Codicology of Islamic Manuscripts in Sumatra: The Impact of Deep Learning on Literature and Written Traditions

Roma Kyo Kae Saniro[1], **M. Yusuf,**[2] **Ahmad Hamidi**[3]

[1,2]Department of Literature and Culture, Faculty of Humanities, Universitas Andalas
[3]Department of Linguistics, Faculty of Humanities, Universitas Andalas

[1]romakyokae@hum.unand.ac.id

Abstract

This study examines the codicological richness of Islamic manuscripts in Sumatra and explores the transformative potential of deep learning technologies in their preservation. It aims to investigate how traditional written heritage, shaped by long-standing spiritual and intellectual legacies, can be revitalized through an interdisciplinary framework that integrates codicology, digital philology, and artificial intelligence. Employing a qualitative descriptive approach, the study analyzes twenty manuscripts from the DREAMSEA catalog, focusing on their physical characteristics, cultural contexts, and the role of digital technologies in enhancing accessibility and analytical depth. The findings reveal a diverse manuscript tradition across regions such as Ogan Komering Ilir, Padang Pariaman, and Sijunjung, encompassing texts on jurisprudence, Sufism, Qur'anic exegesis, and local customary practices. Codicological features including paper types, ink composition, scripts, and page layout provide critical insights for automated recognition and digital preservation processes. Deep learning models, particularly convolutional neural networks, demonstrate strong potential in supporting handwriting recognition, content classification, and visual restoration. Nevertheless, challenges persist in addressing script variability, faded ink, and limited digital literacy. The study concludes that while deep learning significantly enhances the efficiency of manuscript preservation, sustained human expertise and community engagement remain indispensable. A balanced approach that harmonizes technological innovation with cultural sensitivity is essential for safeguarding Islamic literary heritage in the digital age.

Introduction

The legacy of Islamic manuscripts in Sumatra is a tangible reflection of the intellectual and spiritual richness of the region's Muslim communities, shaped through interactions between local cultures and global Islamic scholarly networks since the 16th century. Manuscripts found across areas such as Aceh, Minangkabau, Riau, Jambi, and Palembang encompass religious texts and literary works, medicine, law, Sufism, and social systems. As products of literary culture, these manuscripts stand as clear evidence that the Muslim communities of the archipelago were not merely passive recipients of foreign civilizations but also active producers of knowledge. However, today, these manuscripts face serious challenges regarding physical degradation, limited accessibility, and declining public awareness of their scholarly value. Codicological studies—which examine the material aspects of manuscripts—are thus vital, as

elements such as paper type, ink, illuminations, line structure, and colophons provide insights into their social history, transmission pathways, and textual reproduction processes (Alim, 2023; Iswanto, 2015).

Inventory efforts across various regions in Sumatra have revealed a rich and diverse manuscript collection. For instance, 77 manuscripts have been identified in mainland Riau, 22 of which contain texts on Islamic theology (*tauhid*) (Iswanto, 2015). These manuscripts remain in private collections, undocumented, and not yet part of a national catalog. This situation mirrors Amin's findings in Pontianak, West Kalimantan, where a family collection contained 203 manuscripts that are still outside any national preservation system (Amin, 2012). Such evidence underscores the lack of formal institutional attention toward manuscript preservation, with many texts at risk of extinction due to public unawareness of their historical and intellectual significance.

Geographical and cultural distributions also shape the character of Sumatra's manuscript tradition. Elmustian notes that in island regions such as Pulau Penyengat, written traditions developed more robustly compared to mainland Riau, which leans more toward oral culture (Elmustian & Firdaus, 2024). This indicates that preservation strategies must account for local characteristics and geographic contexts to avoid culturally homogenized interventions. In some cases, manuscripts exhibit mixed scripts and localized marginalia, as seen in a *Tafsir Jalālayn* manuscript from Pesantren Bustanul Ulum Rembang, which includes *the meaning of gandhul* written in a coastal Javanese dialect (Ma'ali & Asif, 2020). These examples affirm that manuscripts are not merely textual artifacts but also vessels of local identity, history, and culture.

Amid these challenges, the advancement of digital technologies and artificial intelligence—intense learning—offers new hope for the preservation and study of classical manuscripts. This technology enables the automation of ancient script reading, transcription, handwriting pattern recognition, and thematic content classification. In practice, deep learning systems can identify script types, detect watermarks, categorize content by themes (e.g., jurisprudence, theology, Sufism), and even detect copying errors rapidly and accurately. These capabilities pave the way for the emergence of *digital philology*, a multidisciplinary approach combining philology, codicology, and digital technology to analyze manuscripts more comprehensively (Bressan & Canazza, 2014). A project led by Ridwan in Sumatra demonstrated that thematic encoding and inter-provincial databases can successfully integrate hundreds of manuscripts into a structured classification system (Bustamam, 2017).

Nevertheless, significant challenges remain, including limited digital literacy among the public, the absence of conservation training, and the risk of cultural homogenization due to digital standardization. Therefore, a technology-based codicological approach must be accompanied by sociocultural engagement, particularly involving local institutions such as *pesantren* (Islamic boarding schools) and community leaders. The active participation of younger generations is also essential to ensure the continuity of this written tradition (Saniro & Yusuf, 2023; Seli et al., 2017).

Beyond their role as preservation objects, manuscripts are essential in literary and cultural education (Fathurahman & dkk., 2010). Well-designed literary instruction based on classical manuscripts can enhance students' cultural appreciation and foster dialogue between local and global values. The *mindful–meaningful–joyful* (MMJ) approach applied by Mustika in secondary school literature education has proven effective in increasing students' interest and deepening their understanding of Islamic values through classical texts (Mustika et al., 2020).

This illustrates that manuscripts are not merely old archives but can be revitalized as educational tools, cultural appreciation media, and spiritual instruments (Fathurahman & dkk., 2010).

The transformation of Islamic manuscript traditions through technology is also evident in digitization efforts across various provinces. Taufiqurrahman and Hidayat documented 512 manuscripts from Riau and West Sumatra using a database system that stores metadata, including script type, manuscript origin, and scholarly categories (Taufiqurrahman & Hidayat, 2022). The system also allows users to access classifications based on academic levels and purposes, opening avenues for developing targeted educational and research platforms. At the same time, preservation efforts must consider the local values embedded in the texts and how they are used within the community, as shown by Ma'ali's study of the *bandongan* recitation method, where tafsir manuscripts serve as mediums for scholarly transmission in traditional *pesantren* (Ma'ali & Asif, 2020).

In the global context, manuscript preservation cannot rely on technology alone. A more sustainable strategy involves integrating technology with local cultural values. Apriyani stresses that technology must function as a tool for preservation, not commodification (Apriyani et al., 2024). Educational outreach via social media, integrating cultural content into digital curricula, and developing local culture-based literacy through mobile applications are vital in addressing the threat of cultural homogenization in the digital era. Therefore, preserving Islamic manuscripts in Sumatra should be designed as a cultural-digital ecosystem responsive to local contexts, inclusive of communities, and adaptive to technological developments.

Methodology

This study employs a qualitative-descriptive method with an interdisciplinary approach integrating codicology, digital philology, and deep learning technology. This method was chosen for its ability to explore the material, cultural, and digital dimensions of classical Islamic manuscripts distributed across Sumatra. The approach enables the integration of physical manuscript analysis (such as paper type, illumination, script, and colophon) with digital transformation supported by character recognition technology and automated thematic classification systems.

The theoretical framework combines classical codicology as the foundation for physical manuscript examination, digital philology for digital representation and metadata structuring, and deep learning models in handwriting recognition and optical character recognition (OCR) as technological solutions for manuscript preservation and interpretation. Deep learning models used in handwriting recognition and OCR have been applied to automatically read Arabic and Jawi scripts in ancient manuscripts, enabling efficient digitization and content classification(Bustamam, 2017). These systems employ algorithms such as convolutional neural networks (CNNs) to identify visual patterns in handwriting and transcribe them into structured text (Bressan & Canazza, 2014).

The research corpus consists of 20 manuscript records and digital documentation reports of Islamic manuscripts from Sumatra, sourced from the DREAMSEA database (Admin, n.d.) Data were collected through a systematic literature review of relevant journals and visual observation of digital manuscript documentation. Codicological identification focuses on physical condition, legibility, script types and sizes, punctuation and diacritics, ink colors, and text coloring (Hermansoemantri, 1986; Permadi, 2011; Saniro & Yusuf, 2023). All data were analyzed using descriptive-thematic techniques, including categorization of codicological

elements, evaluation of digital metadata systems, and analysis of deep learning documentation to identify the potential and limitations of technology in supporting the sustainability of Islamic manuscript traditions.

Finding and Discussion

Codicological studies of Islamic manuscripts in Sumatra have demonstrated that the Islamic writing tradition has endured in physical form and as a reflection of local knowledge systems, networks of scholarly transmission, and complex cultural adaptations. Religious manuscripts—such as those on Qur'anic exegesis, Islamic jurisprudence, Sufism, and locally produced Qur'ans—have been found across provinces like Riau and West Sumatra in varying conditions. In other words, codicological research on Sumatra's Islamic manuscripts reveals remarkable diversity in terms of physical attributes, content, and sociocultural significance (Mulyadi, 1994; Puji Azizah et al., 2023)

Manuscripts discovered in regions such as West Sumatra, Aceh, Riau, and Jambi feature a range of materials, including *dluwang* and European papers (e.g., those bearing the "Pro Patria" watermark), black and red ink, as well as locally distinctive illumination techniques that represent the aesthetic and intellectual identities of Islamic manuscripts in the area (Pramono et al., 2019). The scripts used are also highly varied, ranging from Jawi Arabic and *Arab Gundul* (Arabic without diacritics) to local scripts such as Ulu and Incung, which reflect the adaptation of local cultures to Islamic teachings (Gunawan & Kurnia, 2016; Ma'ali & Asif, 2020).

In terms of function, these manuscripts were not only tools for religious instruction but also served as socio-political instruments, customary legal texts, and spiritual resources in the form of prayers, talismans, and incantations ((Evizariza & Idayanti, 2017). This multifunctionality reveals manuscripts as living artifacts embodying the value systems of local Muslim communities in the past. Many of these manuscripts originated from religious communities such as *surau* and *pesantren*, making them integral to the continuity of traditional Islamic education (Saniro, 2012, 2023a, 2023b).

As part of efforts to document and analyze the intellectual heritage of Islam in Sumatra, this study successfully identifies and discusses 20 unique manuscripts from the DREAMSEA catalog, originating from three key locations: Ogan Komering Ilir (South Sumatra), Padang Pariaman (West Sumatra), and Sijunjung (West Sumatra). These manuscripts offer a window into the region's religious, cultural, and educational traditions, highlighting a broad spectrum of Islamic textual heritage.

From Ogan Komering Ilir, ten manuscripts were identified containing diverse Islamic content. These include DS 0001 00002, *Buku Fiqh Imam Syafi'i*, which outlines Islamic legal rulings based on the Shafi'i school; DS 0001 00005, *Durūs al-Sīrah al-Nabawīyah*, which discusses lessons from the life of the Prophet Muhammad; and DS 0001 00009, *Doa*, a prayer text that serves as the closing section of a manuscript on ritual prayer.

Other notable examples are DS 0002 00006, *Prinsip Hukum Islam*, which outlines the principles of Shafi'i jurisprudence, and DS 0003 00001, *Ini Jikalau Hendak Berkirim kepada Gadis*, a grammatical guide likely used in Arabic language instruction. Also from this region are DS 0003 00002, *Al-Khuṭbah al-thāniyah likulli Jumʿah*, a collection of Friday sermons; DS 0003 00004, *Aturan Membaca Qurʾan dengan Benar*, a manual on correct Qurʾanic recitation

(*tajwīd*); as well as DS 0003 00005 and DS 0003 00012, both prayer texts—one focused on daily supplications and the other on general invocations and charms. Finally, DS 0003 00017 is a personal letter that reflects the tradition of written communication in past Muslim societies.

Meanwhile, five important manuscripts were documented from Padang Pariaman, specifically from Surau Pondok Ketek. These include DS 0147 00002, a composite manuscript containing Islamic jurisprudence, the "Twenty Attributes" of God, and Sufi texts—showing the integration of spiritual and legal content within a single codex. DS 0147 00006 is an exegetical text titled *Fath al-Qarīb al-Mujīb fī Sharḥ al-Faẓ al-Taqrīb*, offering commentary on Islamic jurisprudence. Also significant is DS 0147 00010, *Jawhar al-Ḥaqā'iq* by Syamsuddin al-Sumatrani, which presents a philosophical Sufi discourse and a semiotic reading of Hamzah Fansuri's poetry. DS 0147 00038 is a partial Qur'anic manuscript containing ten *juz'*, and DS 0147 00048 features Islamic historical texts and records of Minangkabau customary law, highlighting the manuscript's role in preserving religious and cultural narratives.

Five manuscripts with a strong Sufi inclination were discovered in the Sijunjung region, particularly within the *surau* communities of Tanjung Ampalu. DS 0043 00014, titled *Jawharat al-Tawḥīd*, and DS 0043 00026, *Masyrab al-Shathārī*, both explore theological and classical Sufi themes. DS 0139 00023, *Tarekat Syattariyah*, details the doctrine of the *Martabat Tujuh* (Seven Grades of Being) and traces the genealogy of the local Syattariyah order. At the same time, DS 0139 00020, *Tahqiq*, offers guidance on achieving spiritual realization within the context of the same *tarekat*. Lastly, DS 0139 00004, titled *Tasawuf*, systematically discusses the doctrines of *tawḥīd* (divine unity), *sharī'ah* (Islamic law), *ḥaqīqah*(ultimate truth), and *ma'rifah* (gnosis). These manuscripts from the three locations collectively illustrate the rich diversity in form, content, and function of Islamic texts in Sumatra while demonstrating the continuity of a deeply rooted literary tradition with profound historical and intellectual significance.

However, the physical condition of these manuscripts varies widely—from well-preserved to severely damaged due to environmental factors and inadequate storage—posing serious preservation challenges (Saniro, 2012). Digitization efforts using high-resolution scanning and codicology-based metadata cataloging systems have begun at several national and international institutions, such as the British Library and the TUFS project in Japan (Seli et al., 2017; Azizah , 2023). It is within this context that technology plays a critical role. For example, a private collection in Pontianak houses over 200 manuscripts, most of which remain undigitized and in their original physical form. Similarly, a survey in Kampar revealed 13 ancient Malay manuscripts written on European paper, containing religious texts and local prayers (Evizariza, 2017).

The codicological aspects of these manuscripts reveal significant elements such as watermarks, illuminations, ink types, and the *meaning of gandhul* (interlinear glosses) found in Jawi or Pegon scripts. A study by Nasihatul Ma'ali on the *Tafsir Jalālayn* demonstrates that the exegetical tradition in coastal Javanese Islamic boarding schools has existed since the 19th century (Ma'ali & Asif, 2020). This is evidenced by the use of black and red ink, the application of *ruku'* markers, and the presence of marginal scripts in both Arabic and Javanese. Similar findings appear in the cataloging of manuscripts from Riau and West Sumatra by Taufiqurrahman and Hidayat, who successfully digitized 512 manuscripts using a SQL-based thematic metadata system containing data on script types, textual content, and scholarly classification (Taufiqurrahman & Hidayat, 2022).

Advancements in digital technology—intense learning—have paved new paths for preserving and interpreting ancient manuscripts. Deep learning models based on convolutional neural networks (CNNs) in handwriting recognition and optical character recognition (OCR) can now automatically read Arabic and Jawi scripts. These tools facilitate large-scale transcription and digitization processes (Bressan & Canazza, 2014; Bustamam, 2017). The technology enables the identification of handwriting patterns, the parsing of page structures, and systematic content classification by topic. As a result, manuscript study is no longer entirely reliant on manual analysis. However, it can be conducted more efficiently and on a much broader scale.

Digital information has brought about a phenomenal shift, allowing individuals to share and reuse data while driving innovation across sectors (Terras, 2015). Furthermore, Terras highlights that digital information is especially valuable for accessing cultural content and ancestral heritage, as it allows for open access, the dissemination and promotion of open cultural data, encourages contributions from individuals or institutions, enables the development of aggregation facilities, and interconnects diverse sources of information (Terras, 2015).

The benefits of digital technology can also be harnessed for literary education. Mustika recommends a manuscript-based pedagogical approach for teaching literature and Islamic cultural values in schools and pesantren, using the *mindful–meaningful–joyful* (MMJ) learning model, which has been proven to enhance student engagement (Mustika et al., 2025). From a cultural perspective, preserving manuscripts is about safeguarding historical artifacts and revitalizing local values. Apriyani emphasizes the importance of integrating Society 5.0 technologies with preserving Malay culture to ensure that globalization does not erode local traditions (Apriyani et al., 2024). Community involvement and developing culturally grounded educational platforms are crucial to ensure digitalization does not detach manuscripts from their original social contexts.

In recent years, *deep learning* has been increasingly utilized to automate the digitization and reading of ancient manuscripts. Models based on convolutional neural networks (CNNs) and recurrent neural networks (RNNs) have been applied to recognize Arabic and Jawi handwriting in handwriting recognition and optical character recognition (OCR) systems. However, challenges persist in dealing with variations in calligraphic styles and distortions caused by physical manuscript damage (Bressan & Canazza, 2014; Bustamam, 2017). These models allow the automatic transcription of manuscript texts into searchable and analyzable digital formats.

This technology has had a significant impact on the sustainability of written traditions. First, digitization enables broader access to manuscripts previously confined to remote locations. Second, big data-based analysis allows for the spatial and thematic mapping of Islamic knowledge distribution. Third, automated classification systems using machine learning algorithms accelerate the categorization of texts by genre, origin, or scholarly context—such as exegesis, jurisprudence, historical narrative, or astronomy—which would otherwise take years using conventional methods.

For instance, in the *aliyah* (astronomical) manuscript of Kerinci by K.H.M. Burkan Saleh, the symmetrical layout and use of technical astronomical terms can be re-mapped and re-analyzed using *image segmentation* and *entity recognition* technologies adapted for Arab-Malay language (Azizah et al., 2023). Similar approaches apply to manuscripts such as *Taj al-Salatin* and *Minhaj al-'Abidin*, which feature complex textual structures and rubrication, making them ideal for semi-automated processing.

When linking *deep learning* to the codicological aspects of the 20 manuscripts sourced from DREAMSEA, this study reveals that Islamic manuscripts from Sumatra—particularly those from Ogan Komering Ilir, Padang Pariaman, and Sijunjung—possess codicological richness that is significant not only in philological terms but also in offering both challenges and immense potential for profound learning-based digital transformation *(Admin, n.d.)*. One of the most prominent codicological dimensions is the physical condition of the manuscripts. Data from the DREAMSEA catalog indicate that many manuscripts exhibit material degradation, such as fading, tearing, missing covers, and water stains. For example, manuscript DS 0147 00006 from Surau Pondok Ketek is severely damaged and difficult to read (DREAMSEA Catalog), as is DS 0043 00026 from Surau Simaung, which has suffered significant fading and loss of textual clarity. These conditions highlight the urgency of digital preservation using automated visual restoration techniques powered by *vision transformer* algorithms and CNNs (Elmustian & Firdaus, 2024; Ma'ali & Asif, 2020).

The legibility of manuscripts is also a crucial variable in codicological studies and technology-based preservation efforts. Some manuscripts, such as DS 0003 00005 and DS 0147 00010, remain highly legible. In contrast, others face severe challenges due to fading ink and blurred characters caused by aging and storage conditions. For instance, manuscript DS 0139 00004 from Sijunjung displays lateral ink dispersion, indicating the ink's instability under humidity.

Regarding script and size, most manuscripts from Sumatra use Arabic and Jawi scripts, each with distinct calligraphic structures. *Due to its rounded and repetitive characteristics, the Naskhi-style Jawi script found in DS 0003 00017 shows relatively machine-readable handwriting.* However, manuscripts like DS 0043 00014 and DS 0139 00020 feature smaller and denser scripts, making letter segmentation difficult. Letter sizes range from small to medium and often vary across pages; for example, DS 0001 00002 contains 14 lines on the first page and 18 on the third. This inconsistency necessitates the application of *adaptive OCR models* in deep learning that can learn from variable spatial distributions (Evizariza & Idayanti, 2017; Nofrizal, 2020).

The use of punctuation and diacritics also follows complex patterns. Manuscripts DS 0003 00004 and DS 0001 00009 include full diacritical marks, focusing on basic instruction—likely intended for beginners or students in *surau*. In contrast, most other manuscripts, such as DS 0043 00026 and DS 0147 00002, omit diacritics, suggesting they were designed for advanced readers or memorizers. Diacritics is critical in character mapping and automatic semantic interpretation in OCR-based pattern recognition.

Three main patterns were identified regarding ink color and text-decoration: dominant black ink, black-red combinations, and faded blue ink. Black ink is commonly used for the main body of the text, while red ink serves as emphasis or headings, as seen in DS 0147 00006 and DS 0147 00010. These color codings structure textual information and are essential for color-based segmentation in machine reading. Blue ink, such as in DS 0001 00009, is more susceptible to spreading and fading, complicating digitization and visual data recovery processes (Elmustian & Firdaus, 2024; Ma'ali & Asif, 2020). Interestingly, almost all manuscripts exhibit characteristics of manually applied ink from dip pens (*kalam*) rather than modern metal pens or industrial inks, as evidenced by variations in ink pressure and the widening of strokes at their ends.

Overall, this codicological description is critical for developing deep learning-based machine models to recognize, preserve, and annotate classical manuscript texts. By understanding the physical condition, script structure, ink color, and manuscript legibility,

researchers and digital humanities practitioners can design systems that are adaptive to the diversity of Nusantara manuscripts, thereby reinforcing the continuity of the Islamic written tradition as a vital intellectual heritage of the nation.

Conclusion

The digital codicology approach based on deep learning represents a significant breakthrough in the preservation and study of Islamic manuscripts in Sumatra. Nevertheless, this technology also presents certain limitations. Not all manuscripts exhibit consistent letter structures; many are written with faded ink, the ink that bleeds through the paper, or uneven strokes. These conditions can lead to errors in classification and automated reading processes. Therefore, a *human-in-the-loop* approach remains essential to validate AI-generated outcomes with manual philological expertise. Moreover, the success of such models heavily depends on collaboration among researchers, technologists, local communities, and educational institutions. Accordingly, the sustainability of Islamic written traditions relies on the capacity to digitize and read manuscripts and on the ability to revitalize the values they embody—through education, public engagement, and inclusive technological adaptation.

References

Admin. (n.d.). *DREAMSEA Manuscripts - Search and Find*. Dreamsea Repository. Retrieved 11 July 2025, from https://www.hmmlcloud.org/dreamsea/manuscripts.php

Alim, K. (2023). Studi Kodikologi dan Tekstologi Manuskrip Mushaf Madura. *At-Tahfidz: Jurnal Ilmu Al-Qur'an Dan Tafsir*, *5*(1), 62–84. https://doi.org/10.53649/at-tahfidz.v5i1.381

Amin, F. (2012). Potensi Naskah Kuno Di Kalimantan Barat : Studi Awal Manuskrip Koleksi H. Abdurrahman Husin Fallugah Al-Maghfurlahu di Kota Pontianak. *ThaqÃfiyyÃT*, *13*.

Apriyani, R., Agustin, W., Niswah, R., & Maryamah. (2024). Upaya Pelestarian Kebudayaan Melayu di Era Society 5.0. *Kalpataru*, *10*(2).

Azizah, F. P., Rahmawati, F., Riza, Y., & Hidayat, A. T. (2023). Analisis Kodikologi dalam Manuskrip Al-Falaqiyah Karangan K.H.M. Burkan Saleh Kerinci. *Titian: Jurnal Ilmu Humaniora*, *07*(02), 287–01. https://online-journal.unja.ac.id/index.php/titian

Bressan, F., & Canazza, S. (2014). Digital Philology in Audio Long-term Preservation: A Multidisciplinary Project on Experimental Music. *Procedia Computer Science*, *38*(C), 48–51. https://doi.org/10.1016/J.PROCS.2014.10.010

Bustamam, R. (2017). Eksplorasi dan Digitalisasi Manuskrip Keagamaan: Pengalaman di Minangkabau. *Jurnal Lektur Keagamaan*, *15*(2).

Elmustian, & Firdaus, M. (2024). Filologi, Transformasi Teks, dan Filsafat Pendidikan: Strategi Pelestarian Budaya dalam Konteks Pendidikan Kontemporer. *Indonesian Research Journal on Education*, *4*(4).

Evizariza, & Idayanti, I. (2017). Pendataan dan Digitalisasi Naskah Melayu Kuno di Kabupaten Kampar. *Jurnal Llmu Budaya*, *14*(1).

Fathurahman, O., & dkk. (2010). *Filologi dan Islam Di Indonesia*. Badan Litabng dan Diklat Kementerian Agama RI.

Gunawan, A., & Kurnia, A. (2016). Naskah-Naskah Islam dari Kebuyutan. *Jumantara*, *7*(2b), 437–468.

Hermansoemantri, E. (1986). *Identifikasi Naskah*. Fakultas Sastra Universitas Padjajaran.

Iswanto, A. (2015). Khazanah Naskah Kuna Keagamaan Islam di Propinsi Riau: Deskripsi Telaah Khusus pada Naskah Bertemakan Tauhid. *Jurnal Lektur Keagamaan*, *13*(2), 431–454.

Ma`ali, N., & Asif, M. (2020). Aspek Kodikologis dan Filologis Manuskrip Tafsir Pondok Pesantren Bustanul Ulum Sedan Rembang. *AL ITQAN: Jurnal Studi Al-Qur'an*, *6*(1), 1–24. https://doi.org/10.47454/itqan.v6i1.58

Mulyadi, S. W. R. (1994). *Kodikologi Melayu di Indonesia*. Fakultas Sastra Universitas Indonesia.

Mustika, R. I., Nurhayati, E., Isnaini, H., Mahardika, R. Y., Sahmini, M., Ratna, Y., & Dewi, S. (2025). Peningkatan kualitas pembelajaran sastra di sekolah menengah pertama melalui pendekatan deep learning (mindful-meaningful-joyful): Pengabdian pada masyarakat di MGMP Bahasa Indonesia Kabupaten Purwakarta. *Abdimas Siliwangi*, *8*(2), 540–564. https://doi.org/10.22460/as.v8i2.27289

Mustika, Syahrun, & Supriatna, A. (2020). Analisis Faktor Penyebab Kerusakan Naskah Kuno Koleksi Abdul Mulku Zahari Di Kelurahan Baadia Kecamatan Murhum Kota Baubau Provinsi Sulawesi Tenggara. *Jurnal Penelitian Arkeologi*, *4*(2), 50–65.

Nofrizal, N. (2020). Pelestarian Manuskrip Kuno Melayu Nusantara Perspektif Industries. *Al-Adyan: Jurnal Studi Lintas Agama*, *15*(2), 163–194. https://doi.org/10.24042/ajsla.v15i2.6110

Permadi, T. (2011). *Kodikologi: Sebuah Pengantar Kajian Naskah*. UPI Press.

Pramono, Apria Putra, Ridwan Bustamam, Chairullah, Ahmad Taufik Hidayat, Lisna Sandora, M. Danil Chaniago, Sudarman, & Jerry Hendrajaya. (2019). *Peran Kementerian Agama dalam Mitigasi Bencana Alam di Sumatera Barat*. www.lektur.kemenag.go.id

Puji Azizah, F., Rahmawati, F., Riza, Y., Taufik Hidayat, A., Kodikologi dalam Manuskrip Al-Falaqiyah Karangan H M Burkan Saleh Kerinci Analisis Kodikologi dalam Manuskrip Al-Falaqiyah Karangan K H M Burkan Saleh Kerinci, A. K., & Burkan Saleh Kerinci Faras Puji Azizah, H. M. (2023). *Titian: Jurnal Ilmu Humaniora The Codicology analysis of the Al-Falaqiyah Manuscript by K*. *07*(02). https://online-journal.unja.ac.id/index.php/titian

Saniro, R. K. K. (2012). *Teks Naskah Sawer Panganten: Kritik, Edisi, dan Tinjauan Fungsi*. Universitas Pendidikan Indonesia.

Saniro, R. K. K. (2023a). *Kolaborasi Penyelamatan Naskah Kuno di Surau Pondok Ketek - Scientia Indonesia*. Scientia. https://scientia.id/2023/06/25/kolaborasi-penyelamatan-naskah-kuno-di-surau-pondok-ketek-/#google_vignette

Saniro, R. K. K. (2023b). *Pesantren sebagai Skriptorium Naskah Nusantara*. Kumparan. https://kumparan.com/romakyo-kaesa/pesantren-sebagai-skriptorium-naskah-nusantara-20ne5AZ3N7J

Saniro, R. K. K., & Yusuf, M. (2023). *Penelusuran Naskah Nusantara: Kajian Kodikologis*. Madza. https://penerbitmadza.com/product/penelusuran-naskah-nusantara-kajian-kodikologis/

Seli, S., Bin Abu Hassan, M. M., & Pramono. (2017). Strategi Pelestarian dan Penyelamatan Khazanah Kesusastraan Melayu Klasik Koleksi Masyarakat di Beberapa Tempat di Sumatera. *Jumantara*, *8*(2), 103–127.

Taufiqurrahman, T., & Hidayat, A. T. (2022). Konservasi, Digitalisasi, dan Penyuluhan Naskah Kuno di Surau Manggopoh Kabupaten Agam. *Aksiologiya: Jurnal Pengabdian Kepada Masyarakat*, *6*(1), 157. https://doi.org/10.30651/aks.v6i1.5377

Terras, M. (2015). Opening access to collections: The making and using open digitised cultural content. *Online Information Review*, *39*(5), 733–752. https://doi.org/10.1108/OIR-06-2015-0193/FULL/XML