

Preserving The Uniformity of the Muṣḥaf: International Challenges and Management from the Uthmanic Codification to the Contemporary Era

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ABSTRACT:

The preservation of the sanctity of the Qur'anic text represents one of the most enduring endeavours in human civilization, evolving from the physical codification during the caliphate of 'Uthmān ibn 'Affān to the complexities of the contemporary digital age. This article examines the continuity and divergence in efforts to maintain the homogeneity of the Muṣḥaf, with particular attention to the transition towards digital applications that now dominate access to the Qur'an. The primary aim of this research is to identify the critical challenges arising from the decentralization of digital publishing and the absence of a central authority capable of verifying the Qur'anic text in cyberspace. Employing a qualitative library-based research design, the study synthesizes historical data, policy documents, and contemporary scholarship on Qur'anic orthography and information technology. The findings indicate that while the Uthmanic tradition achieved a unification of dialectal diversity (ahruf) through the codification of the physical text, the modern digital environment is characterized by a form of textual anarchy, wherein font-encoding

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inconsistencies, dabt (diacritical marks) irregularities, and software malfunctions collectively threaten the integrity of the sacred text. The study further identifies geopolitical tensions in Muṣḥaf governance, particularly between the hegemony of the Madinah Muṣḥaf and the local manuscript traditions of the Nusantara and Indo-Pak regions. In conclusion, this paper advocates for the establishment of an international accrediting body and a standardized Digital Muṣḥaf Protocol to operate in parallel with the Uthmanic Rasm, thereby ensuring that this heritage of preservation is not eroded by the forces of technological globalization.

Keywords: Uthmanic Rasm, Qur'anic Text Integrity, Digital Muṣḥaf, Muṣḥaf Management, Qur'anic Orthography.

1.0 Introduction

The Qur'an occupies a position of unparalleled significance in the lives of Muslims worldwide, and its history of preservation stands as a remarkable achievement in the annals of human civilization. The divine promise of safeguarding the Qur'anic text, as articulated in Sūrat al-Ḥijr (15:9), has been fulfilled through a sustained and systematic process of human custodianship extending from the Prophetic era to the present day (Al-Azami, 2003). A pivotal juncture in this history was the codification project undertaken by Caliph 'Uthmān ibn 'Affān (may Allah be pleased with him), which consolidated the Qur'an into a single, standardized dialect, the Uthmanic Rasm, in order to resolve emerging disputes concerning recitation that had arisen as Islam expanded into non-Arab territories (Déroche, 2022). This Uthmanic enterprise was not merely a theological triumph; it was also a remarkable act of administrative statesmanship that established a norm of textual uniformity sustained for more than a millennium (Al-Qudah, 2018).

Nevertheless, this landscape of preservation has been radically transformed in the twenty-first century. The transition from print culture to digital culture has ushered in an unprecedented era of Qur'anic accessibility, yet it has simultaneously introduced challenges of a kind never previously encountered (Khan & Alginahi, 2013). Whereas the

central problem of the classical period was dialectal variation in oral transmission, the defining challenges of the present era are algorithmic inconsistency, font incompatibility across devices, and the proliferation of thousands of Qur'an applications developed by independent actors operating outside the oversight of established religious authorities (Hakak et al., 2018; Zakariah et al., 2017). These difficulties are further compounded by cross-regional divergences in writing traditions (Rasm) and vocalization markers (Dabt), as evidenced in the tensions between the Nusantara Muṣḥaf traditions and the Madinah Muṣḥaf, the latter occupying a position of informal hegemony in the Middle East alongside the Indo-Pak and Indonesian Standard Muṣḥaf variants, all of which now compete for legitimacy in the unregulated digital space (Efendi, 2019; Sholihah et al., 2025).

Although the historiography of the Uthmanic Rasm has been examined in numerous previous studies, and technical research on Qur'an-based applications has grown substantially, a critical lacuna persists at the intersection of these two scholarly traditions (Gurning et al., 2021). The extant literature remains largely bifurcated: on one side, highly specialized philological studies of classical manuscripts; on the other, narrowly technical treatments of cybersecurity devoid of theological or administrative consideration. The

failure to analyze the symbiotic relationship between the conservative principles of the Uthmanic Rasm and the dynamics of modern digital governance risks eroding public confidence in the fidelity of Qur'anic text encountered on digital screens (Kurniawan et al., 2020; Sadek, 2016).

This study therefore aims to bridge that gap by critically tracing the evolution of challenges in maintaining the uniformity of the Muṣḥaf from the Uthmanic period to the contemporary digital era. The key questions guiding this research are: (1) What are the foundational principles of Uthmanic standardization, and how do they apply to the modern digital context? (2) What specific threats does the unregulated digitalization of the Muṣḥaf pose to Qur'anic textual integrity? (3) What are the roles and limitations of existing Muṣḥaf-management institutions in addressing the challenges of transnational digital governance? This paper contends that, without the emergence of a new paradigm of global governance, the homogeneity safeguarded by the Uthmanic tradition is at risk of unravelling within an unregulated digital environment. The article is organized as follows: a comprehensive review of relevant literature on codification history and contemporary digital challenges; a description of the qualitative methodology employed; a conceptual analysis of the intersection between tradition and technology; a critical discussion of policy implications; and a conclusion that reaffirms the urgent necessity of innovative governance for this sacred text.

2.0 Literature Review

The literature review that informs this paper encompasses a detailed examination of the historiography of the Qur'anic text, the foundational principles of the Uthmanic Rasm, and the evolving challenges of the digital age. This subject necessitates the synthesis of classical 'ulum al-Qur'an scholarship with twenty-first-century digital humanities research.

2.1 *The Uthmanic Legacy and the Principles of Standardization*

Any serious discussion of Qur'anic textual integrity must engage with M. M. Al-Azami's seminal work, *The History of the Qur'anic Text from Revelation to Compilation*. Al-Azami (2003) decisively refutes Orientalist theories of textual corruption and argues that the canonization project of Caliph 'Uthmān constituted an act of administrative genius — one that unified the Muslim community around a single master codex (mushaf imam). His work establishes the scholarly foundation for understanding that variations in recitation (Qira'at) may be accommodated, provided they do not conflict with the consonantal skeleton of the Uthmanic Rasm. This position is corroborated by François Déroche's (2022) meticulous examination of early manuscripts in *The One and the Many*, which demonstrates that despite minor scribal differences, the orthographic system was substantially preserved across early copies. Small (2011) similarly affirms, through textual criticism methodology, that the manuscript tradition exhibits a remarkable degree of internal consistency. However, these historical studies tend to terminate at the manuscript and early print stages, leaving unresolved the question of how the principle of a single, authoritative text translates into the computational era (Cook, 2004; Rippin, 2006). Al-Qudah (2018) has further clarified the doctrinal distinctions between Uthmanic orthography and standard Arabic phonetic spelling (Rasm Imlā'i), underscoring the theological importance of preserving the former in any authorized Muṣḥaf.

2.2 *Muṣḥaf Management and Regional Variations*

A substantial body of literature documents the divergences between the Arab world and the Nusantara region with respect to Muṣḥaf management. Kuswandi et al. (2024) highlight the richness of Qur'anic manuscript traditions in Indonesia, which are distinguished by unique aesthetic features and distinctive Dabt systems that differ significantly from those of the Middle East.

This observation resonates with the broader findings of Efendi (2019), who traces the institutional history of the Indonesian Standard Muṣḥaf and its deliberate departure from the Madinah model in certain orthographic conventions. Lajnah Pentashihan Mushaf Al-Qur'an (2020) further documents the regulatory and scholarly processes underpinning Indonesian Muṣḥaf standardization, while the Department of Islamic Development Malaysia (JAKIM, 2018) outlines the governance framework applicable to Qur'an applications in Malaysia. The printing of the Muṣḥaf is subject to rigorous statutory regulation in Malaysia under the Printing of Qur'anic Texts Act 1986, whereas in Saudi Arabia the King Fahd Complex for the Printing of the Holy Qur'an functions as the de facto arbiter of international standards (Muneeza et al., 2018). A latent tension is therefore discernible in the literature between the Madinah Standard, widely assumed to constitute the exclusive global norm and the legitimate need to preserve local Muṣḥaf identities, such as the Bombay or Indo-Pak Muṣḥaf traditions that are more accessible to non-Arab Muslim communities (Sholihah et al., 2025). Mustafa (2020) and Nasr (2020) have also examined the broader question of digital manuscript classification and heritage preservation, providing methodological frameworks applicable to the Muṣḥaf context. However, the manner in which this regional tension manifests and intensifies on digital platforms has not been adequately addressed in the existing literature.

2.3 Digital Integrity Challenges in the Contemporary Era

Scholarly output on the integrity of digital Qur'anic text has expanded considerably over the past decade. Gurning et al. (2021) and Kurniawan et al. (2020) have produced significant technical research on the authentication of digital Qur'anic texts, finding that the open character of the internet facilitates the spread of corrupted Qur'anic files — whether through inadvertent coding errors or deliberate manipulation. Hakak et al. (2018)

proposed a cybersecurity framework for Qur'an applications; however, their analysis focused predominantly on technical mechanisms and accorded insufficient attention to the dimensions of religious authority and scholarly oversight. Zakariah et al. (2017) conducted a comprehensive survey of Qur'an applications on mobile devices, identifying persistent issues with font rendering and Unicode compatibility. Sadek (2016) and Khan, Siddiqui, and Tayan (2017) further examined cybersecurity vulnerabilities specific to digital Qur'an content, proposing certification frameworks that have yet to attain international adoption.

Mohammed (2024) has more recently highlighted accessibility concerns for visually impaired users of digital Qur'an platforms, adding a dimension of inclusive governance to the discourse. Tayan (2014) additionally explored information security challenges in Qur'anic multimedia content, reinforcing the conclusion that technical solutions alone, absent theological and institutional frameworks, are insufficient to guarantee textual integrity. What remains conspicuously absent from the literature is an integrative framework that brings together information technology specialists and religious scholars within a coherent global governance structure (Rahayu & Irfany, 2022).

2.4 Synthesis and Knowledge Gap

A synthesis of the foregoing literature reveals that while the physical preservation tradition rooted in the Uthmanic Rasm is well documented and institutionally supported, the management of the Muṣḥaf in the digital era remains, in substantive terms, largely ungoverned. The contributions of Khan and Alginahi (2013) and Sholihah et al. (2025) represent early attempts to address this lacuna, drawing attention to orthographic challenges on mobile devices where software frequently fails to render complex Arabic character combinations with requisite accuracy. Similarly, Aprillia and Iryanti (2024) have undertaken a comparative analysis of Rasm Uthmani and Rasm Imla'i in digital Qur'an applications, demonstrating the

extent to which application developers deviate from classical orthographic norms. Mohamad Farouq (2021) has also addressed the broader challenge of preserving intellectual and religious heritage in the digital age, offering recommendations pertinent to the Muṣḥaf governance context. Nevertheless, the prevailing body of literature remains either descriptive or confined to micro-level technical solutions. What has yet to be adequately addressed is a conceptual reconfiguration of the notions of authority and uniformity for a context in which the Muṣḥaf is no longer committed to paper. This paper aims to fill that gap by establishing a conceptual continuum between the conservative ideals of the Uthmanic legacy and the realities of digital anarchy, thereby proposing a more comprehensive and institutionally responsive framework for global Muṣḥaf governance.

3.0 Methodology

This research adopted a qualitative research design grounded in library research and systematic document analysis. The methodology was informed by the necessity of exploring and integrating abstract dimensions of history, theology, and governance policy dimensions that are not amenable to quantitative treatment. The conceptual nature of the inquiry required intensive engagement with primary and secondary sources in order to construct a coherent account of the development of Muṣḥaf preservation across time.

3.1 Research Setting and Scope

The chronological scope of the study is broad, commencing with the codification of the Muṣḥaf during the caliphate of ‘Uthmān ibn ‘Affān (c. 650 CE) and extending to the development of contemporary digital applications up to 2024/2025. The geographical focus is international, with particular comparative attention accorded to the classical centres of Muṣḥaf authority in the Middle East, especially Saudi Arabia and the institutional landscape of Southeast Asia, specifically Malaysia

and Indonesia, as the two largest non-Arab Muslim-majority nations.

3.2 Data Collection

Data were gathered through the systematic analysis of authoritative literature spanning the fields of ‘ulum al-Qur'an, manuscript history, and computer science. Two principal categories of sources were consulted:

3.2.1 Primary Sources: Historical texts pertaining to the compilation of the Qur'an (including accounts of the Committee of Zayd ibn Thabit), and contemporary policy documents, among them, the guidelines of the Lajnah Pentashihan Mushaf Al-Qur'an of Indonesia, the Printing of Qur'anic Texts Act 1986 (Malaysia), and technical reports issued by the King Fahd Complex for the Printing of the Holy Qur'an.

3.2.2 Secondary Sources: Peer-reviewed journal articles, academic monographs, and conference papers addressing Uthmanic orthography, Qira'at variants, and cybersecurity concerns in Islamic applications. Literature searches were conducted across the major academic databases of Scopus, Web of Science, and Google Scholar, using targeted keywords related to the central themes of this study.

3.3 Data Analysis

The data were subjected to content analysis and thematic analysis. Critical reading was employed to identify recurring themes, patterns of institutional change, and contradictions in Muṣḥaf management across different historical periods. A comparative approach was utilized to differentiate the quality-control mechanisms operative in the era of physical manuscripts from those applicable to the digital age. The interpretation of findings was conducted through the conceptual lens of maqasid al-shari'ah specifically the principle of *hifdz al-din* (preservation of religion) in order to evaluate the adequacy of existing management strategies. This design was adopted with the aim of constructing a conceptual framework capable not only of describing the current phenomenon but of providing a theoretical

basis for the amelioration of global governance policy.

4.0 Discussion and Findings

The conceptual analysis conducted in this study yields three principal findings that collectively illuminate the transformation of challenges in Muṣḥaf preservation and management from the Uthmanic era to the present.

4.1 *The Redefinition of Uniformity*

The first finding concerns a fundamental shift in the meaning of textual uniformity. During the Uthmanic period, uniformity was understood as the unification of the consonantal skeleton (Rasm) to forestall communal fragmentation, while a recognized diversity of recitations (Qira'at) was simultaneously preserved through the deliberately unpointed and unvowelled character of the early script (Al-Azami, 2003; Déroche, 2022). In the digital context, however, the concept of uniformity has been inappropriately reduced by software developers to mean adherence to a single typeface or fixed visual rendering typically modelled on the Madinah Muṣḥaf thereby effectively disenfranchising recognized Qira'at variants from digital representation (Aprillia & Iryanti, 2024; Sholihah et al., 2025). This development may be characterized as a "technological freezing of the text," wherein the classical richness of Qur'anic recitation traditions is inadvertently diminished by the constraints of application interface design. Small (2011) and Cook (2004) have both cautioned, in related contexts, against the conflation of visual standardization with authentic textual preservation.

4.2 *The Phenomenon of Digital Authority Anarchy*

The second finding identifies what this study terms "Digital Authority Anarchy." In the print era, institutional bodies such as the Ministry of Home Affairs (KDN) in Malaysia and the Lajnah Pentashihan in Indonesia exercised statutory authority to intercept and withdraw defective physical Mushafs from circulation (JAKIM, 2018;

Lajnah Pentashihan Mushaf Al-Qur'an, 2020). The digital age, however, lacks equivalent jurisdictional mechanisms. Qur'an applications developed in non-Muslim majority countries, or by developers lacking religious expertise, can be freely downloaded by users globally without subjection to national religious scrutiny (Hakak et al., 2018; Zakariah et al., 2017). The present verification architecture is reactive rather than proactive: complaints must be received before erroneous texts are reviewed, by which time corrupted material may have already reached a global audience (Gurning et al., 2021; Kurniawan et al., 2020). Sadek (2016) and Khan et al. (2017) have both underscored the structural inadequacy of current certification frameworks, highlighting the absence of an internationally recognized body empowered to validate digital Qur'anic content.

4.3 *Tension Between Rasm Authenticity and User Accessibility*

The third finding concerns a persistent tension between the imperative of orthographic authenticity and the demands of user accessibility. Document analysis reveals that efforts to render the Uthmanic Rasm accurately in digital environments frequently encounter technical limitations inherent to operating systems — particularly in relation to Unicode — which often fail to reproduce complex Arabic letter-diacritic combinations with the precision required by classical standards (Khan & Alginahi, 2013; Kurniawan et al., 2020). In response to these constraints, certain application developers have adopted the phonetic spelling convention (Rasm Imla'i) to enhance legibility on small screens — a practice that violates the scholarly consensus on the indispensability of the Uthmanic Rasm in authorized Muṣḥaf reproduction (Al-Qudah, 2018; Sholihah et al., 2025). This dilemma raises a profound contemporary governance question: whether priority should be accorded to rigorous theological fidelity or to broad technological accessibility. Mohammed (2024) adds a further dimension to this tension by highlighting the needs

of visually impaired users, whose requirements for accessible digital formats may be in tension with strict orthographic protocols.

5.0 Discussion

The implications of these findings for the theory and practice of sacred text management in the modern world are considerable. The phenomenon of Digital Authority Anarchy identified in this study suggests that the contemporary Muslim community is confronting an epistemological crisis analogous to that which prompted Caliph 'Uthmān to initiate the original codification project. Just as 'Uthmān was apprehensive about dialectal divergences that might fracture Muslim communal unity, the present danger is an indeterminacy of textual sources that threatens to undermine confidence in the sanctity of the Qur'an encountered on digital screens (Al-Azami, 2003; Déroche, 2022). This situation may be conceptualized as a "Second Uthmanic Moment" a globally coordinated effort to establish digitally authoritative standards that command universal recognition.

Drawing on the insights of Al-Azami (2003) and Déroche (2022), the present study advances the argument that the continuum of oral-to-written textual transmission must now be extended to encompass a written-to-digital transition. In contrast to optimistic assessments by some technology researchers who regard artificial intelligence as a comprehensive solution to problems of textual verification, this paper argues that unmonitored technological intervention carries its own risks. Algorithms may be capable of identifying certain categories of typographic error, but they lack the refined discernment (dhawq) necessary to navigate the subtle distinctions in Dabt that vary across different transmission chains (riwayat) (Hakak et al., 2018; Khan et al., 2017). Mohamad Farouq (2021) similarly cautions against an uncritical embrace of digital tools in contexts where religious authenticity is at stake.

Furthermore, the hegemony of the Madinah Muṣḥaf in the global digital space, as identified in

the findings, raises substantive concerns regarding cultural dominance in Islamic textual governance. Although standardization was the avowed objective, an unintended consequence has been the progressive marginalization of local Muṣḥaf-writing traditions in the Nusantara region and the Indian subcontinent (Efendi, 2019; Kuswandi et al., 2024). This outcome stands in tension with the classical Islamic principle of unity within diversity. Any credible framework for global Muṣḥaf governance must therefore be genuinely inclusive, affirming local orthographic traditions such as the Muṣḥaf Pojok of Indonesia, provided they do not contravene the foundational provisions of the Uthmanic Rasm (Lajnah Pentashihan Mushaf Al-Qur'an, 2020; Muneeza et al., 2018). Rahayu and Irfany (2022) have argued that digital transformation in Islamic institutions must be accompanied by robust institutional reform, a perspective directly applicable to the governance of the Digital Muṣḥaf.

Regarding the limitations of this study, it is acknowledged that document analysis alone may not fully capture the technical realities encountered by software engineers working on Qur'anic applications. Future research is therefore recommended to explore interdisciplinary collaboration between Qira'at scholars and software developers in order to produce a standardized Digital Muṣḥaf Protocol. The discussion underscores the broader insight that the textual continuity of the Qur'an is not merely a matter of preserving letters; it is a matter of preserving authority, the chain of scholarly transmission (sanad), and the institutional structures that have historically guaranteed the integrity of the sacred text. In an era defined by the primacy of data, the Muslim community must ensure that Qur'anic data does not become a commodity susceptible to manipulation, but remains a sacred trust governed by ethical and scholarly oversight (Hasan, 2020; Nasr, 2020).

6.0 Conclusion

This paper has traced the protracted history of efforts to maintain the homogeneity of the Muṣḥaf, from the foundational codification project of Caliph 'Uthmān ibn 'Affān to the multifaceted challenges of the digital era. The central aim of the study was to critically evaluate contemporary threats to Qur'anic textual integrity and to assess the readiness of existing management systems to respond to those threats. The findings affirm that, while digital technology presents extraordinary opportunities for the dissemination of the Qur'anic message, it simultaneously creates conditions for textual corruption unless governed by robust institutional mechanisms (Gurning et al., 2021; Hakak et al., 2018).

The Uthmanic legacy teaches that the courage to pursue standardization is the foundation of communal unity. That principle must now be reaffirmed through the establishment of a global certification authority, a Digital Muṣḥaf Consortium composed of qualified Islamic scholars, manuscript specialists, and technology experts drawn from across the Muslim world. Such a body would be charged with developing and

enforcing an internationally recognized Digital Muṣḥaf Protocol, analogous in function to the Uthmanic Rasm in the classical era (Al-Azami, 2003; Khan et al., 2017).

The theoretical implications of this research are evident: frameworks for Qur'anic preservation must be extended beyond classical philology to incorporate the domains of cybersecurity and data governance (Kurniawan et al., 2020; Sadek, 2016). For policymakers, this study signals that existing legislation governing print publication such as the Printing of Qur'anic Texts Act 1986 in Malaysia requires substantive revision to encompass the domain of digital publication (JAKIM, 2018). The limitations of this study open productive avenues for future empirical and interdisciplinary research, particularly into artificial intelligence algorithms capable of performing automated tashhīh (textual verification) with an accuracy approaching that of qualified human scholars. The future of Qur'anic preservation depends ultimately on the capacity of the Muslim intellectual community to achieve a principled and productive balance between the strictness of tradition and the responsiveness of innovation.

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