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The Evolution of Qur'anic Knowledge Authority from Traditional Transmission to Algorithmic Digital Platforms

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Abstract

*Changes in media and technology have affected the legitimacy, distribution, and access to Qur'anic knowledge. The formulation of the research problem focuses on how the authority of Qur'anic science has evolved from traditional to rational-legal to technological and its implications for the legitimacy and quality of science. The **purpose** of this research is to explore the evolution of the scientific authority of the Qur'an, identify challenges and opportunities, and provide recommendations for education and management of digital interpretation. The research **method** uses a descriptive-analytical qualitative approach based on literature review and documentation studies with the integration of Max Weber's theory of traditional, rational-legal, and charismatic authority as an analytical knife. The **results** of the study show three findings. First, the traditional authority in classical times was centered on scholars and sanad, guaranteeing the authenticity and authenticity of the text. Second, rational-legal authority through standardized printing mushaf strengthens formal legitimacy and wide distribution. Third, technology authorities in the digital era bring the democratization of access through applications, but face challenges of legitimacy, interpretation accuracy, and algorithm dominance. The **significance** of the research lies in the systematic understanding of the evolution of the scientific authority of the Qur'an, its implications for education, the regulation of digital interpretation, and the integration of scientific traditions with technological innovation. This research's **contribution** provides a new conceptual framework for the study of the sociology of religion, Islamic epistemology, and the development of Qur'an applications, while affirming the importance of synergy between traditional authorities and technology to maintain the credibility and sustainability of Qur'anic knowledge.*

Keywords: *The Evolution of Authority; Knowledge of The Qur'an; Classic-Digital.*

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Introduction

The Qur'an was revealed gradually to the Prophet Muhammad PBUH through the Angel Gabriel without letters and voices. Then the Prophet listened to the revelation received to the companions which were then immediately memorized and recorded by several sahaba using media such as animal skins, date fronds, and stones but not yet in the form of a structured mushaf. After the death of the Prophet, many memorizers of the Qur'an died so that Caliph Abu Bakr As-Siddiq RA ordered the collection of the revelations that were still being recorded. Zaid bin Tsabit RA led this collection although it was still in the form of separate fragments. The compilation of a uniform Qur'an mushaf was only carried out during the time of Caliph Uthman bin Affan RA when the Islamic territory was expanding. In order to form a structured mushaf, Uthman ordered the preparation of an official mushaf which was then copied and disseminated throughout the Islamic world.

This mushaf was originally written without punctuation and it was only after Uthman's time that punctuation marks and verse identifiers began to be added. The preparation of the Qur'an is *tauqifi*, which is based on the instructions of the Prophet Muhammad SAW. The science of the Qur'an is one of the branches of Islamic science that since its inception has been highly dependent on the structure of scientific authority [1]. This authority is not just a social or institutional structure but is an essential part in maintaining the purity of the text, the validity of interpretation, and the truth of scientific transmission. In the context of early Islamic history, the authority is represented by sanad, which is a chain of scientific transmission that connects a reader or teacher of the Qur'an to the Prophet Muhammad PBUH through the channel of a legitimate narrator and Reliable [2]. At the same time, scholars hold a central position as guardians, interpreters, and at the same time validators of the text and its meaning.

In the classical period, the Qur'anic mushaf was handwritten and strictly guarded [3]. Sacred texts are not merely religious objects but at the same time representations of certain social and epistemic structures. Mushaf is not just a written text, but also a symbol of traditional authority inherent in the community of its readers. The relationship between the mushaf, the reader, and the authority of science is organic and closed because the skill of reading the Qur'an and understanding its interpretation can only be obtained through formal channels such as sitting in the assembly of knowledge, studying with scholars, and studying classical books. Here, authority is traditional in the Weberian sense, which is authority that relies on norms, customs, and legitimacy that are inherited from generation to generation.

However, with the entry of Islam into the modern era, especially after the 19th century, there was a significant shift in the medium of scientific transmission which ultimately also had an impact on the structure of authority itself [4]. The invention of the printing press, as well as the establishment of mushaf printing institutions such as the Egyptian Qur'an Mushaf Printing Committee in 1924, began the process of systematic and formal standardization of sacred texts. This project not only succeeded in printing a large number of mushaf but also confirmed a version of the recitation such as the history of Hafsh 'an 'Ashim as an international standard [5]. This process indicates a shift from traditional authority to a rational-legal form of authority, where legality and authority are determined by formal institutions, administrative documents, and national agreements.

This shift had far-reaching implications, on the one hand the printing of modern mushaf allowed the spread of the Qur'an on a massive scale, reaching territories previously limited by physical and cultural access [6]. On the other hand, scholarly authority began to move from individual scholars to state institutions or official institutions, which had the authority to print, edit, and disseminate the text of the Qur'an [7]. The role of the ulama remains important, but more as part of a formal system integrated in the project of Islamic modernity.

Entering the 21st century, this transformation has experienced a more radical acceleration along with the development of digital technology. The internet and mobile devices have enabled the emergence of digital Qur'an applications, which not only provide sacred texts but also translations, interpretations, audio, videos, and interactive features such as word search, visual theme settings, and user notes. Apps such as Quran.com, MyQuran, Ayat, Muslim Pro, and various other digital platforms are becoming the main source for millions of Muslims to read and understand the Qur'an. More interestingly, however, the app has implicitly created a new form of authority that no longer relies entirely on clerics, Islamic institutions, or the state, but rather on algorithmic design, user interface, app popularity, and user ratings.

In this context, there has been a significant shift in the structure of authority. Access to tafsir and translation is no longer through the process of talaqqi or direct learning from the teacher, but simply by downloading the application and selecting the available tafsir features. Who compiled the interpretation, what was the methodology, and whether it had passed scientific verification – all of this is often not transparent. The democratization of access to the sciences of the Qur'an did occur, but at the same time there was a problem of epistemic validity and authenticity of sources. The public can choose interpretation according to personal preferences, not based on scientific methodology or legitimate scientific authority.

This phenomenon shows that the scientific authority of the Qur'an has undergone a transformation from a traditional and rational-legal form, to what can be called a technological authority. In Max Weber's terminology, this technological authority is not explicitly categorized, but can be considered as a new mutation of the rational-legal, i.e. authority based on a formal system, but governed by technocratic logic: algorithms, data structures, programming logic, and digital culture. App users tend to trust the content presented because of the convincing interface, advanced interactive features, or because the app has a high rating on the Play Store or App Store rather than because of scholarly validation or scientific sanad.

Previous literature reviews have largely discussed religious authority in historical contexts and mass media such as Banat [8]; Situmorang, [9] and *cyber-Islamic environments* carried out by Ibrahim [10]. However, the research specifically explores the shift in the authority of Qur'anic knowledge in the digital ecosystem of interpretation applications, especially how the legitimacy of knowledge is reshaped by algorithms and digital user interactions. This is where the novelty of this research lies because it examines the shift of authority from traditional, rational-legal to technology. Conceptually, this research contributes because it applies Max Weber's theory of traditional, rational-legal, and charismatic authority that is extended to understand technological authority; methodologically, through literature studies and observations of digital applications; and contextually, through the analysis of user interaction and its impact on the legitimacy of Qur'anic knowledge.

This research is focused on the main formulation. *First*, how has the authority of Qur'anic science evolved from classical mushaf to digital applications? *Second*, how the legitimacy of Qur'an knowledge is formed and maintained in the digital era. *Third*, what are the challenges and opportunities that arise due to the shift of authority to the realm of technology. The purpose of this research is to analyze the transformation of the authority of the Qur'an based on transmission media, identify factors that affect the legitimacy of science in the digital era, and provide recommendations for the integration of traditional science with technological innovation to maintain the credibility of science. With this approach, the research places itself in a unique position in the map of the study of Qur'anic science, emphasizing the dynamics of authority that are always negotiated according to social, cultural, and technological contexts, and offering new perspectives that are relevant to the development of Qur'anic science education and literacy in the global digital era.

Method

This study uses a qualitative approach with an analytical descriptive method to understand the dynamics of the evolution of the authority of Qur'an science in the trajectory of media history, ranging from classical mushaf, modern print mushaf, to contemporary digital applications. The qualitative approach was chosen because it allows for an in-depth exploration of social, cultural, and epistemological phenomena that cannot be explained quantitatively. The main focus of this research is how the forms of authority in the science of the Qur'an change as the medium of transmission of texts and information shifts, as well as how the legitimacy of science is formed and accepted in the context of today's digital society.

The data in this study was obtained from contemporary references that discuss issues of authority, Islamic epistemology, and digitization of sacred texts. In addition, this study also directly observed digital Qur'an applications that are popular and widely used by Muslim people today, such as Quran.com, MyQuran, and Ayat. Observations were made to understand how the features in the application such as the presentation of tafsir, translation, audio qira'at, and reading choices build their own authority structure outside the mechanism of sanad and traditional scientific institutions. The data obtained were then analyzed using Max Weber's authority theory framework, which divides authority into three main forms: traditional, charismatic, and rational-legal. These three forms are used as analytical knives to trace the shift in the source of scientific legitimacy from time to time. In addition, this analysis is also complemented by the development of a new category in the form of "technological authority", which is a form of legitimacy that comes from trust in digital platforms, algorithms, and technological interfaces. With this approach, this study seeks to describe the historical, theoretical, and sociological transformation of the authority of Qur'an science in the context of ongoing technological changes.

Results and Discussion

The journey of authority in the transmission of the Qur'an has changed with the development of the times and technology. In the classical era, authority was traditional, rooted in *the sanad qira'at* and the scholarly knowledge. The media used is a handwritten mushaf that is strictly copied. Knowledge is transmitted orally and written in hereditary traditions, with scholars as the center of legitimacy of interpretation. However, access is limited due to dependence on sanad and local authorities. Entering the modern era, authority has changed to rational-legal, supported by the state and official institutions. Printed mushaf such as the 1924 Cairo Mushaf became the standard text. Legality and regulation

reinforce the wide dissemination of the Qur'an with consistency of content, although the authority of the scholars is maintained within a formal framework.

In the digital era, authority shifts to the realm of technology, where the application of the Qur'an becomes the main medium. Legitimacy depends on algorithms, design, and user ratings. Access is increasingly democratic, but the validity of interpretation is prone to questioning. The deconstruction of traditional authority poses serious challenges to authenticity and the potential for the spread of misinformation. To clarify the results of this study, it can be seen from the following table:

Tabel 1. The Transformation of Qur'anic Authority Across Historical Media Regimes (Adapted from Weberian Theory)

Time	Forms of Authority	Media	Features
Classic	Tradisional	Handwritten Mushaf	Authority is rooted in the sanad of qira'at and the ulama as the guardian of knowledge
			Mushaf is made and copied strictly to maintain the authenticity of the text
			Scientific transmission is oral and written, inherent in tradition and heritage
			Scholars as the center of legitimacy of interpretation and learning
Modern	Rasional-legal	Printed Mushaf	Standardization of texts with official printed mushaf (e.g., Cairo Mushaf 1924)
			The role of state institutions and religious institutions in setting standards
			Authority is formal and systematic, supported by regulations and laws
			Scholars continue to play an important role but within the institutional framework
Digital	Technology	Qur'an Application	Legitimacy depends on the app's technology, algorithms, and features
			Wide and fast access without direct cleric mediation
			Democratization of knowledge with user participation (<i>crowdsourcing</i>)
			The problem of validity and authenticity of interpretation due to the lack of verification by scientific authorities
			The popularity and ratings of apps affect the perception of authority

Classical Mushaf and Traditional Authority

In classical times, the authority of Qur'anic knowledge was closely related to the process of guarding and transmitting texts that were carried out strictly and systematically. Mushaf at that time was generally in the form of handwritten manuscripts that were copied and supervised by competent scholars [3]. This process is not just a reproduction of the text, but is a scientific ritual that guarantees the authenticity and authenticity of the text of the Qur'an and the accompanying interpretations. In Max Weber's perspective, this authority can be categorized as a traditional authority, where legitimacy arises from the recognition of the practices, customs, and social position of the scholar as the guardian of historically and religiously recognized science. The sanad, the chain of narration that connects a teacher directly to the Prophet Muhammad (PBUH), becomes an epistemic foundation and a symbol of absolute legitimacy, ensuring that the transmission of knowledge and texts of the Qur'an remains authentic and undistorted.

Handwritten mushaf in the classical era is not only a medium for storing texts, but also a symbol of scientific legitimacy and moral authority. After the death of the Prophet Muhammad, the awareness of Muslims to maintain the sanctity of the Qur'an prompted Caliph Abu Bakr and later Caliph Uthman bin Affan to collect and standardize the mushaf, known as the Ottoman mushaf [12]. This step is not only technical, but also political and social, as it ensures uniformity of reading that can minimize community conflicts. From Weber's perspective, this process shows how traditional authority interacts with rational-legal needs, forming a widely accepted legitimacy both religiously and socially. The Ottoman Mushaf later became a reference for copyists, who copied it with high discipline and moral responsibility, demonstrating the integration between epistemic control and religious ritual.

Copying of the mushaf is carried out by scribes who also understand the science of qira'at and tajweed, following strict rules regarding the layout of verses, punctuation, and style [13]. The scholars who are the guardians of the Qur'an not only copy the text, but also supervise the accuracy of the interpretation and variations of qira'at based on the sanad [14]. This confirms that traditional authority is not only formal, but also epistemic: the ability to interpret, verify, and teach the Qur'an is an indicator of one's legitimacy. As discovered by Maulidia, Finetri, & Fahmi (2025), individuals can only be recognized as having scientific authority if they possess authentic sanad, affirming a direct relationship with the primary source – the Prophet Muhammad (PBUH) – as a recognized epistemic and social standard [15].

The education system in the classical period was based on talaqqi and halaqah, where the teacher taught directly to the students through personal and rigorous teaching methods [16]. This builds a very strong relationship of trust between teachers and students, as well as an epistemic supervision mechanism to maintain the authenticity of knowledge. In Weber's context, this suggests a traditional legitimacy that serves as social and epistemic control simultaneously. The classical mushaf, apart from being a textual medium, also has a high symbolic value: it is considered a religious artifact that must be preserved. The copying of the mushaf is often performed with great holiness, including ablution rituals and certain spiritual conditions, confirming the religious dimension inherent in scientific authority. Mushaf is kept in special libraries, madrasas, or mosques, with limited access to those with scientific and spiritual competence.

Traditional authority centered on scholars and sanad has a wide social impact. Scholars with strong sanad hold significant social positions, becoming religious references as well as decision-makers in law and social structures [17]. From Weber's perspective, this shows the integration between traditional authority and socio-political influence: epistemic legitimacy translated into social legitimacy that strengthens the structure of Muslim communities. However, this authority also has limitations: limited access to knowledge, dominance of certain figures, and the potential for conservatism in interpretation (Andhika, Hamdi, & Jailani, 2024). Critical analysis shows that although traditional authority is effective in preserving the authenticity of the text, it also creates limits on intellectual plurality and methodological innovation in the science of the Qur'an.

Works of classical scholars, such as *Al-Itqan fi Ulum al-Qur'an* by al-Suyuthi and *Al-Burhan fi Ulum al-Qur'an* by al-Zarkasyi, show how traditional authority was systematically constructed through a meticulous combination of sanad, scholarship, and documentation. This study confirms that traditional authority is not only a matter of social influence, but also a structured and analyzeable epistemic system [14]. In the perspective of contemporary research, this classical authority provides a benchmark for understanding the dynamics of the legitimacy of Qur'anic science in the digital age: it becomes a critical foundation for assessing how epistemic authority can survive in the midst of changes in media and technology.

The changing times and media present significant challenges. Globalization and technological advances have opened up wider access to the Qur'an, which was previously only accessible through the sanad or certain institutions. In this context, the relevance of traditional authority is questioned, as people begin to obtain interpretation and access to the Qur'an through digital media that are not always supervised by legitimate scholars or sanad. Critical analysis shows that while traditional authority remains respected, its

sustainability depends on adaptability to changing media and the global dissemination of knowledge. The study of Ali & Isnaini (2024) confirms that this transformation demands the integration of traditional principles with technological innovation, so that classical epistemic authority remains relevant and can be used as a reference in the modern context.

Thus, classical mushaf and traditional authority serve not only as a textual medium, but also as a symbol of complex epistemic, moral, and social legitimacy. From a broader academic perspective, these findings make an important contribution to the understanding of the evolution of the scientific authority of the Qur'an: it emphasizes how traditional authority interacts with social, educational, and religious ritual structures, as well as how these principles remain relevant for the analysis of authority in the digital age and globalization. Traditional authority becomes a critical benchmark for research on the transmission of Qur'anic knowledge, bridging historical, sociological, and epistemic perspectives, while providing a foundation for the evaluation of technological innovations in the dissemination of Qur'anic knowledge.

Printed Mushaf and Rational-Legal Authority

The printing revolution in the history of the Islamic world had a significant impact on the authority of the Qur'anic science, especially related to the mushaf. The transition from handwritten to printed mushaf is not only a technological change, but also a paradigm shift in scientific legitimacy. The printed mushaf marked the emergence of a rational-legal authority, in which the legitimacy of Qur'anic knowledge came not only from tradition and sanad, but from formal processes, institutional regulation, and systematic production standards [18]. The Egyptian Mushaf of 1924 became an important symbol of this transformation, affirming that the authority of science could be legitimized through formal procedures, scientific studies, and institutional certification.

From Max Weber's perspective, this change reflects a shift in authority from the traditional -which is based on historical legitimacy and the habits of clerics- to the rational-legal, where power and legitimacy are acquired through rules, formal procedures, and legal certainty. The printed mushaf is a visual and material representation of this principle, as it contains a text that has been systematically standardized, free from variations or errors that may occur in the handwritten mushaf [19].

This transition has not happened without challenges. At first, the public and scholars were worried that the printing press could lower the spiritual value of the mushaf and lead to errors in the reproduction of the text. However, through collaboration between scholars, qira'at experts, and official printing institutions, the printed mushaf is designed in such a way that the accuracy of

the text is maintained, including in the aspects of tajweed, punctuation, and layout [20]. The 1924 Egyptian Mushaf printed by Al-Azhar became a model of rational-legal authority: it was not only nationally recognized but also adopted internationally as a reference for reading the Qur'an. This standardization shows that the legitimacy of Qur'anic knowledge can now be obtained through a transparent formal mechanism, not just through sanad relationships.

In this context, rational-legal authorities expand access to Qur'anic knowledge. Anyone can have the same standard mushaf, so that society is no longer completely dependent on a particular ulama as a source of authority. Printed mushaf bridges differences in geography, language, and reading traditions, providing a uniformity that was previously difficult to achieve. However, even though rational-legal authority is increasingly dominant, the role of clerics remains vital. They become the official interpreters, ensuring the interpretation that accompanies the mushaf in accordance with the principles of sharia, while maintaining the moral and spiritual dimensions in the use of the mushaf [21]. Thus, traditional and rational-legal authorities go hand in hand, complementing each other and strengthening the legitimacy of science.

The role of the state and official institutions is crucial in forming rational-legal authority. Institutions such as Al-Azhar regulate the production, distribution, and certification of mushafs, guaranteeing that the mushaf in circulation conforms to recognized scientific and legal standards [22]. This shows the integration between political power and scientific authority: the state uses rational-legal mechanisms to maintain social and religious unity, while protecting the people from distorted interpretations. The printed mushaf is a tool of political legitimacy as well as a means of systematic education. The standardization of printed mushaf brought significant changes in Qur'anic education. In madrasas, Islamic boarding schools, and Islamic educational institutions, the use of standard mushaf allows for the preparation of a uniform curriculum, systematic evaluation, and more effective supervision of the quality of learning [23]. This standardization minimizes the risk of reading errors that can arise due to variations in the mushaf and strengthens the quality of religious education. From Weber's perspective, this system shows how rational-legal authorities expand their scientific influence more systematically than traditional authorities, while reducing their dependence on individual scholarly figures.

However, the switch to rational-legal authority has created new tensions. Some conservatives argue that strict regulations tend to reduce flexibility in responding to the diversity of qira'at and local traditions. Standardization is considered bureaucratic and less sensitive to the plurality of valid religious practices. Critical analysis suggests that these tensions actually reflect a dilemma between the need for formal legitimacy and respect for the diversity of traditions,

which have been major challenges in the evolution of Qur'anic authority. In addition, the development of printing technology improves the quality of mushaf, for example neat layout, the use of colors for tajweed, and an index system that makes it easier to find verses. Printed mushaf is no longer just text; It became a medium of education, da'wah, and formal learning. Publishing institutions and religious organizations use printed mushaf to disseminate scientific interpretations and official explanations, strengthening rational-legal authority while supporting the role of scholars. This phenomenon also has an impact on global spread: standard mushaf allows Muslims in different countries to have the same reference, strengthening cross-border unity through the legitimacy of the same text [24].

Nonetheless, rational-legal authorities face significant challenges from the digital age. The digitization of the Qur'an gave rise to new media whose distribution was difficult to control by official institutions and state regulations [25]. This challenge shows that rational-legal authorities must be adaptive, combining formal principles with technological innovation to remain relevant in the global era. The study of Abbas, Amiruddin, & Luthfiyah (2025) emphasizes that the combination of traditional, rational-legal, and technological authority is key to keeping the legitimacy of Qur'an science strong and widely accepted [26].

Thus, the printed mushaf and the rational-legal authority represent an important phase in the evolution of the scientific authority of the Qur'an. They show how technology and formal systems strengthen legitimacy while expanding people's access to sacred texts. Critical analysis shows that rational-legal authority is not merely a substitution of the traditional, but a complementary one that balances epistemic, moral, and legal authority. The existence of printed mushaf allows the knowledge of the Qur'an to develop while maintaining its validity and being accessible more evenly while minimizing deviations and conflicts in religious practice.

Academically, these findings are relevant in understanding the transformation of scientific authority from the perspective of Weber's sociology, Islamic epistemology, and the educational history of the Qur'an. The study confirms that the shift from manuscript to print is a systematic evolution of authority: from personal and traditional to formal, legal, and standardized. These findings make a new contribution to innote research, as they relate the history of the printing of the mushaf to the dynamics of social, educational, and political authority in Muslim societies, as well as emphasize the conceptual relevance of rational-legal authority in modern and global contexts.

In short, the printed mushaf is not just a medium for reproduction of texts; It is a symbol of formal, scientific, and legal rational-legal authority, which goes

hand in hand with traditional authority. This legitimacy model allows Muslims to have consistent access to the Qur'an, maintains the integrity of the text and interpretation, while providing a solid foundation for the development of education, da'wah, and scientific research in the modern era. This transformation also shows how the scientific legitimacy of the Qur'an can be adapted according to the development of media and technology, without losing the epistemic and moral foundations built through the classical tradition.

Digital Applications and Technology Authorities

The digital era has opened a new chapter in the history of the dissemination and authority of Qur'anic knowledge. The presence of the digital application of the Qur'an marks a significant shift that not only affects the way the Qur'an is read and understood, but also the way in which scientific legitimacy is organized and represented [27]. If in the classical period the authority of Qur'an knowledge was attached to the ulama and sanad, and in the modern era centered on the standardization of printed mushaf regulated by the state and official institutions, the digital era introduced a new form of authority: technological authority. This authority is built through digital platforms, algorithms, user interactions, and popularity mechanisms, which did not exist in the history of the Qur'anic scientific tradition.

In Max Weber's perspective, this phenomenon shows the evolution of authority from traditional, through rational-legal, to a more decentralized and participatory form of authority. In the classical period, the legitimacy of the ulama and sanad was historical, ritualistic, and personal, while in the printed mushaf, legitimacy was obtained through formal procedures, standardization, and institutional certification. Today, the legitimacy of Qur'anic knowledge in the digital context is determined not only by formal authority, but also by factors of user experience, application design, algorithms, and platform popularity [28]. The Qur'an app provides instant and interactive access to sacred texts, including commentary, multilingual translations, audio reciter readings, and verse search features. This phenomenon represents the democratization of knowledge: anyone can access the Qur'an without going through the filters of traditional scholars. However, from Weber's point of view, this digital authority has a different characteristic: it is rational-technical and depends on the system, not historical or moral legitimacy. This poses new challenges related to the validity and legitimacy of science [29].

App design is a major factor in building technological authority. Applications that are user-friendly, easy to navigate, and offer interactive features will be more trusted and widely used. Instantly accessible interpretation, quality audio reading, and accurate translations increase the app's perceived

authority. In other words, the authority of technology relies heavily on user experience [30]. However, Weber points out that rational-technical legitimacy does not automatically guarantee epistemic qualities; User experience and popularity can create the illusion of legitimacy if it is not accompanied by scientific verification. Algorithms also play a critical role in shaping authority [31]. The algorithm determines the content that is displayed, the interpretation that is recommended, and how the information is personalized for the user. While personalization increases engagement, it has the potential to create filter bubbles, where users only receive interpretations or content that suits their preferences, reducing the diversity of interpretations. This phenomenon raises a critical question: the extent to which technological authorities are able to guarantee the authenticity of science compared to traditional or rational-legal authorities.

The popularity of the platform is another indicator of authority. Apps with millions of users and high ratings tend to be trusted more widely. However, popularity does not always correlate with scientific validity. There is a risk that popular apps spread less accurate or less verified interpretations, so that technological authorities can become pseudo-authorities, emphasizing aspects of quantity and user convenience rather than scientific quality [32]. The democratization of knowledge through digital applications has complex social and cultural implications. Open access allows people across geographical, linguistic, and ability to independently access the knowledge of the Qur'an, increasing global religious literacy. However, this also delegitimizes the authority of traditional scholars, as society relies more on the convenience of technology than on sanad or teaching. This transformation poses a dilemma: how to maintain a balance between accessibility, participation, and scientific validity.

Validity issues become more complex when *crowdsourcing* features are used, allowing users to contribute to interpretation or translation. Although this encourages participation, without a strict verification mechanism, content contributed by laypeople can reduce the authenticity of knowledge, even lead to bias or misinterpretation [33]. From Weber's perspective, this confirms that technology-based authority is fragile, since legitimacy is not the result of formal or historical procedures, but rather of social dynamics and algorithms that are easily changed. The role of religious institutions and scholars remains crucial in maintaining the integrity of Qur'anic knowledge in the digital era. Some institutions responded by developing official applications that combine digital convenience with scientific verification. This approach balances traditional and rational-legal legitimacy with technological authority, keeping digital content verified, trustworthy, and relevant (Rafiq, 2021). However, the penetration of

these official applications facing competition with commercially popular applications demands adaptive strategies to keep formal authority in place.

In addition, the shift in digital authority is affecting formal Islamic education. Curriculum, learning methods, and teaching strategies must adapt to the new way of accessing knowledge. Teachers need to equip students with critical skills, so as not to take digital interpretation for granted without study or verification [34]. The intelligent use of digital applications can enrich the learning experience, for example through audio, video, animation, and quick search, so that the younger generation is more interested and actively learning the Qur'an. Critical analysis shows that technological authority does not completely replace traditional or rational-legal authority, but rather complements and affirms the need for integration. Without scientific oversight, digital applications risk shifting legitimacy from epistemic qualities to mere popularity, convenience, or technical mechanisms. The integration of scholars in the development of digital content is a strategic step so that technological authorities remain verified and trusted, while maintaining the quality and authenticity of Qur'anic knowledge.

This phenomenon reflects the dynamics of the shift of authority in Qur'anic science: from traditional (sanad and ulama), to rational-legal (printed mushaf and state regulation), to decentralized and participatory technological authorities. This shift confirms that the authority of science is not static, but is always negotiated and redefined according to the media, technology, and socio-cultural contexts. The academic relevance of these findings is vast: it provides a conceptual framework for the study of the sociology of religion, Islamic epistemology, and religious education, particularly related to the legitimacy of knowledge, the democratization of knowledge, and the adaptation of education in the digital age.

Implications

Theoretical: Theoretically, this research has implications for the affirmation that the authority of science is not static but rather contextual and always negotiated according to the times. Practically, this research is expected to move religious institutions and scholars to be actively involved in the development of digital application content to ensure accuracy and conformity with sharia principles. This research certainly has limitations because it emphasizes conceptual analysis and literature because empirical observations on the use of digital applications in society are still limited. So that this research can be developed by future researchers by conducting field empirical studies to observe the behavior of users of the Qur'an digital application, including their interaction with interpretation and *crowdsourcing features*.

Conclusion

Based on the description mentioned above, it can be concluded that the digital era has brought a significant transformation in the authority of Qur'anic knowledge. The evolution of authority took place from the traditional centered on scholars and sanad, to rational-legal through the standardization of printed mushaf, to the emergence of technological authority that relied on application design, algorithms, and the popularity of digital platforms. The Qur'an application makes it easier to access interpretation, translation, and audio instantly, thus opening up a space for the democratization of knowledge that is wider, inclusive, and participatory. However, this ease of access also poses critical challenges related to the legitimacy and validity of knowledge, where technical factors and popularity are often benchmarks, thus potentially weakening the authority of traditional scholars and posing the risk of spreading less verified interpretations. The *crowdsourcing* feature adds complexity by allowing layman user contributions without strict verification mechanisms.

Thus, the authority of Qur'anic knowledge in the digital era is dynamic, decentralized, and always negotiated. This transformation reflects the legitimacy of science more than just a matter of history and formal procedure but also of social and technological interactions, as Max Weber's perspective on the evolution of authority from traditional to rational-legal to technological. These findings are relevant to the study of Islamic epistemology because they show that media and technology demand adaptation in the legitimacy and distribution of science.

Author Contributions

Ahmad Mahfudz: Conceptualization, Methodology, Writing-review & editing, Supervision, Project administration. **Abd Munib:** Methodology, Writing-review & editing, Investigation.

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