement, educational objectives and the consequences of actions for those affected. Therefore, human involvement is not merely a technical supplement, but rather an integral part of the mechanism for maintaining decision quality and ensuring institutional accountability.

This understanding emphasises that the governance of AI-assisted decision-making must position technology as a support for managerial judgement, rather than as a substitute for human authority and responsibility. The utilisation of information technology in educational administration must be underpinned by the readiness of human resources and the commitment of institutional leaders (Suharti & Mariam, 2025). In the context of Islamic education in the digital age, technological transformation must also continue to take into account humanistic and spiritual values. Therefore, clarity regarding who verifies AI outputs, decision-making authority, and responsibility for the consequences are crucial aspects of AI use in madrasahs. This principle forms the basis for the formulation of the Maqasid-Shura Decision-Escalation (MSDE) model, particularly in linking AI-assisted evidence with human verification. Meanwhile, the classification of decision consequences and the escalation mechanism are discussed in greater detail in the section on the formulation of the MSDE model. Thus, AI governance in Islamic education must not merely focus on the technology's ability to generate information, but must also ensure that decision-making authority and responsibility are upheld.

Islamic Ethical Values as Governance Mechanisms Beyond Technical AI Ethics

Responsible AI governance generally emphasises human control, accountability, transparency, fairness, privacy and contextual consideration (Adams dkk., 2023; Nguyen dkk., 2023). Meanwhile, studies of AI from an Islamic perspective emphasise moral responsibility, amanah, and a purpose-oriented approach based on maqasid al-shariah. These two perspectives can complement one another, but Islamic values also provide a distinctive ethical foundation for decision-making within Islamic educational institutions. The principle of amanah emphasises the obligation to verify information and ensure clarity of responsibility, whilst shura provides a basis for the involvement of others when a decision is insufficient if based solely on individual considerations. As for maqasid al-shariah, it serves as the basis for assessing the objectives, benefits and potential negative impacts of decisions on educational interests, social life and religious values.

In this context, Islamic values are not merely normative guidelines, but must be translated into governance mechanisms that influence the decision-making process (Ghafran & Yasmin, 2020). Amanah relates to verification and accountability, shura to consultation mechanisms, whilst maqasid al-shariah relates to the assessment of the objectives and consequences of decisions. The

relationship between these three principles forms the basis for the formulation of the Maqasid-Shura component within the Maqasid-Shura Decision-Escalation (MSDE) model. This model integrates the value-based practices identified in the research into the proposed decision-escalation mechanism. However, the formal Maqasid-Shura stages within the MSDE are the result of an analytical formulation based on research findings, rather than formal procedures already in place in madrasahs.

Institutional Readiness as a Prerequisite for Responsible AI Governance

Institutional readiness is a prerequisite for responsible AI governance, as the decision-escalation process requires competent human resources and adequate organisational support. This is in line with the research by (Fazira dkk., 2026) on transformational leadership, organisational readiness and value-based management, as well as studies on AI literacy which emphasise educators' ability to understand the limitations of AI and evaluate its outputs ethically (Celik, 2023; Sperling dkk., 2024). Limited AI literacy, unstable infrastructure and unclear lines of responsibility can hinder the verification process and the establishment of accountable decisions. In the MSDE model, these factors are positioned as conditions supporting the escalation mechanism, rather than as distinct stages.

This perspective is reinforced by (Pohan & Pohan, 2025), who link AI-assisted administration to staff engagement and implementation conditions, as well as by (Isnaeni, 2024), who emphasises the interconnection between AI-assisted curriculum management and educators' practices and the institutional context. Consequently, responsible AI governance in madrasahs depends not only on technical capabilities but also on human resource competencies and organisational readiness.

Table 2. Governance Risks, Enablers, and Required Controls

Dimension	Observed Risk	Enabling Condition	Required Governance Control
Infrastructure	Unstable connectivity; limited server capacity; budget constraints	Cloud options; prioritized upgrades; external support	Reliability thresholds, fallback procedures, and documented exceptions
Human resources	Uneven AI literacy; resistance; limited training time	Leadership support; peer mentoring; recognition	Role-based AI literacy and verification competence
Pedagogy	Over-reliance on AI; reduced human interaction	Teacher-centered design; blended practice	Teacher authority over content, assessment, and student intervention
Ethics and Islamic values	Privacy risk; bias; unsuitable content	Amanah protocols; shura; religious consultation	Data stewardship, content review, ethical-purpose check
Policy and accountability	No comprehensive AI policy; unclear responsibility	Institutional leadership; stakeholder collaboration	Decision-risk classification, named human owner, audit trail
Sustainability	Maintenance cost; obsolescence; staff turnover	Scalable systems; knowledge management	Lifecycle planning and documented institutional knowledge

Table 2 reinforces this interpretation by linking observed vulnerabilities to the organizational controls needed for responsible oversight. The analytical implication is that escalation thresholds alone are insufficient: institutions also require verification competence, data stewardship, consultation mechanisms, and clear decision ownership. This helps explain why MSDE is framed as a governance model rather than merely a decision-flow diagram; its escalation logic depends on organizational capacities that make human and ethical review substantive rather than symbolic.

From Empirical Patterns to the MSDE Model

The *Maqasid-Shura Decision-Escalation* (MSDE) model is formulated on the basis of empirical findings regarding the use of AI-assisted evidence, human verification, and the preservation of human decision-making authority. The practice of filtering AI outputs based on Islamic values and consultation forms the foundation of the Maqasid-Shura component. This approach aligns with the principles of responsible AI governance, particularly human control, accountability, and contextual consideration (Adams dkk., 2023; Nguyen dkk., 2023).

The MSDE further classifies decision consequences into three levels: routine, consultative, and high-consequence. This classification is an analytical framework based on differences in the requirements for verification, consultation and accountability, rather than a formal procedure already in place in madrasahs. By integrating human involvement and Islamic ethical considerations into the escalation mechanism, MSDE offers a governance model that can be further tested (Ahmed & Sarwer, 2022; Wang, 2024).

Integrating MSDE into Existing Governance Approaches

The Maqasid-Shura Decision-Escalation (MSDE) model extends the Human-in-the-Loop (HITL) approach by explaining how the intensity of human oversight can be adjusted in line with the consequences of AI-assisted decisions. Whilst HITL emphasises the importance of human involvement, MSDE distinguishes between different forms of oversight: monitoring, professional verification and collective ethical review. Consequently, attention is directed not only towards the presence of humans in the decision-making process, but also towards when and how such involvement needs to be escalated.

In relation to responsible AI governance, MSDE translates the principles of transparency, fairness, privacy, accountability, security and human control into procedural mechanisms such as evidence verification, consequence assessment, review escalation and the assignment of ultimate responsibility. This approach is in line with the NIST AI Risk Management Framework, which positions governance and risk management as organisational functions, as well as (Wang, 2024) study on authority, transparency, and oversight in algorithmic decision-making in the field of education (Tabassi, 2023; Wang, 2024). However, the classification of consequences and escalation thresholds within the MSDE are the result of analytical formulation based on empirical patterns, rather than direct input from participants.

MSDE also has a complementary relationship with Islamic Human-in-the-Loop (I-HITL). The I-HITL framework proposed by (Ahmed & Sarwer, 2022) offers an Islamic AI governance approach that encompasses risk classification, human oversight, religious safeguards, and accountability. MSDE complements this approach by detailing the decision-making process at the operational level, ranging from the use of AI-assisted evidence and professional verification to the review of Maqasid-Shura and authorisation by the responsible party. Consequently, MSDE is not intended to replace the broader framework of Islamic AI governance, but rather to elucidate the decision-escalation mechanism within the context of Islamic education management.

Overall, MSDE offers a governance model at the meso level that links AI-assisted evidence, professional judgement, consequence-based oversight, Islamic ethical considerations, and accountable authorisation. Empirical evidence supports the use of AI, human verification, and the retention of decision-making authority by humans, whilst the classification of consequences and the escalation mechanisms are the result of the researchers' analytical formulation. This position forms the basis for further testing of MSDE within different institutional contexts.

Table 3. Positioning the Novelty of the MSDE Model

Governance Approach	Primary Contribution	Remaining Analytical Limitation	Specific Contribution of MSDE
Human-in-the-Loop (HITL)	Retains human involvement and limits unrestricted AI autonomy	Human oversight must be commensurate with the consequences of decisions.	A consequence-based escalation from monitoring to collective ethical review.
General AI Governance / Responsible AI	Reaffirming the principles of responsible AI governance	Ethical principles must be reflected in procedures and rules governing authority.	Verification, risk classification, escalation and ethical authorisation.
Islamic AI Ethics	The ethical foundations of Islam: amanah, maqasid al-shari'ah, and justice.	Islamic values have not yet been incorporated into decision-making procedures.	Implementing the principles of amanah, shura and maqasid in AI governance.
Islamic Human-in-the-Loop (I-HITL)	An Islamic AI governance framework covering risk, oversight and accountability.	It does not explain the transition in the levels of review of AI decisions in madrasahs.	Linking AI evidence, verification, risk classification, the Maqasid-Shura review, and authorisation.
MSDE	The integration of AI evidence, human assessment, impact, Islamic ethics and authorisation.	A single-case-based analytical model requiring cross-site validation.	An adaptive, measurable and auditable mechanism for escalating AI decisions in madrasahs.

Table 3 shows that the novelty of MSDE lies in the integration of human oversight and Islamic ethics into a decision-making mechanism that is calibrated according to the consequences. Unlike the Human-in-the-Loop (HITL) approach, which emphasises human involvement, MSDE links the consequences of a decision to the intensity of verification, consultation, ethical review and authorisation. This approach complements the principles of responsible AI governance (Adams dkk., 2023; Nguyen dkk., 2023) with a more operational escalation mechanism. In an educational context, this mechanism is relevant to issues of authority, transparency and oversight in algorithmic decision-making (Wang, 2024).

In practical terms, MSDE can serve as a basis for madrasah leaders to formulate policies on the use of AI through the classification of decision risks, the designation of human account holders, verification procedures, consultation provisions (shura), data management based on the principle of amanah, and the examination of ethical objectives for high-risk decisions. This approach aligns human-centred orientation and its emphasis on institutional responsibility in AI governance (McDonald dkk., 2025). Consequently, accountability for the use of AI in madrasahs must take into account both technical performance and educational objectives and Islamic values.

This study has several limitations. As it was conducted in a single madrasah, the MSDE is an analytical model that requires further testing in other institutional contexts. The research data were primarily sourced from participant accounts and institutional documentation; this study did not conduct an independent technical audit of the AI system, test for algorithmic bias, or verify all reported performance estimates. Furthermore, pupils, parents and external religious authorities were not included as key interview groups. Future research should test the MSDE across different types of madrasahs and regions, combine qualitative analysis with system audits and measurements of governance readiness, and evaluate its impact on the quality of decision-making, trust, data protection and educational outcomes.

CONCLUSION

Research at MAN 1 Bojonegoro shows that AI supports decision-making through the automation of administration, reporting, learning analytics and early warnings, but the authority for the final decision remains with humans. Professional verification, consideration of consequences, and the principles of amanah and shura are key elements in the governance of AI in madrasahs.

This research formulates the Maqasid-Shura Decision-Escalation (MSDE) model, which consists of five stages: AI-assisted evidence provision, human verification, consequence classification, Maqasid-Shura review, and accountable authorisation and feedback. The model's contribution lies in its escalation mechanism, which tailors oversight to the consequences of decisions. However, the classification of consequences and the formal sequence of the model represent the researchers' analytical formulation, rather than a protocol already implemented in madrasahs.

As it was developed from a single case study, the MSDE still requires cross-madrasah testing. Further research needs to test and refine its escalation mechanism to assess its relevance in various contexts of Islamic education. This study emphasises that responsible AI governance requires proportionate human oversight, Islamic ethical considerations, and clarity of accountability.

Statement on the Use of Artificial Intelligence (AI)

AI-assisted editing was used to improve the manuscript's grammar, clarity, and flow. The authors reviewed the proposed wording and retained only revisions that accurately conveyed their intended meaning. Research planning, examination of the evidence, interpretation, and conclusions were undertaken by the authors, who assume full responsibility for the published content.

Author Contribution Statement

Rifa'i coordinated the research, developed the study objectives, collected and analysed the data, and drafted the manuscript. Tatang Aulia Rahman contributed to the methodological framework, assessed the analysis, and helped refine the presentation of the findings. Nurotun Mumtahanah examined the relevant literature, contributed to the theoretical discussion, and

critically revised the manuscript. All authors reviewed the completed article, approved its submission, and accepted responsibility for the work.

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Conflict of Interest Statement

The authors disclose no financial interests, professional commitments, or personal relationships that could have compromised the independent conduct or reporting of this study.

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