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The Transformation of Quranic Studies in the Era of Artificial Intelligence: An Epistemological Shift from Classical Scientific Tradition to the Digital Ecosystem

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Abstract
The development of artificial intelligence as a digital knowledge infrastructure has fundamentally changed the landscape of contemporary Quranic studies. Unlike previous approaches that tended to position technology as an assistive instrument, the integration of AI in the form of semantic search engines, natural language processing, and interpretation recommendation systems presents epistemological issues that have not been systematically studied, particularly regarding the shift in knowledge sources, truth validation mechanisms, and the configuration of interpretive subjects within the Quranic scholarly tradition. This study aims to critically analyze the epistemological transformation of Quranic studies from a classical scientific framework to an AI-based digital ecosystem, focusing on the reconstruction of knowledge authority, changes in interpretive methodology, and the restructuring of subject-knowledge relations. This study uses a qualitative method with an epistemological-critical approach, analyzing the latest academic literature in the field of Quranic studies and technology, as well as a conceptual review of concrete practices of AI utilization in digital Quranic studies. The results show that the integration of AI triggers a multidimensional epistemological shift, namely: first, the reconstruction of knowledge sources from the authority of scholars and texts to an aggregative algorithmic database; Second, the transformation of interpretive methodology from in-depth, discipline-based reading to rapid, computationally-assisted analysis; Third, the shift in truth validation

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mechanisms from scientific consensus to technological and statistical verification; Fourth, the emergence of new epistemic subjects that do not fully fall within the framework of conventional scholars or academics. These findings emphasize that AI is epistemologically non-neutral and forms a new logic of knowledge production that demands theoretical reformulation in the epistemology of contemporary Quranic studies.

Keywords: Quranic Studies; Artificial Intelligence; Digital Interpretation; Knowledge Authority; Classical Science

Abstrak

Perkembangan kecerdasan buatan sebagai infrastruktur pengetahuan digital telah mengubah secara fundamental lanskap studi Al-Quran kontemporer. Berbeda dari pendekatan sebelumnya yang cenderung menempatkan teknologi sebagai instrumen bantu, integrasi AI dalam bentuk mesin pencarian semantik, pemrosesan bahasa alami, dan sistem rekomendasi tafsir menghadirkan persoalan epistemologis yang belum banyak dikaji secara sistematis, khususnya terkait pergeseran sumber pengetahuan, mekanisme validasi kebenaran, dan konfigurasi subjek penafsir dalam tradisi keilmuan Al-Quran. Penelitian ini bertujuan menganalisis secara kritis transformasi epistemologi studi Al-Quran dari kerangka keilmuan klasik menuju ekosistem digital berbasis AI dengan memfokuskan kajian pada rekonstruksi sumber otoritas pengetahuan, perubahan metodologi penafsiran, dan restrukturisasi relasi subjek-pengetahuan. Penelitian ini menggunakan metode kualitatif dengan pendekatan epistemologis-kritis, melalui analisis literatur akademik mutakhir di bidang studi Al-Quran dan teknologi, serta telaah konseptual terhadap praktik konkret pemanfaatan AI dalam studi Al-Quran digital. Hasil penelitian menunjukkan bahwa integrasi AI memicu pergeseran epistemologis multidimensional, yakni: pertama, rekonstruksi sumber pengetahuan dari otoritas ulama dan teks menuju basis data algoritmik yang bersifat agregatif; kedua, transformasi metodologi penafsiran dari pembacaan mendalam berbasis disiplin ilmu ke analisis cepat berbantuan komputasi; ketiga, pergeseran mekanisme validasi kebenaran dari konsensus keilmuan menuju verifikasi teknologis dan statistik; keempat, kemunculan subjek epistemik baru yang tidak sepenuhnya berada dalam kerangka ulama maupun akademisi konvensional. Temuan ini menegaskan bahwa AI bersifat non-netral secara epistemologis dan membentuk logika produksi pengetahuan baru yang menuntut reformulasi teoretis dalam epistemologi studi Al-Quran kontemporer.

Kata Kunci: Studi Al-Quran; Kecerdasan Buatan; Tafsir Digital; Otoritas Pengetahuan; Keilmuan Klasik

Introduction

The development of artificial intelligence has fundamentally changed the landscape of knowledge production and legitimacy, including religious knowledge, which has been built for centuries through classical scholarly traditions (Papakostas, 2025). Quranic studies have historically relied on the authority of scholars, the transmission of scholarly chains of transmission, philological methodology, and a normative epistemological framework that positions humans as reflective and ethically responsible interpreters (Laila et al., 2023). The emergence of AI-based systems challenges these foundations by introducing a computational, probabilistic, and non-reflective logic of knowledge (Ranaldi & Pucci, 2023). This shift is not merely a matter of changing research tools but also touches on fundamental

epistemological issues related to the criteria of truth, the sources of interpretive legitimacy, and the relationship between scientific authority and technology.

This phenomenon emerged alongside international reports on the accelerated adoption of artificial intelligence in education, digital humanities, and religious studies. UNESCO (2025), which monitors digital transformation, noted a significant increase in the use of AI in educational contexts, including the digitization and application of AI technology for learning data analysis, research, and education policy in higher education. A survey by the International Association of Universities (IAU) (2025) also showed that the study of AI—including the use of computational systems for the exploration of themes, semantic pattern searching, and cross-disciplinary comparison of interpretations—has become a crucial part of the digital transformation in higher education institutions across the globe. This shift marks a shift from a knowledge ecosystem based on teacher-student relationships and scholarly authority to a digital environment that is open, distributed, and often independent of traditional normative verification mechanisms. As algorithms become the primary mediators of religious knowledge, epistemological questions about who has the right to interpret, how truth is determined, and the extent to which technology can replace scholarly authority become increasingly pressing.

Previous studies have addressed the relationship between the Quran and digital technology from various perspectives, albeit with certain analytical limitations. Whyte's (2022) study highlights the digitization of Quranic manuscripts and commentaries as a means of democratizing access to knowledge. Still, it has not yet examined its implications for the epistemological structure of Quranic knowledge. Bashir et al.'s (2023) study examines the use of AI for linguistic analysis of the Quran. It demonstrates the effectiveness of algorithms in recognizing morphological and semantic patterns, but stops at the technical aspects without reflecting on the legitimacy of machine-based interpretation. Andok's (2024) study discusses the decentralization of scholarly authority due to digital media, but does not yet consider AI as a non-human epistemic agent actively producing knowledge. Papakostas (2025) emphasizes the ethical dimensions and risks of AI bias in religious contexts, although he does not systematically link these to the epistemological shifts in Quranic studies. Meanwhile, Ibrahim (2024) highlights the methodological opportunities of Islamic digital humanities but acknowledges the lack of a normative epistemological framework as a basis for technological integration. These limitations indicate a research vacuum at the critical epistemological level, particularly in analyzing how AI changes the structure, authority, and logic of knowledge in Quranic studies conceptually and systemically.

Based on these conditions, this study formulates the main problem regarding how the transformation of Quranic studies in the era of artificial intelligence gives rise to an epistemological shift from classical scholarly traditions to a digital ecosystem, and how this change impacts the authority of interpretation, study

methodology, and the construction of knowledge about the Quran. The research aims to analyze the epistemological character of classical Quranic studies, map the role of AI as a new epistemic agent with a specific computational logic, and explain the theoretical and practical consequences of AI integration for contemporary Quranic studies. The initial argument of this study rests on the assumption that artificial intelligence is not epistemologically neutral but rather carries a structure of knowledge, values, and validation mechanisms that differ from Islamic normative epistemology, thereby potentially reconfiguring how religious truth is produced and legitimized. Expected contributions include developing a critical epistemological framework to understand the relationship between sacred texts and intelligent technology, enriching the discourse of Quranic studies through non-technical analysis of AI, and providing normative reflections for the development of Quranic studies that are adaptive to digital innovation without losing their roots in scientific tradition.

Method

This research method employs a critical qualitative approach, combining an analytical-reflective literature review design with digital discourse analysis, grounded in a crucial epistemological framework, to examine shifts in the modes of production, legitimacy, and authority of knowledge in Quranic studies during the era of artificial intelligence. Data sources include reputable international journal articles published between 2015 and 2025, which serve as sources of contemporary discourse, as well as official documentation, feature descriptions, and public discourse related to Quranic-based AI platforms, which are objects of digital epistemic discourse. Data collection was conducted through systematic searches of the Scopus, Web of Science, and Google Scholar databases using relevant thematic keywords. Literature selection was based on clear inclusion and exclusion criteria, and observations were limited to the AI platform's documentation and interface, without involving algorithmic technical evaluation. Data analysis was conducted through thematic-critical analysis with units of study in the form of epistemic concepts, patterns of knowledge authority, and subject-text-technology relations, which were processed through stages of conceptual reduction, historical-comparative categorization, critical interpretation across sources, and reflective synthesis to formulate a new framework of understanding regarding the epistemological transformation of Al-Quran studies in a digital ecosystem based on artificial intelligence.

Results and Discussion

Sources of Knowledge in Quranic Studies in the AI Era

The development of artificial intelligence has triggered a profound epistemological shift in Quranic studies, altering the definition, structure, and legitimacy of Islamic sources of knowledge. Knowledge previously constructed

through the authority of scholars, the continuity of the *sanad* (chains of transmission), and the internalization of classical scholarly traditions is now being reconfigured toward a data- and computation-based paradigm (Alaimo & Kallinikos, 2022). This shift extends beyond simply changing the medium for storing texts, also touching the epistemic foundations of what constitutes a legitimate source of knowledge. Digital databases and algorithmic systems form a new framework for knowledge production that places data stability and system performance as guarantors of validity (Vomberg et al., 2024). The resulting epistemology emphasizes computational order over historical intellectual experience. This condition marks a transition to a digital epistemology, positioning the revealed text as a structured informational entity. This transformation demands a critical reading of the assumption that widespread access and speed of automated analysis are directly proportional to the depth of religious understanding. This new paradigm shifts the center of knowledge legitimacy to a technological architecture that operates based on calculative logic.

This new epistemic basis rests on data and metadata as the primary units of Quranic knowledge construction. Digitization breaks down the revealed text into discrete elements that can be classified, calculated, and processed through statistical models. Linguistic, thematic, and structural metadata form a representational framework that allows the exploration of meaningful relationships without direct involvement of historical interpretive traditions (Ali & Isnaini, 2024). Artificial intelligence models employ pattern-recognition logic to identify relationships among linguistic elements based on their likelihood of occurrence. Knowledge production no longer relies on normative argumentation or the authority of interpreters, but rather on computational correlations deemed objective (Dong, 2024). This epistemology positions data as the primary prerequisite for knowledge, relegating hermeneutic experience to a secondary variable. Although the system is human-designed, its operational outcomes gain relative epistemic autonomy through automation. This situation marks a shift from meaning-based to pattern-based knowledge, with serious implications for understanding the Quran.

The representation of the Quran as a digital corpus changes the text's ontological status from a vehicle for normative meaning to an object of informational analysis. The text, which previously existed as a discursive unity, is now fragmented into modules according to the system's processing needs. Units of verse, word, and even morpheme are treated as separate variables that can be recombined (Yunus et al., 2017). This reification obscures the historical dimension of scientific transmission and diminishes the role of the social context of its transmission and interpretation. Interpretation is no longer understood as the result of a long dialogue between text, tradition, and reality, but rather as the analytical output of data processing—the production of meaning shifts from a process of reflective understanding to the calculation of statistical relations. The sacredness of the text

remains normatively recognized, but its epistemic practice is subject to the logic of efficiency and measurability. Reducing meaning to structured information creates a new horizon of understanding that has the potential to simplify the complexity of the revealed message. This configuration demands a critical epistemological evaluation to ensure that technological transformation does not obscure the normative dimension of the sacred text.

In this context, artificial intelligence functions as an epistemic actor that helps determine the structure and direction of contemporary Quranic knowledge. Algorithmic systems do not simply facilitate access but also direct epistemic attention through mechanisms of data selection, ordering, and prominence. The resulting meaningful relationships are a product of epistemic assumptions embedded in model design, training data selection, and optimization parameters (Hohenstein et al., 2023). Claims of algorithmic neutrality obscure the fact that every system carries specific structural biases. Computational epistemology prioritizes order and internal consistency, often at the expense of the ambiguity of meaning that is essential to the exegetical tradition. The resulting knowledge appears objective because it is measurable, but it lacks the reflective dimension inherent in human reasoning. Recognizing AI as an epistemic actor demands a critical analysis of the relationship between humans and machines as co-producers of knowledge. Without such awareness, epistemic authority risks implicitly shifting toward systems lacking normative responsibility for the meaning of revelation.

This shift in knowledge sources has given rise to an epistemic tension between the authority of human scholarship and the technological legitimacy of machines. Scholars and classical exegetical traditions, which for centuries have maintained the continuity of meaning, are now confronted by systems that offer speed and breadth of analysis. Technology gains authority through claims of data-driven objectivity, while human knowledge is perceived as subjective and limited (Holford, 2019). This asymmetry creates an epistemic power relationship that positions algorithms as the primary mediators of access to the Quran. As systems determine the relevance of texts and dominant meaning relations, the role of human interpreters is potentially marginalized. This tension reflects a paradigm clash between traditional, authority-based epistemologies and computation-based digital epistemologies. The dominance of technological logic risks shifting interpretive responsibility from conscious subjects to automated systems. This situation demands a reaffirmation of the human role as the epistemic subject responsible for religious meaning.

The reconstruction of knowledge sources in Quranic studies also marks an ontological shift in religious knowledge. Knowledge is no longer understood as the result of internalizing tradition, but rather as the output of a stable and replicable system—the ontology of knowledge shifts toward informational entities detached from historical relations and social practices. The new epistemic regime is

characterized by a data-centric orientation, the dominance of algorithms, and a tendency to decontextualize meaning (Bashir et al., 2023). System stability replaces personal authority as the guarantor of truth. This configuration expands the possibilities for textual exploration while simultaneously establishing new boundaries of understanding. The complexity of revelation's meaning risks being reduced to measurable patterns that neglect ethical and spiritual dimensions. This ontological shift is not neutral; it shapes how people understand the relationships among text, knowledge, and truth. Awareness of this ontological transformation is a prerequisite for developing critical and reflective Quranic studies.

The primary challenge for contemporary Quranic studies lies in redefining the position of human epistemic authority within the digital ecosystem. The integration of artificial intelligence cannot be denied, but it must be situated within a critical epistemological framework that recognizes the limitations of computational systems. Data-driven knowledge needs to be treated as a mode of understanding, not a total replacement for scholarly tradition. Reconstructing sources of knowledge demands a balance between technological innovation and hermeneutic responsibility. Human authority needs to be reaffirmed as interpreters with normative, historical, and ethical awareness. Without such reflection, Quranic studies risk falling into epistemic reductionism that simplifies revelation into information. A new paradigm must be developed through a critical dialogue between tradition and technology. This epistemological awareness allows for the use of AI without compromising the integrity of religious knowledge. Digital transformation must be understood as a field of epistemic contestation that requires the active involvement of the scholarly community.

Transformation of Interpretive Methodology from Classical Hermeneutics to Algorithmic Analytics

The transformation of Quranic interpretation methodology in the era of artificial intelligence cannot be understood simply as a technical shift from manual reading to computational processing, but rather as a fundamental shift in the epistemic structure of knowledge production. Classical exegetical hermeneutics operates through a set of institutionalized methodological procedures, encompassing a hierarchy of authoritative sources, normative linguistic rules, and mechanisms for verifying meaning proven within the scientific tradition (Istianah & Salman, 2025). Philological analysis, grammatical studies, and the semantic relations between words do not stand as individual intuitions, but rather as the result of a rigorous, layered internalization of the scientific discipline (Chukhanov & Kairbekov, 2024). This methodology positions meaning as an intentional entity born through a dialogue between the text, the historical context, and the interpreter's epistemic competence. This framework makes the interpretive process a reflective activity that demands both in-depth linguistic understanding and historical awareness, so that meaning is not reduced solely to formal linguistic relations.

The emergence of artificial intelligence introduced a methodological paradigm rooted in computational epistemology. This approach views text as a corpus of data that can be processed through statistical calculations and mathematical modeling (Alvarado, 2023). Algorithmic analytics emphasizes speed, scale, and the ability to map large numbers of patterns beyond the reach of manual methods (Rahmani et al., 2021). This shift not only changes the way analysis works but also reconstitutes the status of the Quranic text as an object of study that can be formally represented. The relationships between words, phrases, and themes are treated as variables that can be calculated, compared, and grouped (Bashir et al., 2023). Consequently, the methodology of interpretation is no longer entirely based on reflective interpretative processes but rather on computational results generated through algorithmic parameters. This change marks a shift in the epistemic locus from an intention-based understanding to a representation based on the regularity of language patterns.

These methodological differences are evident in how each approach interprets the Quranic language. The classical tradition views revealed language as a contextual, rhetorical, and historical system of meaning, thereby orienting linguistic analysis toward capturing semantic nuances that depend on the circumstances of revelation and the conventions of early Arabic (Saeed & Akbar, 2021). Computational approaches operate through natural language processing, involving tokenization, automatic morphological labeling, and statistically based linguistic feature extraction (Toramanet al., 2023). Machine learning models construct meaning representations through mathematical vectors that represent semantic proximity based on the distribution of word occurrences (Garcia, 2021). These representations are relational and probabilistic, not intentional. Meaning is understood as the result of calculating proximity data, not as a product of hermeneutic reflection. These ontological differences indicate that meaning in AI is not a direct continuation of the concept of meaning in classical exegesis, but rather a fundamentally different epistemic construct.

The application of algorithmic modeling opens the possibility of large-scale thematic exploration of the Quran by identifying coexistence patterns, semantic clusters, and latent concept networks. This method enables the mapping of thematic structures that are difficult to identify through manual reading, thereby enriching the descriptive dimension of Quranic studies (Badawy, 2025). However, it is essential to emphasize that claims of objectivity and neutrality for algorithms are problematic. The entire computational process involves human assumptions, from selecting training data and designing the model to interpreting the output. Thus, artificial intelligence does not eliminate the role of interpretation but shifts its locus to the model design and evaluation stages. The unclear distinction between the results of computational analysis and the meaning of normative interpretation can

lead to epistemological errors if algorithmic output is treated as a representation of the final meaning (Carlsen & Ralund, 2022).

Reducing meaning to numerical representation raises significant methodological issues. The language of the Quran is rife with directional ambiguity, semantic tension, and rhetorical devices that do not always conform to statistical regularities (Ramadhani et al., 2025). Algorithmic modeling operates through generalization, thus tending to overlook meaningful deviations that are key to understanding the revealed text. Rhetorical intensity, irony, and pragmatic implicatures cannot be fully represented through formal linguistic features. This limitation is not merely a technical issue but also an epistemological one, as it concerns the inability of statistical models to capture the intentional dimension of language. Meaning in classical interpretation resides not only in the structure of the text but also in the communicative purpose and meaningful effects produced through the historical interaction between the text and its original audience (Saeed & Akbar, 2021).

The epistemological limitations of artificial intelligence become increasingly apparent when analysis confronts the context of revelation and the social dynamics of early Arabic. This context is not present as explicit data, but rather as a horizon of understanding constructed through scholarly tradition. Computational models lack the temporal and cultural awareness necessary to reconstruct these implicit meanings. Each analytical output is probabilistic and descriptive, rather than reflective (Ciapparelli, Zarbo, & Marelli, 2025). This suggests that algorithmic analytics is more appropriately positioned as an aid to structural analysis than as a stand-alone interpretive methodology. Ignoring these limits risks reducing the Quran's meaning to mere linguistic regularities, thereby obscuring the normative and ethical dimensions inherent to the revealed text.

Recognizing these epistemic differences requires a more precise formulation of a methodological position. Classical and algorithmic approaches are not substitutive, but rather complementary, with clear functional boundaries. Interpretive hermeneutics provides a reflective framework for understanding meaning as a historical and normative phenomenon, while artificial intelligence offers analytical tools for systematically mapping language structures. Integration of the two is only possible if the epistemological limits of each are explicitly recognized. Artificial intelligence cannot replace interpretive work that demands linguistic and historical sensitivity, but it can expand the analytical horizon through informative pattern mapping. This critical position prevents the glorification of technology and avoids a priori rejection of AI's methodological potential.

The transformation of Quranic interpretation methodology in the digital era must therefore be understood as an epistemic negotiation between hermeneutic reflection and computational calculation. The success of AI-based Quranic studies depends on researchers' ability to maintain a balance between analytical efficiency

and depth of meaning. Artificial intelligence functions optimally when positioned as an exploratory tool that supports human intellectual work, rather than as an epistemic authority determining meaning. A critical and reflective methodological stance allows the use of technology without sacrificing the fundamental principles of interpretation, a scientific tradition rooted in language, history, and human experience. This approach ensures that the methodological transformation does not lead to a reduction in meaning, but rather to an enrichment of ways of responsibly and scientifically understanding the Quran.

Shifting Mechanisms of Validation and Truth of Quranic Knowledge

The shift in the validation mechanisms of Quranic knowledge due to the adoption of artificial intelligence reflects a fundamental change in the structure of epistemic legitimacy, not in the revealed text itself. The authority of knowledge, previously constructed through scientific competence, methodological discipline, and collective argumentative processes, is recontextualized within quantitative technological parameters. The accuracy of system output, consistency of response, and stability of performance are positioned as primary indicators of the validity of knowledge claims (Ozdemir & Yapici, 2025). This transformation shifts from epistemic validity to functional reliability, where truth is no longer determined by rational justification that can be tested intersubjectively, but rather by the system's success in meeting user expectations. This condition marks the reduction of truth from an epistemological process to a performative property of technology. When legitimacy is determined by technical effectiveness, the relationship between knowledge claims and their supporting arguments undergoes a structural weakening, with direct implications for how the truth of Quranic knowledge is understood and accepted (Huriadi, Ahmad, & Hamim, 2024).

Reducing truth to technical performance narrows the space for critical reflection. System accuracy is often interpreted as the conformity of responses to a corpus of popular reference data, rather than as the result of epistemically justifiable methodological reasoning (Abdlkarim et al., 2023). Output consistency is interpreted as stability, even though such stability can be achieved by replicating statistical patterns that eliminate hermeneutic complexity. Processing efficiency even affirms speed as an epistemological value, as if deep understanding can be substituted for instant response. The logical consequence is the emergence of an illusion of epistemic certainty, a condition where system reliability is equated with the truth of knowledge (Antúnez et al., 2022). This illusion blurs the distinction between technical accuracy and epistemic validity, thus depriving truth of its problematic character as the result of reasoning open to correction, debate, and ongoing argumentative revision.

The first prominent epistemological problem concerns data bias in shaping the output of artificial intelligence. Training data represents specific historical selections, the preferences of dominant schools of thought, and non-neutral

discursive tendencies. This bias is not merely technical but also epistemic, as it determines the horizon of possible meanings the system can produce. When an algorithm internalizes bias, AI output appears objective, yet in fact reflects the hidden power structures of knowledge (Machen & Nost, 2021). Accuracy-based validation cannot detect this distortion because the measure of success refers only to the system's internal conformity. As a result, the resulting truth is circular, confirming the initial assumptions of the data without mechanisms for critical correction. This situation shifts the epistemology of the Quran toward a homogenous reproduction of meaning and erodes the argumentative plurality that has long characterized intellectual dynamics.

The epistemological problem that further underscores this shift in legitimacy is closely related to data bias in shaping the output of artificial intelligence. Training data is never neutral because it represents historical selection, dominant discursive preferences, and specific configurations of scientific authority (Minh, Wang, Li, & Nguyen, 2022). This bias is epistemic because it determines the horizon of meaning the system can produce. When algorithms internalize biased structures, AI output appears as objective knowledge, even though it actually reproduces power relations of knowledge that users are unaware of (Lopez, 2023). Internal accuracy-based validation fails to detect this distortion because success is measured by the output's conformity to data that is already biased from the outset. This situation results in a circular truth, where the system merely confirms the epistemic assumptions embedded in its own database (Talbott, 2020). The impact is evident in the homogenization of meaning and the reduction of argumentative plurality that has long characterized the intellectual dynamics of Quranic studies.

The legitimacy crisis becomes more complex when algorithmic mechanisms become opaque, rendering the relationship between input and output impossible to explore rationally. The technical opacity of artificial intelligence evolves into epistemological opacity because the system's inference processes are unavailable for critical evaluation (Ortmann, 2025). When knowledge claims are accepted without access to their internal justification, the reflective dimension of knowledge erodes. Argumentative explanations no longer accompany truth, but rather are accepted as the result of computations assumed to be legitimate because they are produced by sophisticated systems (Melis, 2023). This condition severing the relationship between truth and intellectual accountability, which has long been a central tenet of scientific epistemology. The inability to assess algorithmic assumptions, generalizations, and inferences weakens users' critical capacity. Its legitimacy shifts toward technological trust, which is epistemologically fragile because it relies on mechanisms that cannot be openly questioned.

Claims of objectivity in artificial intelligence deepen the legitimacy issue by framing system output as value-free and non-subjective. Objectivity is reduced to statistical stability and output consistency, while the system still reflects the

developer's design choices, technical parameters, and institutional interests. This reduction blurs the distinction between methodological and epistemic objectivity (Yüksel et al., 2023). Epistemological objectivity requires openness to rational criticism and justification, not simply the elimination of human actors (Rott, 2021). When objectivity is understood as the absence of human subjectivity, the dialogical dimension of knowledge is significantly diminished. Quranic knowledge risks being treated as a data entity that can be processed without historical, methodological, and ethical context. This orientation fosters an instrumental epistemology that prioritizes instant results over reflective meaning-making processes that enable correction and intellectual enrichment.

These dynamics all indicate a shift in epistemological paradigms that demand critical vigilance in the use of artificial intelligence for Quranic studies. A clear distinction between technological efficiency and epistemic validity is essential to prevent truth from being reduced to mere system performance. While AI can serve as a supporting tool for analysis, it cannot replace the rational justification process at the heart of knowledge legitimacy. Without a rigorous epistemological evaluation framework, technology can confer authority to performance-based truths that cannot be scientifically justified. A critical analysis of knowledge-validation mechanisms is a prerequisite to ensuring that the digital transformation does not reduce the truth of Quranic knowledge to a mere technological product, but rather maintains its understanding as an intellectual construct open to criticism, dialogue, and rational accountability.

Restructuring the Subject-Knowledge Relationship in the Digital Quranic Studies Ecosystem

The restructuring of the relationship between the subject of knowledge and the Quran in the artificial intelligence-based digital study ecosystem marks a structural epistemological shift. The subject of knowledge can no longer be understood as an autonomous entity directly confronting the text, but rather as a relational node formed through the interaction among humans, sacred texts, and computational systems. A relational epistemological perspective suggests that the production of Quranic meaning occurs through a network of mutually influencing human and non-human actors (Gonzalez, 2023). Consequently, interpretive authority no longer rests solely on the subject's social position, but rather on the configuration of epistemic relations that frame the process of understanding.

The position of *'ulamā'* (Islamic scholars) has undergone a significant epistemic repositioning within this relational configuration. *'Ulamā'* no longer operate as the sole center of the production of Quranic meaning, but rather as epistemic actors interacting with artificial intelligence systems and other interpretive subjects (Al-Masduqi, Matkur, & Mustajab, 2025). The *'ulamā'*s scholarly authority has not been completely erased, but has transformed from a symbolic-hierarchical form to a dialogical-reflective one. Epistemic legitimacy is no longer

obtained primarily through institutional affiliation or scientific chains of transmission, but rather through the capacity to negotiate within the digital discursive space. This repositioning demands a redefinition of the *'ūlamā*'s role as guardians of epistemological orientation rather than merely transmitters of final meaning. Thus, this change is not directly related to the mechanism of truth validation, but rather to a shift in the subject's relationship to the text—*'ulamā'* function as reflective interpreters, confronting a distributed knowledge ecosystem that demands continuous conceptual and methodological adaptation.

Academics occupy a distinct epistemic position because they operate within a framework of critical reflection on both texts and the knowledge infrastructures that mediate them. Artificial intelligence challenges the academic's role as the primary producer of analysis, as some data processing functions have been automated (Rolnik, 2024). This situation does not negate the academic's relevance, but shifts their locus of epistemic agency. Academics transform into reflective subjects who examine the impact of algorithmic architecture on how the Quran is perceived, classified, and consumed (Malhas & Elsayed, 2022). The ontological difference between academics and scholars lies in their epistemic orientation, as academics focus on critiquing the conditions of the possibility of knowledge. This position emphasizes that the restructuring of the subject of knowledge is not a matter of competing authorities, but rather the differentiation of epistemic roles within an increasingly complex relational network. Academics contribute through conceptual elaboration that maintains a critical distance from the naturalization of technology.

Non-institutional readers of the Quran experience the most significant transformation, as direct access to artificial intelligence systems shapes a new epistemic subjectivity. These subjects no longer rely solely on the authority of scholars or academics to construct initial understanding; instead, they rely on repeated interactions with algorithmic interfaces. This phenomenon gives rise to a form of epistemic agency that is individual and situational. Epistemic self-confidence stems not from formal scholarly legitimacy, but from experiences of interactions deemed adequate to meet the need for understanding. Within the framework of social epistemology, these subjects represent a shift in the structure of testimony and the authority of knowledge (Longino, 2022). This transformation needs to be understood as a change in the interpreter's subjectivity, not simply an expansion of access to information. Non-institutional epistemic subjects are formed through an intensive relationship between personal questions and algorithmic responses that frame the horizon of Quranic meaning.

The decentralization of authority is a key feature of this restructuring of epistemic relations. Authority is no longer centralized in a single human figure but is distributed across a network of actors, including both humans and computational systems. Artificial intelligence functions as a non-human actor that mediates the

production of meaning through mechanisms of classification, ranking, and information recommendation (Túñez-López, Fieiras-Ceide, & Vaz-Álvarez, 2021). Algorithmic logic shapes the visibility of Quranic knowledge and determines the direction of meaning exploration. An actor-network perspective suggests that epistemic authority is relational and performative rather than inherent. This creates a more horizontal scientific landscape, but also increases epistemological vulnerability because algorithmic structures are not always transparent (Tsemach et al., 2023). This decentralization does not eliminate power relations, but rather reconfigures power through technical systems that require critical reading to avoid creating the illusion of knowledge neutrality.

The relationship between human agency and artificial intelligence automation is co-productive because the meaning of the Quran is generated through a reciprocal interaction between human intentions and system responses. Artificial intelligence cannot be understood as an autonomous agent, but it does possess significant epistemic influence. The system's structure frames the possible questions, exploration paths, and the forms of answers the subject receives. Human agency remains present through interpretive choices and critical reflection, but its scope is limited by the algorithmic design. This relationship raises questions of epistemic responsibility because the results of understanding cannot be fully separated from the system's intervention. The human position as a subject of knowledge demands an awareness of the limits of control and active involvement in the process of meaning-making. This dialectic of agency demonstrates that the epistemology of digital Quran studies requires an ethical framework that places humans as the ultimate bearers of meaning.

Automation also alters the perception of understanding the Quran as an epistemic practice. Processes previously associated with long-term intellectual and spiritual engagement shift toward responsive, needs-based interaction patterns. This shift represents a shift in modes of knowing, not simply a change in learning styles. The Quran is positioned as a source of knowledge accessible to personal contexts through technological mediation. The subject's epistemic orientation shifts toward rapid and adaptive thematic exploration. This change does not necessarily diminish the quality of understanding, but rather alters the subject's temporal and existential relationship to the text. Understanding no longer demands contemplative depth as the sole prerequisite, but instead opens up the possibility of different forms of epistemic engagement. This transformation needs to be critically analyzed so that the changing modes of knowing do not obscure the reflective dimension of Quranic study.

Epistemic dependence on artificial intelligence is another implication of the restructuring of the relationship between the subjects of knowledge. This dependence differs from technical dependence because it involves delegating cognitive and evaluative processes. Subjects begin to entrust some of their

assessments of meaning to systems lacking reflective awareness. This relational asymmetry poses the risk of epistemic outsourcing, potentially weakening human critical capacity. Artificial intelligence systems possess an epistemic performativity that can guide understanding, yet they cannot account for their normative implications (Alvarado, 2023). Critical awareness of this dependence is a primary requirement for subjects to maintain epistemic autonomy. The restructuring of the relationship between subjects and the Quran demonstrates that digital transformation demands continuous reflection to maintain human responsibility as subjects of knowledge in the new epistemological landscape.

Conclusion

The transformation of Quranic studies in the era of artificial intelligence represents a fundamental epistemological shift from classical scholarly models based on personal authority and textual reading to a digital ecosystem mediated by data, algorithms, and intelligent computing systems. Key findings emphasize that these changes are not merely technical in nature but reconfigure sources of knowledge, analytical methodologies, mechanisms for validating truth, and the relationship between interpreters and Quranic knowledge. Theoretically, this study contributes to the development of an epistemological framework for contemporary Quranic studies by emphasizing the need to redefine epistemic authority, integrate critical reflection on algorithmic bias, and affirm the epistemological boundaries of AI systems in the production of religious meaning. Practically, these findings have implications for the development of Quranic studies curricula in Islamic universities, the design of hybrid humanities-digital research methodologies, and the ethical governance of AI-based interpretation platforms. The limitations of this study lie in its conceptual-qualitative approach based on secondary data and its focus on a specific academic context, which prevents it from directly capturing the empirical dynamics of users and pedagogical practices. Therefore, further research is needed to fill this gap through cross-cultural empirical studies, digital ethnography, pedagogical experiments, and the testing of adaptive Quranic knowledge validation models for AI-based digital ecosystems.

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Author Contribution Statement

MS contributed to the formulation of the research concept, the determination of the analytical framework, the writing of the main draft, and correspondence with the editors and the revision process. SB contributed to the literature review, strengthening the theoretical foundation, and to the methodology section. JP contributed to data collection and processing, including verifying sources and ensuring consistency in scientific references. ZA contributed to data analysis, the development of scientific arguments, and the preparation of the results and

discussion sections. KH contributed to academic editing, sharpening scientific language, checking the appropriateness of the writing format, and final review of the manuscript before submission.

Conflict of Interest

The author declares that this manuscript was prepared and published without any conflict of interest, whether financial, institutional, or personal, that could influence the research process, analysis, or presentation of the results. The entire writing process was conducted independently, objectively, and in accordance with the principles of academic integrity. The author also ensures that no other parties have interests that could influence the content or conclusions of this manuscript.

AI Usage Statement

The author declares that the use of artificial intelligence (AI) in the preparation of this manuscript was limited to improving language quality, correcting grammar, and assisting with text formatting to ensure it is more systematic and in accordance with academic writing standards. The entire substance of the manuscript, including problem formulation, data collection and analysis, concept development, scientific argumentation, interpretation, and conclusion drawing, is entirely the result of the author's intellectual work. Therefore, AI was not used to generate the main ideas, research findings, or scientific analysis in this article.

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