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Negotiating the New Moon: Social Media and the Dynamics of Hijri Calendar Determination among Muslims

Ahmad Fauzi

Universitas Islam Negeri Sunan Kalijaga, Indonesia
Corresponding Author, Email: ahmad.fauzi@uin-suka.ac.id

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Abstract

Social media has become a primary platform for Muslims to access religious information, including the determination of the Hijri month, which is central to worship such as Ramadan fasting, Eid al-Fitr, and Eid al-Adha. This study explores how social media shapes understandings and debates regarding the *ḥisāb* and *rukyat* methods for marking the start of the Hijri month. Using a netnographic approach, data were collected from various platforms and analyzed through content analysis to identify dominant narratives, information patterns, and forms of debate in the digital sphere. Findings reveal three modes of understanding: academic-scientific (based on astronomical data and *ḥisāb*), normative-textual (rooted in classical arguments and religious authority), and popular (driven by public opinion, humor, and satire). Debates are fragmented into scientific-argumentative, emotional-narrative, and humorous-satirical forms, shaped by authoritative, semi-authoritative, and lay actors. The study concludes that social media plays a dual role: enhancing digital literacy in Islamic astronomy while simultaneously intensifying discourse polarization, highlighting the need for inclusive religious communication strategies.

Keywords: Islamic calendar, astronomy, social media, digital literacy

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Media sosial telah menjadi platform utama bagi umat Islam untuk mengakses informasi keagamaan, termasuk penentuan awal bulan Hijriah yang penting bagi ibadah seperti puasa Ramadan, Idul Fitri, dan Idul Adha. Penelitian ini menelaah bagaimana media sosial membentuk pemahaman dan perdebatan terkait metode *ḥisāb* dan rukyat dalam menentukan awal bulan Hijriah. Dengan menggunakan pendekatan netnografi, data dikumpulkan dari berbagai platform dan dianalisis melalui analisis konten untuk mengidentifikasi narasi dominan, pola informasi, dan bentuk perdebatan yang berkembang di ruang digital. Temuan menunjukkan tiga bentuk pemahaman: akademik-ilmiah (berbasis data astronomi dan *ḥisāb*), normatif-teksual (berakar pada argumen klasik dan otoritas keagamaan), dan populer (opini publik, humor, dan satire). Perdebatan terfragmentasi ke dalam bentuk argumentatif-ilmiah, naratif-emosional, dan satir-humoris, yang digerakkan oleh aktor otoritatif, semi-otoritatif, dan publik. Penelitian ini menyimpulkan bahwa media sosial berperan ganda: meningkatkan literasi digital dalam ilmu falak sekaligus memperkuat polarisasi wacana, sehingga diperlukan strategi komunikasi keagamaan yang inklusif.

Kata Kunci: kalender Islam, astronomi, sosial media, literasi digital

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A. Introduction

Determining the start of the Hijri month, especially Ramadan, Shawwal, and Dhu al-Hijjah, is an essential issue in the lives of Muslims because it is directly related to the implementation of fasting, Eid al-Fitr, and Eid al-Adha.[1] With the development of information technology, social media has become a new space for Muslims to obtain, disseminate, and even debate information related to the methods of *ḥisāb* and *rukyat*. Whereas religious authorities were once the primary reference, people can now easily access a variety of views from scholars, organizations, and even individuals who independently upload astronomical analyses on platforms such as Facebook, Instagram, and YouTube.[2] This phenomenon has ambivalent effects. On the one hand, it increases public literacy about astronomy. However, on the other hand, it also has the potential to cause confusion, polarization, and even protracted debates in the digital public sphere. Therefore, research on the influence of social media on the understanding and discussion surrounding the determination of the start of the Hijri month is essential to examine how religious authority is transforming in the digital age and how this affects the unity of the Muslim community.

In recent years, the discourse on determining the start of the Hijri month, particularly *ḥisāb* versus *rukyat*, has become one of the most hotly debated topics on social media, especially ahead of Ramadan or Eid al-Fitr.[3] For example, every time the Itsbāt Council announces its decision, thousands of comments appear on Facebook and Instagram posts—ranging from support to sharp criticism of the official decision. Posts like "*Ḥisāb* or *Rukyat*" on Twitter (X) often receive hundreds of replies within hours, with many accounts expressing opinions without referencing scientific sources. This phenomenon reflects the imperfections of digital astronomical literacy in Muslim communities, where both valid and invalid information circulates widely and rapidly, potentially causing confusion, polarization, and intense debate in virtual public spaces. Internal data indicates that posts about *ḥisāb-rukyat* receive a higher ratio of negative comments to 'likes' (the "ratio"), signaling public tension and resistance even on religious issues that should unite.

Some researchers highlight that social media accelerates the dissemination of religious information while simultaneously enabling the spread of unverified content, creating uncertainty among the public. In Indonesia, this dynamic became evident during the *Itsbāt* session on June 29, 2022. Comments posted on Instagram in response to the government's official announcement on the beginning of the Hijri month revealed significant resistance. Several users openly rejected the decision, voicing alternative interpretations and criticisms. This phenomenon reflects more than simple disagreement; it illustrates how digital platforms cultivate a culture of participation and contestation within the Muslim community. Social media empowers individuals to challenge religious authorities publicly, amplifying diverse perspectives that may not easily emerge in traditional forums. However, this also raises concerns about polarization, as fragmented narratives

[1] Muhammad Akbar Herman, Qadir Gassing, and Muhammad Shuhufi, "Kontroversi Hisab Dan Rukyat Dalam Penentuan Kalender Islam Di Era Modern Pendekatan Fikih Kontemporer," *Media Hukum Indonesia (MHI)* 2, no. 4 (2024): 617–25, https://doi.org/https://doi.org/10.5281/zenodo.14253182.

[2] Iman Nursyamsi, "Faktor-Faktor Yang Mempengaruhi Persepsi 1 Generasi Milenial Kota Cirebon Dalam Menggunakan 2 Aplikasi Hitung Hilāl Untuk Menentukan Awal Bulan Hijriah" (UIN Siber Syekh Nurjati Cirebon, 2025), https://repository.syekhnurjati.ac.id/16316/.

[3] Mursyid Fikri and Indriana Indriana, "Persepsi Dan Harapan Netizen Mengenai Variabilitas Waktu Perayaan Idul Fitri Di Indonesia," *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan* 18, no. 4 (June 23, 2024): 2791, https://doi.org/10.35931/aq.v18i4.3450.

and unverified claims circulate widely. Thus, while social media fosters inclusivity in religious discourse, it intensifies authority and legitimacy debates.[4]

The influence of social media in this study is understood as the extent to which digital platforms such as Facebook, Instagram, YouTube, and Twitter (X) affect how Muslim communities obtain, understand, and interpret information related to determining the beginning of the Hijri month. This phenomenon includes several dimensions, such as the intensity of social media use, the type of content accessed (educational, opinion, or polemic), the level of user interaction (comments, sharing, liking), and the authority of the information source (official from astronomical institutions or non-authoritative individuals). The influence of social media not only increases the community's astronomical literacy, but can also broaden public debate that often transcends academic boundaries and mixes with social, political, and religious ideological aspects. Thus, it is crucial to study this to understand how social media functions dualistically, both as a means of education and as a trigger for division in determining the beginning of the Hijri month.

Determining the beginning of the Hijri month is a central issue in Islamic religious practice, as it is directly related to the observance of Ramadan fasting, Eid al-Fitr, and Eid al-Adha. Traditionally, two main approaches are used, namely *ḥisāb* (astronomical calculations) and *rukyat* (direct observation of the crescent) or a combination of both.[5] In Indonesia, official decisions are usually made through the Itsbāt council by the Ministry of Religious Affairs, considering *ḥisāb* data and *rukyat* results from various regions. At the same time, Islamic organizations sometimes have their own criteria. [6] These differing approaches often lead to variations in the dates of religious observances among the faithful. In the digital age, information about *ḥisāb* and *rukyat* is obtained from official institutions and widely disseminated through social media, making the debate more open and involving the public more extensively than before.

Understanding and debate among Muslims regarding the determination of the beginning of the Hijri month reflect the dynamics of the interpretation of astronomy and religious authority. On the one hand, some people understand the concepts of *ḥisāb* and *rukyat*, enabling them to accept differences in methods as diversity in *ijtihād*. However, on the other hand, there are still many Muslims whose understanding is limited, making them easily influenced by popular opinions on social media without scientific verification. This condition often leads to debates that are not only academic but also emotional and even political, especially when differences in determining the beginning of the month directly impact congregational worship practices.[7] Social media expands this discourse by providing a platform for various views, whether based on religious authority or

[4] M. Fadhil Yarda Gafallo, Adibrata Iriansyah, and Adiansyah, "Budaya Partisipasi Dan Resistensi Komunitas Keagamaan Di Media Sosial," *Jurnal Studi Komunikasi Dan Media* 26, no. 1 (December 29, 2022): 17–30, https://doi.org/10.17933/jskm.2022.4902.

[5] Rudi Hartono and Muhammad Yunus, "Analisis Penentuan Awal Bulan Hijriyah Dengan Metode Pendekatan Hisab Dan Rukyat," *Al-Mizan: Jurnal Hukum Islam Dan Ekonomi Syariah* 12, no. 1 (2025): 17–32, https://doi.org/https://doi.org/10.54621/jiam.v12i1.997.

[6] Misbah Khusurur, "Perpaduan Hisab Dan Rukyat Sebagai Metode Penentuan Awal Bulan Hijriyah," *Jurnal Al-Wasith : Jurnal Studi Hukum Islam* 5, no. 2 (December 12, 2020): 150–61, https://doi.org/10.52802/wst.v5i2.76.

[7] Nihayatur Rohmah, "Otoritas Dalam Penetapan Awal Bulan Qamariyah (Konfrontasi Antara Pemimpin Negara Dan Pemimpin Ormas Keagamaan)," *Al-Mabsut : Jurnal Studi Islam Dan Sosial* 9, no. 1 (2015): 1–15, https://doi.org/https://doi.org/10.56997/almabsut.v9i1.17.

individual interpretation, thereby reinforcing polarization while also opening up opportunities to improve astronomical literacy among the Muslim community.

Previous studies have examined technical and social aspects of determining the beginning of the Hijri month, but they are still limited in digital media. For example, Rudi Hartono and Muhammad Yunus conducted an in-depth comparative study of the *ḥisāb* and *rukyat* methods from astronomical and fiqh perspectives. They offered a hybrid approach as an integrative solution.[8] Furthermore, through literature studies and interviews, Taufiqurachman et al. explored the comparison between *ḥisāb* and *rukyat* in Indonesia based on accuracy, practice, and public acceptance.[9] Meanwhile, Zufriani highlighted the impact of differences in *ḥisāb-rukyat* criteria on the unity of Muslims, while suggesting inter-school dialogue to create harmony.[10] The difference between these studies and the proposed research lies in their focus. All three emphasize the methodological and normative aspects of *ḥisāb-rukyat*. At the same time, this study highlights how social media, as a modern communication channel, influences understanding and triggers public debate among Muslims.

This research contributes to the development of astronomical studies by linking them to the study of Islamic media and communication, thereby enriching interdisciplinary perspectives that have rarely been explored. In addition, this research helps improve digital literacy and scientific understanding in responding to religious information on social media, so that the discourse that arises does not merely end in emotional debate, but also builds collective awareness of the importance of scientific authority and Islamic brotherhood. This research stems from the phenomenon of the increasing use of social media as a space for religious discussion, including the issue of determining the beginning of the Hijri month, which often causes debate among Muslims. Based on this fact, this study aims to analyze the influence of social media in shaping the public's perspective on the authority to determine the beginning of the Hijri month, identify patterns of debate that arise on digital platforms, and assess their implications for social harmony and religious understanding among Muslims. Thus, conducting an in-depth study of how social media shapes public perception and debate on the *ḥisāb-rukyat* method is essential. This article fills the gap in sociological studies on Islamic astronomy practices in the digital realm.

B. Method

This study uses the netnography method, an ethnographic approach applied to online communities to understand interactions, behaviors, and meaning construction in digital spaces. Netnography was chosen because social media has become the main arena for discussions and debates related to determining the beginning of the Hijri month, so that empirical data can be obtained through systematic observation of conversations, comments, posts, and discussions on platforms such as Facebook, Twitter (X), Instagram,

[8] Hartono and Yunus, "Analisis Penentuan Awal Bulan Hijriyah Dengan Metode Pendekatan Hisab Dan Rukyat."

[9] Taufiqurachman Taufiqurachman et al., "Analisis Perbandingan Antara Metode Hisab Dan Rukyat Dalam Menentukan Awal Bulan Ramadhan Di Indonesia," *JIIP - Jurnal Ilmiah Ilmu Pendidikan* 7, no. 11 (November 1, 2024): 12473–81, https://doi.org/10.54371/jiip.v7i11.6203.

[10] Zufriani Zufriani, "Hisab Dan Rukyat Serta Pengaruhnya Terhadap Kesatuan Umat Islam: Analisis Dampak Dan Solusi," *Al-Qisthu: Jurnal Kajian Ilmu-Ilmu Hukum* 14, no. 2 (March 30, 2016), https://doi.org/10.32694/010160.

and YouTube. Data collection techniques included passive participatory observation, discourse recording, and content analysis relevant to the issues of *ḥisāb-rukyat* and the Muslim community's response to religious authorities. Data analysis was conducted by categorizing the emerging themes, such as understanding astronomy, patterns of argumentation in debates, and their impact on religious attitudes. With this method, the study explored the contextual socio-religious dynamics in virtual space, while capturing actual phenomena reflecting Muslim communities' social reality in the digital age.

After the data were collected through passive participatory observation, discourse recording, and content analysis, the analysis stage was carried out systematically by organizing the findings based on thematic categories. This process began with identifying the main issues in the discourse on *ḥisāb rukyat* to determine the beginning of the Hijri month, both in scientific arguments and socio-religious narratives developed in virtual spaces. Next, the data were coded to map patterns of public understanding of astronomy and how they constructed arguments in debates involving religious authorities. The analysis then focused on the relationship between digital discourse and spiritual attitudes, revealing how the *ḥisāb rukyat* discussion was technical and touched on aspects of authority, belief, and religious legitimacy. With this approach, the study provides a contextual picture of religious social dynamics in the digital age, revealing the interaction between science, authority, and spiritual practices among Muslims in dealing with the issue of the Hijri calendar.

C. Result and Discussion

1. The Hijri Calendar: Between Tradition, Astronomy, and the Challenges of Unity

The Hijri calendar is a lunar-based calendar system used by Muslims around the world to determine the timing of religious observances, such as Ramadan, Eid al-Fitr, Eid al-Adha, and the Hijri year, which begins with the Prophet Muhammad's migration from Mecca to Medina. This calendar consists of 12 months, each lasting 29 or 30 days, so that the total number of days in a Hijri year is around 354 or 355 days, which is about 11 days shorter than the solar-based Gregorian calendar.[11] This fundamental difference means that Hijri months do not remain fixed in a particular season but shift throughout the year. The determination of the beginning of Hijri months, particularly Ramadan and Shawwal, involves Islamic astronomical studies using both the *ḥisāb* (calculation) method and the *rukyat hilāl* (moon sighting) method.[12] This reflects the close relationship between astronomical phenomena, Islamic scientific traditions, and religious practices of the community.

[11] Nurul Wasilah Wahidin, "Problem of Unification Hijri Calendar," *AL - AFAQ : Jurnal Ilmu Falak Dan Astronomi* 4, no. 2 (December 11, 2022): 275–83, https://doi.org/10.20414/afaq.v4i2.5761.

[12] Muh Rasywan Syarif, Sakirman Sakirman, and Muhammad Fazlurrahman Syarif, "A Semantic Literature Review on Crescent Visibility: Trends, Models, and Implications for the Islamic Calendar," *Al-Hilal: Journal of Islamic Astronomy* 7, no. 1 (2025): 67–88, https://doi.org/10.21580/al-hilal.2025.7.1.26099; Muhamad Zainal Mawahib, *Sistem Penanggalan Aboge Dalam Perspektif Astronomi* (Penerbit Lawwana, 2023), 30; Muhamad Zainal Mawahib, "Implikasi Penggunaan Sistem Perhitungan Aboge Dalam Penetapan Awal Bulan Hijriah," *Syaksia : Jurnal Hukum Perdata Islam* 23, no. 2 (May 2, 2022): 182–210, https://doi.org/10.37035/syaksia.v23i2.7052.

In addition to serving as a marker for religious observances, the Islamic calendar also has critical historical and social dimensions. Certain months in the Hijri calendar, such as Muharram, Rajab, Sha'ban, and Zulhijjah, are considered sacred and have special spiritual significance for Muslims.[13] This calendar plays a role in regulating religious rituals and serves as a cultural identity for Muslims that distinguishes them from other calendars. In its development, debates over the methods of determining the start of the month, whether through sighting or calculation, reflect the dynamism of scholarly discourse and efforts to preserve the authority and authenticity of Islamic traditions in the face of modern challenges and advancements in astronomical science.[14]

The determination of the beginning of the Hijri month has always been an interesting and controversial issue among Muslims. This is due to differences in methods between *rukyat* and *ḥisāb*, as well as differences in the criteria for crescent visibility used by various religious authorities in the Islamic world. Some countries or Islamic organizations adhere to rukyat as the primary method, as it is considered more in line with the practices of the Prophet Muhammad. In contrast, others rely on modern *ḥisāb*, which is deemed more practical, accurate, and relevant to the advancements in scientific knowledge.[15] These differences often lead to discrepancies in determining essential days such as the beginning of Ramadan, Eid al-Fitr, and Eid al-Adha, which, on the one hand, reflect the diversity of *ijtihād* but, on the other hand, also pose challenges in efforts to unify the Hijri calendar.

A critical aspect in determining the beginning of the Hijri month is the concept of *maṭla'*, which is the area where the moon rises and forms the basis for deciding the crescent moon in a region. Differences in *maṭla'* often lead to variations in the determination of the beginning of the month between countries or areas within a single country.[16] This is closely related to the criteria for moon visibility, such as the height of the crescent moon, elongation, age of the moon, and weather conditions that determine the likelihood of seeing the first thin crescent moon after conjunction. The relationship between this astronomical phenomenon and the Islamic calendar system shows how the Hijri calendar depends on a combination of mathematical calculations (*ḥisāb*) and empirical observations (*rukyat*).[17] The integration of these two approaches confirms that the Islamic calendar is a religious tradition and a scientific product rooted in cosmic observations and the intellectual reflections of astronomical scholars from the classical to the modern period.

[13] Muhajir Muhajir, "Sejarah Kalender Hijriyah," *J-CEKI : Jurnal Cendekia Ilmiah* 3, no. 5 (2024): 4598–4609, https://doi.org/https://doi.org/10.56799/jceki.v3i5.4483.

[14] Ahmad Musonnif, "Islamic Law And Science In NU-Muhammadiyah's Lunar Calendar Determination," *Al-Hilal: Journal of Islamic Astronomy* 6, no. 2 (October 31, 2024): 199–220, https://doi.org/10.21580/al-hilal.2024.6.2.23995.

[15] Khairul Anaam, "Utilization Of Radio Telescopes In Determining The Beginning Of The Islamic Calendar," *Al-Hilal: Journal of Islamic Astronomy* 6, no. 2 (October 31, 2024): 177–98, https://doi.org/10.21580/al-hilal.2024.6.2.23416.

[16] Novi Arisafitri et al., "Territory, Hilāl, and Sovereignty: Revisiting Indonesia's Maṭla' under MABIMS' New Criteria," *Al-Hilal: Journal of Islamic Astronomy* 7, no. 1 (April 21, 2025): 19–36, https://doi.org/10.21580/al-hilal.2025.7.1.25278.

[17] Holis, Ahmad Musadad, and Tri Pujiati, "The Role of Public Law in Determining the Islamic Calendar in Indonesia," *Al-Hilal: Journal of Islamic Astronomy* 7, no. 1 (April 21, 2025): 1–18, https://doi.org/10.21580/al-hilal.2025.7.1.25485.

2. Digital Discourses on the Hijri Month: Keyword Trends and Social Media Dynamics

Discussions about determining the start of the Hijri month consistently peak on social media ahead of important months such as Ramadan, Shawwal, and Dhu al-Hijjah. During this period, netizen activity increased sharply, with various conversations covering official information from the government and Islamic organizations, clarifications from astronomical experts, and opinions from the general public colored by personal experiences and local traditions. The intensity of the discussion usually peaks a day or two before the itsbāt session is held, when the issues of *rukyat al-hilāl* and *ḥisāb* become trending topics on various platforms.[18] This phenomenon shows that social media is a public space that accommodates and accelerates the spread of religious discourse.[19] So that any differences of opinion regarding the beginning of the Hijri month quickly gain widespread attention and have the potential to influence the collective perception of the ummah.

Keyword trend analysis shows that terms such as *rukyat hilāl*, *ḥisāb*, and *itsbāt* always experience a surge in searches and conversations on social media ahead of Ramadan, Shawwal, and Dhu al-Hijjah. The keyword *rukyat al-hilāl* is widely used when the public awaits the results of the new crescent moon sighting announced by the government or Islamic organizations. At the same time, the term *ḥisāb* appears more frequently in academic discussions and communities with a Muhammadiyah following or scientific circles. Meanwhile, "*sidang itsbāt*" is the most popular keyword on news platforms and Twitter (X), as this event is considered the official moment of determining the start of the month, which has a significant impact on the lives of the Muslim community. This pattern shows that each keyword has a specific user segmentation and social meaning, forming the digital discourse ecosystem surrounding the Hijri calendar.

Meanwhile, term "*Lebaran dua kali*" (two Eid') has emerged as one of the most viral keywords often used in humor, satire, and social criticism. This trend usually increases when the results of calculations and sightings produce differences, causing some people to celebrate Eid al-Fitr on different days. On Twitter (X), and YouTube, this term is often used in memes or satirical comments, while on YouTube, it appears in the form of educational content and opinions from religious scholars and astronomers. However, netizens also highlight the desire to find agreement on celebrating Eid, as in the research by Fikri and Indriana.[20] The virality pattern of this keyword shows how serious debates surrounding the start of the Hijri month can quickly shift to the popular realm, where emotional and entertainment aspects take precedence over scientific arguments. Thus, keyword trends reflect the intensity of discussions and reveal the dynamics of how society interprets astronomical issues in the digital context.

Discussions about determining the start of the Hijri month show different characteristics on each social media platform. On Twitter (X), discussions are more dynamic and real-time, especially when approaching the *itsbāt* session. Many users share brief opinions, news quotes, and quick responses to the results of *rukyat* or *ḥisāb*, so this issue often makes it into the trending topics list. This dynamic makes Twitter (X) the main arena for capturing public responses directly, even though

[18] Fikri and Indriana, "Persepsi Dan Harapan Netizen Mengenai Variabilitas Waktu Perayaan Idul Fitri Di Indonesia."

[19] Novi Fitia Maliha, "Pengaruh Media Sosial Pada Gernaha Bulan Super Blue Blood Moon," *The Journal of Society & Media* 2, no. 1 (July 30, 2018): 1, https://doi.org/10.26740/jsm.v2n1.p1-12.

[20] Fikri and Indriana, "Persepsi Dan Harapan Netizen Mengenai Variabilitas Waktu Perayaan Idul Fitri Di Indonesia."

the nature of the conversations there is more reactive and sometimes emotional. This makes Twitter (X) serve as an early barometer for the intensity of public debate in a very short time.

Meanwhile, Facebook and YouTube show different conversation trends. Facebook facilitates more extended discussions with chain comments involving many users from various backgrounds, making conversations more complex and sometimes mixed with political narratives or personal experiences. In contrast, YouTube provides a more educational space through lecture videos, Islamic astronomy, and *ḥisāb-rukyat* simulations produced by official institutions and individuals. YouTube's visual format allows for scientific explanations that are easier to understand, although interactions in the comments section still open up opportunities for debate. The different characteristics of each platform show that social media not only disseminates information but also shapes the style of religious discourse according to its respective communication ecology

3. Actors and Authority in Digital Discourses on the Hijri Month

Actors can be classified into three categories: authoritative, semi-authoritative, and the general public. *First*, authoritative actors refer to parties with complete legitimacy and are officially recognized in a particular field.[21] Authoritative actors in discussions determining the start of the Hijri month on social media generally consist of the government, Islamic organizations, astronomers, and other experts. The government, in this case the Ministry of Religious Affairs of Indonesia, has a central position because through their *itsbāt* (confirmation) session, they officially determine the beginning of Ramadan, Shawwal, and Dhu al-Hijjah. The information conveyed by the government usually receives widespread attention on social media, both in the form of support and criticism, because these decisions have a direct impact on all Muslims in Indonesia. Meanwhile, large Islamic organizations such as Nahdlatul Ulama (NU) and Muhammadiyah also play an essential role, using different methodological approaches. NU prioritizes *rukyat* and *imkān rukyat*, while Muhammadiyah is more consistent in using *ḥisāb*. These differences in approach then become a subject of widespread public discussion in the virtual world, especially when the results of the two do not align with the government's decision.

In addition to formal institutions, the presence of astronomers also strengthens authoritative discourse on social media. Astronomers from universities or research institutions often provide technical explanations regarding the position of the crescent moon, calculation data, and observation methodologies, thereby providing an academic basis for people who want to understand this issue scientifically. Meanwhile, although professional astronomers do not always have a background in Islamic studies, they contribute science-based perspectives that enrich the discussion. Both groups are often positioned as references by the media and netizens to distinguish between information based on valid data and mere public opinion. Thus, authoritative actors function as sources of information and as guardians of scientific and religious legitimacy in the digital discourse on the beginning of the Hijri month.

Second, semi-authoritative actors are parties with partial authority, recognized within specific communities, but not absolute. They can be local figures, practitioners, or influencers with specific

[21] Alvin I. Goldman, "Experts: Which Ones Should You Trust?," *Philosophy and Phenomenological Research* 63, no. 1 (July 2001): 85, https://doi.org/10.2307/3071090.

scientific backgrounds.[22] Social media *ustādh*, da'*wah* influencers, and online study communities dominate semi-authoritative actors in discussions determining the start of the Hijri month. They usually do not have formal authority like the government or large mass organizations. However, they can influence public opinion because of their communication style, which is close to their digital audience. Social media *ustādh*, for example, often convey their views on *ḥisāb* and *rukyat* in a light, concise, and easy-to-understand format, either through short videos on TikTok or Instagram posts. Da'wah influencers also leverage their popularity to share information or comments on astronomical issues, though they sometimes prioritize rhetorical aspects over scientific depth. With a large following, this group often serves as a bridge between authoritative discourse and the popular understanding of the general public.

In addition, online study communities also play a significant role in broadening the discussion. Facebook groups, WhatsApp forums, and Telegram channels often become spaces for intense debate where members share articles, calculation data, sighting results, and even memes related to differences in determining the beginning of the month. Discussions in these communities do not always align with official authorities, but rather showcase a diversity of views that color the dynamics of digital debate. On the one hand, the presence of these semi-authoritative actors can help expand astronomical literacy among the digital generation. On the other hand, unverified information or information mixed with personal opinions can confuse and reinforce societal polarization.

Third, lay public actors refer to the general public who do not have formal scientific authority but remain consumers and producers of information.[23] Lay public actors are the largest group in discussions about determining the start of the Hijri month on social media. They are members of the general public who do not have religious authority or expertise in astronomy but are active in voicing their views, experiences, and personal opinions. The nature of the discussions that emerge from this group is very diverse, ranging from simple questions about why there are differences between *ḥisāb* and *rukyat*, emotional comments related to the *itsbāt* decision, to stories of local traditions in welcoming Ramadan and Eid al-Fitr. Their presence makes the digital discourse more lively because everyone feels they have a space to participate in topics that directly impact their daily lives.

However, public participation often presents its own challenges. A lack of scientific understanding causes some opinions to be mixed with misinformation, conspiracy theories, or political satire. As mentioned in Maulana Fikri's research, some netizens see this variation as an opportunity for cultural exchange, diversity of celebrations, and multicultural acceptance. In contrast, others express disappointment regarding the absence of a unified date for Eid al-Fitr.[24] Social media then amplifies this effect through algorithms promoting viral content, so public opinion is sometimes more widespread than authoritative explanations. Nevertheless, the general public cannot be ignored, as they primarily receive information from the government, mass organizations, and semi-authoritative figures. Thus, how they interpret the issue of the beginning of the Hijri month

[22] Peter Berger and Thomas Luckmann, "The Social Construction of Reality," in *Social Theory Re-Wired* (Routledge, 2016).

[23] Brian Wynne, "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science," *Public Understanding of Science* 1, no. 3 (July 1, 1992): 281–304, https://doi.org/10.1088/0963-6625/1/3/004.

[24] Fikri and Indriana, "Persepsi Dan Harapan Netizen Mengenai Variabilitas Waktu Perayaan Idul Fitri Di Indonesia."

on social media is an essential indicator of the extent to which astronomical literacy can be accepted and understood by the wider community.

According to Hartono and Yusuf, one alternative in resolving differences in determining the beginning of the month is a hybrid approach, namely combining the advantages of technology with spiritual traditions, which can bridge the epistemological gap that has been the source of debate in fiqh discourse.[25] However, there is a striking difference between how authorities such as the government, Islamic organizations, and astronomers convey information and the language style used by the general public on social media. Authorities generally use formal, technical, and academic or institutional language, for example, through terms such as "*imkān rukyat*," "elongation," or "criteria for the appearance of the crescent moon," which emphasize methodological aspects and scientific legitimacy. In contrast, the general public tends to express the same issues in simple, emotional, and even humorous language, for example, with expressions such as "*Lebaran bareng*" (Eid together) or "*Lebaran dua kali*" (Eid twice), which are easier to understand and quickly go viral. This pattern reveals a communication gap: authorities strive to maintain the authenticity of data and institutional authority, while the general public prioritizes personal experiences and popular expressions. As a result, even though authorities have scientific and religious legitimacy, their messages often lose out in terms of speed of dissemination compared to the short and light narratives shared by the general public.

4. Typologies of Understanding and Actor Interactions in Social Media Discourses on the Beginning of the Hijri Month

There are three forms of understanding reflected in social media regarding the determination of the beginning of the Hijri month. *First* is the scientific-academic understanding that originates from authoritative actors. *Second* is the textual-normative understanding that develops mainly from semi-authoritative actors. *Third* is the popular understanding that emerges from ordinary public actors, namely, the general public.

First, scientific understanding in discussions about determining the start of the Hijri month on social media is characterized by references to astronomical data, calculation methods, and systematic astronomical studies.[26] The content that appears usually comes from astronomers, academics, or official institutions that present information about the position of the crescent moon, elongation, moon height, and criteria for imkan rukyat. These explanations are often published in graphs, tables, or simulations of the moon's movement, providing an objective picture of the possibility of seeing the crescent moon. Although the language used tends to be technical and complex for some laypeople to understand, this academic, scientific approach is essential for strengthening digital astronomy literacy. This data-based content also counters popular narratives that are sometimes emotional, ensuring the public continues to have access to scientifically accountable knowledge.

[25] Hartono and Yunus, "Analisis Penentuan Awal Bulan Hijriyah Dengan Metode Pendekatan Hisab Dan Rukyat."

[26] Hegar Yudha Saxena, "Evolusi Metodologi Ilmu Falak Di Indonesia (Analisis Terhadap Pengaruh Teknologi Dan Hukum Islam)" (UIN Siber Syekh Nurjati Cirebon, 2024), https://repository.syekhnurjati.ac.id/16247/.

Second, the normative textual understanding in discussions about determining the beginning of the Hijri month on social media is generally rooted in hadith and Sharia traditions regarding the sighting of the crescent moon. Users with this mindset emphasize the importance of following religious texts literally, for example, the words of the Prophet ﷺ, "Fast when you see the crescent moon and break your fast when you see it." They tend to view rukyat as the only valid method for determining the month's beginning, so the *ḥisāb* approach is considered merely a tool or even irrelevant.[27] The emerging narratives usually use simple religious language, emphasizing obedience and caution in worship. Although not always accompanied by astronomical arguments, this textual-normative style has a strong appeal because it uses religious arguments that are easily understood and internalized by the general public, allowing it to spread quickly on social media.

Third, popular understanding reflected on social media is usually a mixture of personal opinions, local traditions, and religious and political issues surrounding the determination of the beginning of the Hijri month. This can take the form of stories about families celebrating Eid on different days, criticism of the government or mass organizations, or even satirical memes about the phenomenon of "two Eids." Such content is often not based on scientific or strict textual arguments, but rather on everyday narratives familiar to the community. Because of its light, emotional, and easily shareable nature, popular understanding has a higher potential for virality than academic or normative content.[28] This phenomenon shows that social media is not only a space for the dissemination of astronomy but also an arena for the production of social and cultural meaning, where the determination of the beginning of the Hijri month is interpreted not only as a matter of worship but also as part of identity, social expression, and even an arena for political criticism.

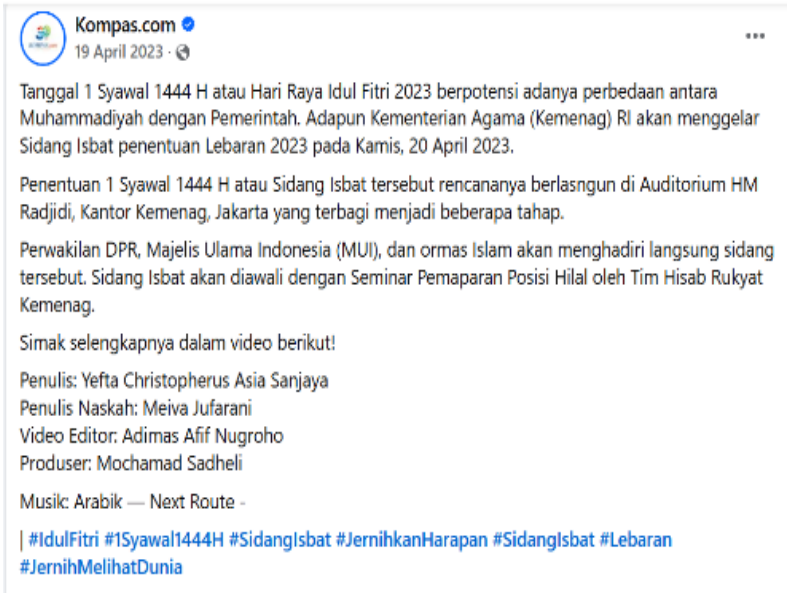

Figure 1. Discussion on Hijri month in social media Facebook

[27] Arino Bemi Sado, "Imkan Al-Rukyat Mabims (Solusi Penyeragaman Kelender Hijriyah)," *Istinbath: Jurnal Hukum Islam* 13, no. 1 (2014): 22–36.

[28] Fikri and Indriana, "Persepsi Dan Harapan Netizen Mengenai Variabilitas Waktu Perayaan Idul Fitri Di Indonesia."

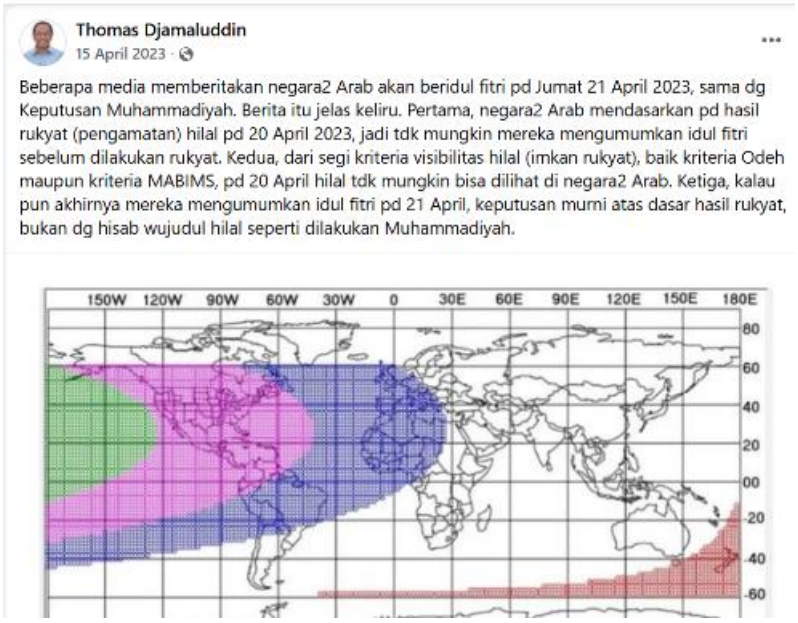

Figure 2. Discussion on Hijri month in social media Facebook

Figure 3. Discussion on Hijri month in social media X

Table 1. Forms of Understanding Reflected in Social Media Based on Actors

Actor	Forms of Understanding	Content Style on social media	Examples of Posts/Conversations
Authoritative (government, Islamic organizations, astronomers)	Academic scientific	Data infographics, official sighting reports, scientific publications, crescent simulations, and *itsbāt* session news	*"Calculation results show a crescent height of 3.2° with an elongation of 6.1°. The Ministry of Religious Affairs' observation team will report the results of their observations after sunset."*
Semi-authoritative (social media clerics, religious influencers, study groups)	Textual normative	Hadith quotations, short lectures, *da'wah* videos, excerpts from classical texts, narratives of *rukyat* arguments	*The Prophet Muhammad said, "Fast when you see the crescent moon..." Let us not precede the Sharia with mere calculations.*
The general public (the general public, netizens)	Popular	Personal opinions, local experiences, humorous memes, political satire, and emotional comments	*"Eid twice again? 😅 So confused about which one to follow, the government or the mass organizations?"*

Interactions between actors on social media often do not proceed linearly, but rather form an increasingly complex spiral of debate. Despite being based on scientific data and having formal legitimacy, authoritative information from the government or astronomical experts is often questioned or reinterpreted by semi-authoritative actors such as social media clerics or religious influencers. They use a more normative-textual communicative style closer to the people's language, so that authoritative messages that were originally scientific can be transformed into more emotional narratives of Sharia law. This shift opens up space for the general public to respond with popular expressions, ranging from personal opinions to humorous satire, which can widen the understanding gap. According to Fikri's research, this is influenced by factors such as religious beliefs, personal experiences, and regional customs, which affect the knowledge of the role of netizens in shaping discussions related to the timing of Eid al-Fitr celebrations in Indonesia.[29]

This dynamic shows that each actor does not stand alone but influences the others in shaping digital public opinion. Authoritative actors serve as sources of legitimacy, semi-authoritative actors function as normative interpreters, while the general public amplifies discourse through the virality of memes or spontaneous comments. This pattern of interaction results in escalating debates: issues that were originally technical-astronomical can expand into fiqh debates, and even shift to the realm of politics and group identity. Thus, social media is not only an arena for distributing astronomical information, but also a field of contestation of religious and social authority among contemporary Muslims.

[29] Fikri and Indriana.

5. Categories and Dynamics of Digital Debates on the Beginning of the Hijri Month

Digital debates often arise on social media about determining the beginning of the Hijri month. They can be categorized into three types: *First*, argumentative scientific debates arise mainly from authoritative actors. *Second*, semi-authoritative actors mostly trigger emotional narrative debates. *Third*, debates in the form of humor and satire that almost entirely originate from ordinary public actors, although sometimes semi-authoritative actors also respond to reinforce their message of preaching in a lighthearted manner.

First, scientific debates on social media usually occur between groups that support the *ḥisāb* method and those who emphasize *rukyat* as the determinant of the beginning of the Hijri month. The pro-*ḥisāb* group often presents arguments based on modern astronomical data, such as calculations of the moon's position and elongation, and criteria for *imkān rukyat* that can be predicted precisely. They emphasize that science provides certainty, so differences can be minimized if *ḥisāb* is used as the basis. Conversely, the pro-*rukyat* group asserts the importance of following the textual guidance of the hadith regarding the obligation to see the crescent moon directly, so *ḥisāb* only serves as a supporting factor.[30] Discussions on social media often feature quotations from religious arguments and observational data, reflecting efforts to defend the methodological legitimacy of each side.

Although academic, argumentative scientific debates on social media often develop into open debates that are difficult to resolve. This is due to differences in basic paradigms, with one side emphasizing scientific rationality, while the other prioritizes the authority of religious texts. Nevertheless, this type of debate has a positive value because it shows increased astronomical literacy among the digital community. Many netizens who were previously unfamiliar with the subject are now exposed to technical terms such as *wujūd al-hilāl*, *imkān rukyat*, or *ijtima'* (conjunction), thereby gaining a better understanding of the complexity of determining the beginning of the month. In other words, although scientific-argumentative debates give rise to polarization, they also serve as an essential means of public education in the digital age.

Second, emotional debates on social media often arise when government or community organization decisions regarding the start of the Hijri month differ from the expectations of some public members. Narratives such as "the community is divided," "why can't we be united," or "the government has made the wrong decision" become dominant expressions that show both disappointment and collective anxiety. Not infrequently, the criticism is driven more by emotion than scientific argument, so the language used is rhetorical, full of appeals, and sometimes even provocative. This phenomenon shows that the issue of determining the beginning of the month is not only understood as an astronomical or fiqh issue, but also touches on aspects of identity, unity, and public trust in religious and state authorities.

In addition, emotional narratives are often reinforced by personal experiences shared by netizens, such as stories about a family or village celebrating Eid al-Fitr on different days. Such expressions easily gain public sympathy and attention because they touch on the social and psychological aspects of the community. Emotional posts can quickly go viral, sparking lengthy discussions and triggering negative sentiments toward authorities perceived as failing to maintain

[30] Muhammad Awaludin and Fachrir Rahman, *Ḥisāb Rukyat Indonesia: Diversitas Metode Penentuan Awal Bulan Kamariah* (NTB: CV Alfa Press, 2022).

unity. Although often lacking a scientific basis, these emotional-narrative debates play a significant role in shaping public perception on a mass scale due to their strong appeal in influencing collective opinion in the digital space.

Third, debates in humor and satire are distinctive social media phenomena when discussing the determination of the beginning of the Hijri month. Popular expressions such as "two Eids" are often used in memes, short videos, and satirical comments that mock the differences between the results of calculations and sightings. This humorous content is more easily accepted and shared by the general public because it presents serious issues lightheartedly and entertainingly. On the one hand, humor reflects the community's creativity in responding to differences, while also serving as a strategy to ease the tension of emotionally charged debates.

However, humor and satire also have an ambivalent side. Although entertaining, satirical content can potentially reinforce negative stereotypes, such as portraying specific mass organizations as "stubborn" or cornering the government as the party that is "always wrong." Viral memes and satirical comments often shape public opinion without going through a clarification process, thus emphasizing entertainment over scientific substance. Hence, humor and satire in digital debates are not only a reflection of netizens' creativity, but also part of the dynamics of religious communication that show how society negotiates falak issues in the digital public sphere.

The mechanism for escalating digital debates about determining the start of the Hijri month usually begins with an educational post or official information shared by the government, Islamic organizations, or astronomers. These posts then receive responses in the form of comments, either in the form of questions for clarification or criticism. From these comments, the discussion develops into a lengthy debate between users with different backgrounds and understandings. Some emphasize textual arguments, some use scientific arguments, and others express their emotions or personal experiences. This interaction process brings the issue of the beginning of the month to the forefront and reaches a broader audience.

When a debate successfully attracts the attention of many users, social media algorithms push the content to become more viral. Initially informative content can turn into a major polemic involving thousands of comments, reposts, and even memes. At this point, the substance of the discussion often shifts: from scientific education to emotional narratives or satire that is easier for the public to understand. This pattern of escalation demonstrates how social media can transform a small conversation into a national issue, while also showing that the spread of misinformation in the digital space is not only determined by the quality of the content, but also by the dynamics of social interaction and the platform's viral logic.

Figure 4. Categories of Digital Debate

Figure 5. Categories of Digital Debate

Figure 6. Categories of Digital Debate

Tabel 2. Categories of Digital Debate

Debate Categories	Main Actors	Dominant Platform	Discourse Characteristics
Scientific-Argumentative	Astronomers, the government (Ministry of Religious Affairs), and some *ustādh* with academic qualifications	Twitter (X), YouTube (astronomy lectures and webinars)	Focus on *ḥisāb* vs. *rukyat* data, astronomical methodology, and fiqh arguments; academic and analytical.
Emotional-Narrative	Social media clerics, religious influencers, and religious laypeople	Facebook, Instagram, and WhatsApp groups	Narratives of religious division, government criticism, and personal experiences, filled with emotional expression and subjective opinions.
Humor & Satire	General public, creative netizens (sometimes responded to semi-authoritatively)	Twitter (X), Facebook (memes), Instagram	Memes, satire, parodies of court rulings, satire about "two Eids"; lighthearted, entertaining, easily viral.

The digital debate regarding the determination of the beginning of the Hijri month on social media shows a diversity of expressions influenced by the leading actors, the platforms used, and their respective communication styles. In scientific argumentation, discussions are driven mainly by astronomers, the government, and the Ministry of Religious Affairs. Conversations on Twitter (X) and YouTube tend to focus on the presentation of *ḥisāb* and *rukyat* data, astronomical analysis, and the legitimacy of fiqh arguments. The discourse is relatively systematic, data-driven, and educational, although it does not always reach a broad audience due to its high technicality. This is in line with Jayadi et al.'s research that these differences in methods reflect the conflict between

revelation and reason and involve aspects of religious authority, sharia legitimacy, and political and cultural challenges.[31]

In contrast, social media clerics, religious influencers, and religious communities lead the dominant emotional narrative debate on Facebook, Instagram, and WhatsApp groups. Their communication style emphasizes religious identity, narratives of unity or division among the faithful, and emotional personal experiences. Meanwhile, humor and satire emerge as popular expressions from the general public through memes, parodies, and satire on Twitter and Facebook. This pattern makes the issue of falak not only a serious discourse but also an easily viral mass entertainment, while also broadening the scope of discussion to wider segments of society.

6. Social Media's Dual Role in Hijri Month Determination

The influence of social media on the authority and unity of the Muslim community in determining the start of the Hijri month is very significant. On the one hand, social media provides wider access to astronomical information so that the public can directly obtain calculation data, sighting reports, and the results of the *itsbāt* (confirmation) meeting. This role increases awareness and digital astronomical literacy among the Muslim community, especially the younger generation active in the virtual world. However, this openness also presents new challenges. Traditional authorities such as the government, the Majelis Ulama Indonesia (MUI), and large mass organizations are often questioned and even considered less relevant than the opinions of social media ustādh or *da'wah* influencers who are more communicative and quick to respond.[32] This phenomenon shows a shift in authority from formal institutions to popular digital figures, who sometimes do not have strong scientific or religious authority.

Another impact that has emerged is the disruption of unity among the people due to polarization reinforced by content virality. Differences in calculation and observation methods, which were previously considered normal in the realm of fiqh, are often perceived on social media as symbols of division among the people. Emotional comments, satirical memes, and harsh criticism of the government or mass organizations widen the gap, especially among ordinary users who tend to be influenced by popular narratives, as in the research by Jayadi et al.[33] Thus, social media has a dual role as a means of Islamic astronomy literacy and as an arena that can potentially exacerbate conflict. The main challenge for religious and state authorities is how to manage this digital space so that it strengthens unity among the people, not the opposite.

Social media plays a vital role in raising awareness of astronomy among Muslims, especially the younger generation who are more familiar with the digital space. Information about *hilāl* sightings, calculation data, and astronomical explanations can now be easily accessed and are often presented visually and interactively. This enriches the community's knowledge and makes astronomy more popular than in previous eras, when it was limited to academics and practitioners. However, behind this increase in literacy, social media also widens the gap of differences, because differences in calculation and sighting methods are often presented in open debates full of emotion.

[31] Haeruman Jayadi, Zulfian Wanandi, and Kurniawan, "Dialektika Otoritas Keagamaan Dan Ilmu Pengetahuan Dalam Penetapan Awal Bulan Kamariah," *Aksioreligia* 3, no. 1 (July 2, 2025): 30–39, https://doi.org/10.59996/aksioreligia.v3i1.769.

[32] Jayadi, Wanandi, and Kurniawan.

[33] Jayadi, Wanandi, and Kurniawan.

Instead of strengthening unity, digital debates usually exacerbate polarization, because public opinion is more easily formed from emotional and viral narratives than rational scientific arguments.

Traditional authorities such as the government, the Ministry of Religious Affairs, the Majelis Ulama Indonesia (MUI), and major Islamic organizations, which have long been the primary references in determining the start of the Hijri month, now face new challenges from the digital generation. This generation tends to be critical, open-minded, and more inclined to trust information that spreads quickly on social media rather than waiting for the formal decision of the *itsbāt* meeting. In fact, the opinion of a popular YouTube cleric or a brief explanation from a religious influencer on Instagram often convinces them more than the official *fatwā* of the *ulamā'*. This phenomenon indicates a shift in religious authority from formal institutions to digital figures, where credibility is measured more by communication style, consistency, and emotional connection with the audience than by scientific competence or religious authority. This forces authoritative institutions to adapt their communication strategies to remain relevant amid the increasingly fast-paced and dynamic digital landscape.

The unity of Muslims in determining the beginning of the Hijri month faces new challenges due to the virality of content on social media. Previously, differences in determination between mass organizations and the government were considered normal as part of fiqh knowledge. However, now social media often exaggerates these differences with emotional narratives that spread quickly. Memes, satire, and provocative content about "two Eids" easily go viral and shape public opinion that the Muslim community is divided. However, in Islamic scholarly tradition, differences in calculation and observation methods are commonplace, as noted in the research by Hartono and Yusuf.[34] However, the logic of virality transforms these scientific differences into polemics perceived as identity conflicts, as noted in Fikri and Indiyana's research.[35] This situation highlights how social media, while serving as a space for literacy, also has the potential to become an arena that reinforces community polarization if not managed wisely.

7. Digital Islamic Astronomy Literacy and the Shifting of Religious Authority in the Social Media Era

In the long term, social media has great potential as a space for digital astronomy literacy that can bridge Islamic astronomy with the broader community's needs. Through platforms such as YouTube, Instagram, and TikTok, astronomers and official institutions can present educational content that is simple, visual, and easy to understand, so that the public is not only exposed to polemical information. Using infographics, animations of the crescent moon's movement, and modern calculation simulations can make astronomy more inclusive and engaging, while reducing the gap in understanding between academics and the general public.[36] If managed consistently, social media can serve as a strategic tool for fostering healthy religious literacy, guiding

[34] Hartono and Yunus, "Analisis Penentuan Awal Bulan Hijriyah Dengan Metode Pendekatan Hisab Dan Rukyat."

[35] Fikri and Indriana, "Persepsi Dan Harapan Netizen Mengenai Variabilitas Waktu Perayaan Idul Fitri Di Indonesia."

[36] Fajri Zulia Ramdhani, "Kontribusi Pemuda Dalam Digitalisasi Ilmu Falak Pada Aplikasi Islamicastro Dan Faza Haul" (UIN Sunan Ampel, 2020), http://digilib.uinsa.ac.id/41780/.

methodological differences toward scientific dialogue, and cultivating a tolerant attitude toward diverse perspectives regarding the determination of the start of the Hijri month.

The need for an Islamic astronomy-based public communication strategy in the virtual world is critical, given the rapid flow of information that is not always accurate. Without a strong official narrative, the public tends to be more easily influenced by popular opinions that often lack a scientific basis. Therefore, the government, Islamic organizations, and astronomical experts must develop a systematic communication pattern by presenting informative, interactive content that aligns with digital logic. For example, explanations of the results of *rukyat* and *ḥisāb* can be given in the form of short videos, infographics, or podcasts that are easy to share, so that the public receives the final decision and understands the scientific and religious reasoning behind it.

In addition, public communication strategies must also consider the psychology of digital audiences who prefer simple, concise language relevant to their daily lives. The presence of authoritative figures in cyberspace must be packaged with a humanistic approach to embrace all levels of society, including the critical younger generation. Thus, social media is not only a space for repetitive debates but also a forum for Islamic astronomy literacy that strengthens scientific authority while maintaining the unity of the ummah. This strategy will position astronomy not merely as a seasonal discourse ahead of Ramadan or Eid al-Fitr, but as religious knowledge that continues to live in the digital consciousness of Muslims.

Recommendations that can be made include the development of an official astronomy education platform that is easily accessible to the public, whether in the form of a website, mobile application, or social media channel managed by authoritative institutions such as the Ministry of Religious Affairs, the Majelis Ulama Indonesia (MUI), or associations of astronomy experts. This platform should not only contain the decisions of the *Itsbāt* Council, but also provide educational content in the form of a digital Hijri calendar, calculation simulations, rukyat guides, and interactive Q&A sections that address public concerns. With a modern, user-friendly interface and scientific data-based content, such a platform can serve as a credible primary reference, reducing misinformation and strengthening astronomy literacy in the digital age.

This research finding shows a significant epistemic shift from traditional religious authority to popular digital authority. Formal religious authorities such as the Ministry of Religious Affairs, the Majelis Ulama Indonesia (MUI), and large mass organizations (NU and Muhammadiyah) are no longer the only primary references in determining the beginning of the Hijri month. The presence of social media clerics, religious influencers, and even viral public accounts shows that credibility in the digital age is often determined not by scientific competence or institutional legitimacy, but by language accessibility, emotional closeness, and speed of information distribution.

As a result, traditional religious authorities face serious challenges in maintaining their legitimacy. Formal institutions will become increasingly marginalized in shaping public perception if they cannot adapt to digital communication patterns. However, this also opens up opportunities for traditional authorities to reposition themselves by integrating communication strategies based on astronomical data visualization, humanistic narratives, and digital interactivity to remain relevant and trusted.

On the other hand, the future of digital Islamic astronomy literacy appears ambivalent. On the one hand, social media can expand public access to astronomical knowledge previously limited to

academic circles. Viral applications for calculating astronomical events, crescent moon simulations, and astronomical infographics can make astronomy more inclusive and popular. However, on the other hand, this literacy is threatened with being reduced to "instant knowledge" if popular opinion and viral humor dominate over scientific education. The most considerable risk is the formation of pseudo-literacy, a partial understanding that appears scientific but is superficial and unverified.

The strengths and weaknesses of this study include the fact that the netnography approach provides an excellent opportunity to capture the dynamics of digital discourse authentically. However, this method is also prone to certain biases. One of the main biases is the dominance of majority opinion in the digital space. Social media algorithms generally promote content that receives the most interaction (likes, shares, comments), so that the majority voice, or at least the most viral voice, is more visible than minority views. As a result, the public perception recorded in netnographic research can be distorted, as if the representation of Muslims is homogeneous, when in fact there is a broader spectrum of views. Conversely, there is also the possibility of vocal minority bias, when small groups with provocative or humorous rhetoric dominate the conversation because their content is more likely to go viral. This phenomenon means that the digital discourse map does not always reflect the actual proportions in offline society, but tends to prioritize the most sensational.

In addition, netnography is often tied to specific platforms, so the ecology of each medium influences the framing of discourse. For example, Twitter (X) emphasizes short, reactive responses, while YouTube provides space for longer educational content. If we rely too much on one platform, our analysis may be biased toward a particular communication style. The implication is that the findings of this study need to be read critically: that the "digital public voice" is not always synonymous with the "voice of the people" as a whole. In other words, discourse representation on social media is better understood as an arena for the production of popular opinion rather than a pure reflection of the religious consensus of the Muslim community. Therefore, future digital Islamic astronomy literacy strategies must also consider how algorithms mediate authority, so that emotional or viral narratives do not drown out authentic scientific voices.

D. Conclusion

Social media has become a new space that significantly influences the understanding and debate surrounding the determination of the beginning of the Hijri month among Muslims. The intensity of discussions that increase ahead of Ramadan, Shawwal, and Dhu al-Hijjah shows how important this issue is in the religious life of Muslims. Analysis of keyword trends such as *rukyat al-hilāl*, *ḥisāb*, *sidang itsbāt*, and the phenomenon of "two Eids" shows that social media is not only a space for information, but also an arena for the reproduction of public discourse that is rich in scientific, emotional, and even humorous dimensions. The differing dynamics across platforms—Twitter (X) being fast and reactive, Facebook more in-depth, and YouTube educational—highlight the diversity of digital communication patterns among Muslims in accessing and discussing astronomical issues.

The presence of authoritative actors such as the government, Islamic organizations, and astronomers in the digital space has proven vital. However, they often encounter a more straightforward, emotional, and popular communication style among the general public. These

responses have given rise to various forms of understanding: scientific and academic understanding based on astronomical data, normative textual understanding based on hadith, and popular understanding mixed with opinions and socio-political issues. The dynamics of the debate are also layered, ranging from scientific arguments and emotional narratives to humorous satire that triggers virality. On the positive side, social media has increased awareness of astronomy among the public; however, on the other hand, it has also widened the gap between differences and weakened traditional authority. Therefore, effective public communication strategies and the development of official digital astronomy literacy platforms are needed so that social media is not only a space for debate but also a means of education and unity for Muslims.

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