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Ulama and Islamic Astronomy in Contemporary Indonesia: T.M. Ali Muda's Concept on *Matla' al-Hilal*

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Abstract: The existence of the concept of *maṭlā'* in determining the beginning of the Hijri month has become an increasingly discussed topic, particularly in the context of proposals for global Hijri calendar criteria currently gaining attention at the national level. This study aims to explain the existence and legitimacy of *maṭlā'* in the Hijri calendar according to T.M. Ali Muda. To achieve this objective, this study employs a descriptive-qualitative analysis method, using T.M. Ali Muda's works on *maṭlā'* as the primary source. According to T.M. Ali Muda, the concept of the *maṭlā'* of the crescent moon (*hilāl*) in determining the beginning of the Hijri month is divided into *ittiḥād maṭlā'* and *ikhtilāf maṭlā'*. The authoritative concept in determining the beginning of the Hijri month is *ikhtilāf maṭlā'*, as this concept aligns with the scientific understanding of the Earth's sphericity, whereas *ittiḥad maṭlā'* is based on the outdated concept of a flat Earth. From a scientific perspective, the flat Earth concept has been refuted, rendering juristic opinions supporting *ittiḥad maṭlā'* non-authoritative. The researcher argues that T.M. Ali Muda's perspective on the *ikhtilāf maṭlā'* concept significantly contributes to the development of Islamic astronomy (*'ilm falak*) in Indonesia by emphasizing the relevance of a scientific approach to determining the beginning of the Hijri month, consistent with advancements in modern astronomy.

Keywords: *maṭlā' al-hilāl*, Hijri calendar, T.M. Ali Muda, Islamic astronomy

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Introduction

T.M. Ali Muda is one of the lesser-discussed figures in the field of *'ilm falak* (Islamic astronomy) in the Nusantara, despite being one of its foundational contributors in Indonesia.[1] His contributions are evident in the historical development of *'ilm falak* in the country. Notably, in 1972, T.M. Ali Muda and Sa'adoeddin Djambek were assigned by President Soeharto to directly measure the coordinates of the Ka'bah as the primary reference for calculating the qibla direction for Indonesia.[2] The Ka'bah coordinates they brought back remain recorded in several *ilmu falak* books in Indonesia as 21 degrees 25 arcminutes North Latitude and 39 degrees 50 arcminutes East Longitude.[3]

Throughout his life, T.M. Ali Muda frequently delivered scientific lectures on *'ilm falak* related to acts of worship. Among his notable works studied in this research are his papers presented at the Al-Muzakarah III of the Indonesian Ulama Council in North Sumatra, titled "Pengaruh Beda Matla' terhadap Penanggalan Syar'iy dan Hubungannya dengan Idul al-Adha 1417 H.", written in Medan on November 9, 2000. These two works serve as the primary foundation for this study on the existence and legitimacy of the *maṭlā' al-hilāl* concept in determining the beginning of the Hijri month.[4]

The existence and legitimacy of the *maṭlā'* concept are crucial to examine, especially from the perspective of a *falak* scholar of T.M. Ali Muda's stature. This is particularly relevant given the emergence of the Hijri calendar concept based on *ittiḥad maṭlā'* (global *maṭlā'*), supported by juristic opinions that permit its adoption from a *fiqh* perspective. The dichotomy between *ittiḥad maṭlā'* and *ikhtilāf maṭlā'* is a longstanding issue that remains pertinent, often seen as addressing the needs of the

[1] Arwin Juli Rakhmadi Butarbutar, "Historiografi Ilmu Falak di Nusantara: Sejarah, Motivasi, dan Perkembangan," *Journal of Contemporary Islamic Management Studies* 1, no. 2 (2020): 123–145, https://jurnal.uinsu.ac.id/index.php/jcims/article/view/2928

[2] Hendro Setyanto and Fahmi Fatwa Rosyadi Satria Hamdani, "KRITERIA 29: Cara Pandang Baru dalam Penyusunan Kalender Hijriyah," *Al-Ahkam* 25, no. 2 (2015): 205–20, https://doi.org/10.21580/ahkam.2015.25.2.602

[3] Susiknan Azhari, "Ensiklopedi Hisab Rukyat," 2005, 277, https://books.google.com/books/about/Ensiklopedi_hisab_rukyat.html?id=qT9mAAAAMAAJ.

[4] Arsyita Baiti Musfiroh and Muhammad Himmatur Riza, "Analysis of the Early Determination of the Kamariah Month Perspectives of Fiqh and Astronomy," *Astroislamica: Journal of Islamic Astronomy* 1, no. 2 (2022), https://doi.org/10.47766/astroislamica.v1i2.969.

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Muslim community in matters of calendar development. The Hijri calendar is an essential tool, especially in a Muslim-majority country like Indonesia, where Islamic holidays and national public holidays heavily rely on the adopted calendar system.[5]

In Indonesia, the Hijri calendar system currently represents these two *maṭlā'* concepts. The Indonesian government, through the Ministry of Religious Affairs, adopts the concept of *wilāyat al-ḥukmi maṭlā'*. This approach declares the start of a new month for the entire country if the crescent moon (*hilāl*) is visible or meets the *imkān ru'yat* criteria at any observation point within Indonesia.[6] The same method is also applied by Islamic organizations such as Persatuan Islam (PERSIS) and Nahdlatul Ulama (NU). Meanwhile, Muhammadiyah, since 1 Muharram 1446 H, has adopted the global *maṭlā'* concept, declaring the start of a new month globally if the *hilāl* is visible from any point on Earth.[7]

Several prior studies have explored these issues, such as Susiknan Azhari's article, "Cabaran Kalendar Islam Global di Era Revolusi Industri 4.0."[8] This study concluded the necessity of implementing a global Hijri calendar and reevaluating the understanding of hadiths on *ru'yat* and *maṭlā'*. Another study by Moh. Hafid, titled "Pengaruh *Ikhtilāf al-Mathāli'* Terhadap Penentuan Awal Bulan dalam Perspektif Mazahib al-Arba'ah," highlighted differing opinions among the four Sunni schools but did not explore the reasons for these differences.[9] Similarly, Sherly Olyfiya Frifana's study, "Hadis Matla' Hilal (Tempat Terbitnya Hilal dan Tempat Terjadinya Hilal)"

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[5] Ibnor Azli Ibrahim, Mohd Hafiz Safiai, and Ezad Azraai Jamsari, "Functions of Astrofiqh Observatories in Malaysia in Solving Astrofiqh Issues," *Mediterranean Journal of Social Sciences* 6, no. 1S1 (January 1, 2015): 112–19, https://doi.org/10.5901/mjss.2015.v6n1s1p112.

[6] T. B Ramadhan, Thomas Djamaluddin, and Judhistira Aria Utama, "Re-Evaluation of Hilaal Visibility Criteria in Indonesia By Using Indonesia and International Observational Data," in *Proceeding of International Conference On Research, Implementation And Education Of Mathematics And Sciences 2014* (Yogyakarta: Yogyakarta State University, 2014), 87–92.

[7] Muhamad Syazwan Faid et al., "Assessment and Review of Modern Lunar Crescent Visibility Criterion," *Icarus*, January 21, 2024, 115970, https://doi.org/10.1016/J.ICARUS.2024.115970.

[8] Susiknan Azhari, "Cabaran Kalendar Islam Global Di Era Revolusi Industri 4.0," *Jurnal Fiqh* 18, no. 1 (2021), https://doi.org/10.22452/fiqh.vol18no1.4.

[9] Rahwan and Moh. Hafid, "Pengaruh Iktilaf Al-Mathali' Terhadap Penentuan Awal Bulan Dalam Perspektif Mazhab Al-Arba'ah," *Al-Hukmi/ : Jurnal Hukum Ekonomi Syariah Dan Keluarga Islam* 2, no. 2 (2021), https://doi.org/10.35316/alhukmi.v2i2.1781.

concluded that the *maṭlā'* concept significantly influences the determination of the Hijri month's beginning.[10]

From these prior studies, it is evident that further research is needed on the *maṭlā' al-hilāl* concept in determining the beginning of the Hijri month. This research remains highly relevant in reaching a conclusion to strengthen the *maṭlā' al-hilāl* concept, which has long been categorized into two types: *ittihad maṭlā'* (global *maṭlā'*) and *ikhtilāf maṭlā'* (local *maṭlā'*). The focus is to determine which concept is most authoritative (*mu'tabar*) in today's context.

This study draws upon the theory of authority and the role of figures in the development of *'ilm falak*, focusing on T.M. Ali Muda's thoughts, which have influenced the system of determining the Hijri month's beginning in Indonesia. A central argument of this study is the importance of the existence and legitimacy of the *maṭlā' al-hilāl* concept, which underpins debates in *'ilm falak*, particularly regarding the differences between *ittiḥad maṭlā'* and *ikhtilāf maṭlā'*. This research explores T.M. Ali Muda's perspective, which significantly contributes to addressing the needs of the Hijri calendar in Indonesia. T.M. Ali Muda argues that the *ikhtilāf maṭlā'* concept is more relevant to the advancement of astronomy, aligning with scientific understandings of the Earth's sphericity, compared to the outdated *ittiḥad maṭlā'* concept. This perspective highlights T.M. Ali Muda's role as a figure combining charismatic, traditional, and rational-legal authority, as explained in Max Weber's theory of authority.

Methods

This study employs a descriptive qualitative research approach using a library research model. The primary data sources consist of T.M. Ali Muda's works on the *maṭlā' al-hilāl*, while secondary data sources include journal articles, books, and websites relevant to the subject of this study. Through this research approach and methodology, the study aims to draw conclusions regarding the existence and legitimacy of the *maṭlā'* concept in determining the beginning of the Hijri month from T.M. Ali Muda's perspective.

[10] Olyfiya Frifana Sherly, "Hadis Matla ' Hilal (Tempat Terbitnya Hilal Dan Tempat Terjadinya Hilal)," *Al-Afaq: Jurnal Ilmu Falak Dan Astronomi* 2, no. 1 (2020): 15–30.

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Results and Discussion
Profile of T.M. Ali Muda

The full name of T.M. Ali Muda is Muhammad Ali bin Teungku Muda bin Teungku Geuchik bin Teungku Diaceh bin Teungku Haji Penghulu. Commonly referred to as T.M. Ali Muda, he was born in Gampong Peureupok Simpang Mulieng, Syamtalira Aron, North Aceh, on Thursday, December 31, 1942 (23 Zulhijjah 1361 H). His mother was named Jariyah, and his father was Teungku Muda. His early education was provided by his parents. Formally, he studied at Dayah Cot Trueng, North Aceh, under the leadership of Teungku Abubakar Ali (Abu Cot Kuta) at the time.[11]

Subsequently, T.M. Ali Muda pursued further education at Dayah Darussalam Labuhan Haji, South Aceh, learning from several scholars. He then continued his studies at Dayah Kruet Lintang, East Aceh, led by Teungku Haji Muhammad Yusuf Kruet Lintang, where he eventually became a senior teacher. It was the head of this dayah who encouraged T.M. Ali Muda to delve deeper into the study of astronomy (*falak*).[12]

In addition to direct learning, T.M. Ali Muda expanded his knowledge through rigorous study and reading of various astronomical literature in Indonesian, Arabic, and English. Among his significant contributions to the field of astronomy are his formulas based on Duffett, LPNO, Jean Meeus, and Brown theories.[13]

T.M. Ali Muda passed away on 23 Sha'ban 1426 H (September 27, 2005), on a Monday night at 01:20 WIB at Haji Adam Malik Hospital, Medan. He was buried in the public cemetery in Sungai Mati Village, Medan Labuhan. He left behind a wife (Nur Asiah) and two daughters (Zubaidah and Husniah).[14]

T.M. Ali Muda's works span a wide range of disciplines, including Islamic jurisprudence (*fiqh*), the principles of Islamic law (usul *fiqh*), Sufism,

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[11] Arwin Juli Rakhmadi et al., "TM. Ali Muda (w. 2005 M) Karya Dan Kontribusinya Dalam Bidang Ilmu Falak," *Astroislamica: Journal of Islamic Astronomy* 2, no. 2 (December 23, 2023): 190–205, https://doi.org/10.47766/ASTROISLAMICA.V2I2.1930.

[12] Teungku Mustafa Muhammad Isa dan Murdani Bin Abdul Wahab, "Abu Muhammad Isa/ : Ulama Falak Aceh Pertengahan Abad 20 - Google Books," Cv. Jejak, 2020, https://www.google.co.id/books.

[13] Arwin Juli Rakhmadi Butar-Butar, "Khazanah Ilmu Falak Aceh (Sejarah, Tokoh, Naskah)," UMSU Press, 2022, https://books.google.co.id/books?

[14] Teungku Mustafa Muhammad Isa dan Murdani Bin Abdul Wahab, "Abu Muhammad Isa/ : Ulama Falak Aceh Pertengahan Abad 20 - Google Books."

theology, and astronomy. In the field of astronomy, his notable contributions include:

1. Kedudukan Ilmu Falak dalam Menetapkan Beberapa *Furu'* Syariat (1981). A thesis written during his studies at IAIN North Sumatra (now UINSU Medan) that discusses prayer times, the qibla direction, and the start of Islamic months. This book provides a concise, yet argumentative analysis of astronomical issues related to worship and Islamic law.
2. Pengaruh Beda Matla' terhadap Penanggalan Syar'iy dan Hubungannya dengan Idul Al-Adha 1417 H. A paper presented at the third Majelis Ulama Indonesia (MUI) North Sumatra conference in 1997.[15]
3. Beda Matla' Hilal dan Pengaruhnya terhadap Penanggalan Syar'iy". A paper written in Medan on November 9, 2000.[16]
4. Jadwal Miqat 1 & 2 (1990). It contains annual solar and sidereal motion schedules up to 2000, monthly movements, daily, hourly, and minute adjustments. It also includes tables for solar motion corrections and declination.
5. Cara Praktis Mengetahui Arah Qiblat (1994).
6. Diktat Himpunan Rumus dan Jalan Perhitungannya. A textbook on astronomy.
7. Penetapan Awal Bulan Qamariyah dan Kaitannya dengan Pengamalan Ibadah. It's published in *MIQOT*: *Majalah Ilmu Pengetahuan & Pembangunan*.
8. Rumus-Rumus Ilmu Falak untuk Menetapkan Arah Qiblat dan Waktu Shalat. Lecture notes for an astronomy course taught at the Faculty of Sharia, IAIN North Sumatra, in 1994.[17]

T.M. Ali Muda's contributions to astronomy are indisputable. His analyses and records on astronomical calculations and Islamic jurisprudence demonstrate his expertise and profound understanding of the field. His classification of astronomical calculations into different accuracy levels includes:

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[15] T.M Ali Muda, *Jadwal Miqat II Standard Thn 2000* (Medan: Fakultas Syariah IAIN Sumatera Utara, 1992).

[16] T.M Ali Muda, *Rumus Falak Sistem J. Meeus* (Medan: Fakultas Syariah IAIN Sumatera Utara, 1992).

[17] Muhammad Faishol Amin, "The Method of Determining Lunar Month of Four Madhhab," *Hayula: Indonesian Journal of Multidisciplinary Islamic Studies* 2, no. 1 (2018): 17–32, https://doi.org/10.21009/hayula.002.1.02.

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1. Accuracy Level One: Based on Brown's theory.
2. Accuracy Level Two: Based on Jean Meeus and Newcomb's theories.
3. Accuracy Level Three: Based on Duffett and LPNO.
4. Accuracy Level Four: Based on *Khulasah al-Wafiyyah.*
5. Accuracy Level Five: Based on *Sullam an-Nayyirain.*[18]

This classification was established through extensive study and testing, proving his mastery of various astronomical calculation methods. His astronomical formulas were later compiled by one of his students, Teungku Mustafa Isa, into a collection titled *Accurate Two Calculations for Jean Meeus Theory* and *Accurate Three Calculations for Duffett and LPNO Theories.*[19]

Throughout his academic journey, T.M. Ali Muda studied in Malaysia, India, and Mecca. One of his prominent astronomy teachers was Sheikh Sayyid Khair, who significantly influenced his expertise in the field.

Considering Max Weber's theory of authority, T.M. Ali Muda can be seen as a figure possessing charismatic authority, where knowledge and personal integrity serve as the foundation of his influence. Weber's concept of charismatic authority refers to leadership derived from personal charm and extraordinary qualities recognized by followers. With his deep expertise in astronomy and dedication to education, T.M. Ali Muda built his authority through significant intellectual contributions.

Additionally, T.M. Ali Muda demonstrated traits of traditional authority, which Weber describes as power rooted in custom and historical values. Through his role in traditional Islamic educational institutions (*dayah*), he reinforced his status as an authority in his community. His close ties with scholars and his transmission of Islamic scientific traditions further established his role as both a charismatic and traditional authority in the teaching of astronomy.

The Astronomical Thought of T.M. Ali Muda

The thoughts of T.M. Ali Muda in the field of astronomy seem to be focused primarily on studies related to Islamic jurisprudence (*fiqh*).

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[18] Teungku Mustafa Muhammad Isa dan Murdani Bin Abdul Wahab, "Abu Muhammad Isa/ : Ulama Falak Aceh Pertengahan Abad 20 - Google Books."

[19] Watni Marpaung, *Pengantar Ilmu Falak* (Prenada Media, 2015).

However, it is important to note that his studies and their combination of astronomy and *fiqh* are not superficial; rather, they are detailed and profound. In the determination of the beginning of the Islamic (Hijri) month, T.M. Ali Muda appears to be one of those who followed the *ru'yat* (sighting) school of thought, while also leaving space for the practice of *hisāb* (astronomical calculation).[20] This can be seen in a paper he wrote in Medan, where he acknowledges *hisāb* as one of the legitimate methods for determining the Islamic calendar dates:

> The term "syar'iy date determination" refers to the Islamic legal determination of dates, whether for the purpose of religious observance or other matters. The basis for setting the date in Islamic law is the *ru'yat* (sighting), and if the *ru'yat* is unsuccessful, then *istikmal* (completion) is used, with many scholars permitting the use of *hisāb* (astronomical calculation).[21]

His expertise in constructing astronomical-mathematical formulas stands as a testament to his skill in the field of astronomy. One example of this is his simplification of the astronomical formulas by Jean Meeus, which he made accessible for students taking astronomy courses at UIN Sumatera Utara Medan, as well as students at other universities in Medan.[22]

According to T.M. Ali Muda, the determination of the Islamic calendar date can be established based on one of the following *hisāb* systems:

1. *Ijtimā'* Reference. This means that if the *ijtimā'* (conjunction) occurs before sunset, then from the moment the sun sets on that day, the new month is considered to have begun.
2. Haqiqi Horizon Reference. This means that if, at sunset, the height of the *hilāl* (crescent moon) is above the *ḥaqīqi* horizon (true horizon), the night is considered the start of the new month.

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[20] Arwin Juli Rakhmadi Butar-Butar et al., "The Feasibility Study of Barus City as the New Astrotourism Destination from Astronomical and Meteorological Aspect," *Journal of Physics: Conference Series* 2214, no. 1 (February 1, 2022): 012026, https://doi.org/10.1088/1742-6596/2214/1/012026.

[21] T.M Ali Muda, *Rumus Falak Sistem J. Meeus*.

[22] Chunli Su et al., "Origin of the Crescent Moon Spring in the Gobi Desert of Northwestern China, Based on Understanding Groundwater Recharge," *Journal of Hydrology* 580 (2020), https://doi.org/10.1016/j.jhydrol.2019.124344.

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3. *Ḥissi* Horizon Reference. This means that if, at sunset, the height of the *hilāl* is above the *ḥissi* horizon (apparent horizon), the night is considered the beginning of the new month.
4. *Imkān ru'yat* Reference. This means that if, at sunset, the conditions for *imkān ru'yat* (the possibility of sighting) are met, the night is regarded as the beginning of the new month.

Recognition of the methods for determining the Islamic calendar date based on the *ijtima'*, *ḥaqīqī* horizon, *ḥissi* horizon, and *imkān ru'yat* gives insight into T.M. Ali Muda's deep appreciation for the use of *hisāb* in determining the beginning of the Hijri month.[23] Viewed from the perspective of the Hijri calendar, the *hisāb* method is very appropriate for determining the start of the month, as it is the only method that can be used to create the calendar.[24]

The Concept of *Matla' al-Hilal* According to T.M. Ali Muda

Every *fiqh* book that discusses fasting during Ramadan almost certainly addresses the concept of *maṭlā' al-hilāl*. This is because it is crucial in determining the beginning of the Islamic (Hijri) month, especially the start of Ramadan, Shawwal, and Zulhijjah. *Maṭlā' al-hilāl* is a concept within the *ru'yat* (moon sighting) school, where the new Hijri month is considered to have started once the *hilāl* (crescent moon) is visible in a specific *maṭlā' al-hilāl*. In *fiqh*, the concept of *maṭlā' al-hilāl* is divided into three categories: global *maṭlā' al-hilāl*, local *maṭlā' al-hilāl*, and *wilāyat al-ḥukmi* (juridical territorial) *maṭlā' al-hilāl*.[25] The differences in applying the concept of *maṭlā' al-hilāl* are one of the reasons for the differences in determining the beginning of the Hijri month, especially the start of Ramadan,

[23] I Ismail and Abdul Ghofur, "Implementasi Maqashid Syariah Dalam Sidang Itsbat Hilal Penentuan Awal Ramadhan," *International Journal Ihya' 'Ulum Al-Din* 21, no. 1 (May 2, 2019): 80–94, https://doi.org/10.21580/IHYA.21.1.4163.

[24] Abdul Mufid and Thomas Djamaluddin, "The Implementation of New Minister of Religion of Brunei, Indonesia, Malaysia, and Singapore Criteria towards the Hijri Calendar Unification," *HTS Teologiese Studies / Theological Studies* 79, no. 1 (June 30, 2023): 8, https://doi.org/10.4102/HTS.V79I1.8774.

[25] Sayid Al-Bakri, *I'anatu Al-Thalibin* (Beirut: Daru Al-Fikri, n.d.).

Shawwal, and Zulhijjah. Therefore, understanding the concept of *maṭlā' al-hilāl* is a responsibility for Muslims.[26]

According to Sayyid Abu Bakar 'Uṡmān bin Muḥammad Shaṭā' in the book *I'ānah aṭ-Ṭalibīn*, there are two rulings concerning the study of the concept of *maṭlā' al-hilāl*: it is a *farḍ kifāyah* (communal obligation) when conducted in a community, and *farḍ 'ain* (individual obligation) when done in isolation. This can be understood from the following text: (*Fara'*) *mâ ḥukm ta'allum ikhtilâf al-maṭâli' yataajjih an yakûn kata allum adillat al-qiblah ḥattá yakûn farḍ 'ayn fî al-safar wa-far kifâyah fî al-haḍar* (What is the ruling on studying the differences in *maṭlā'*? The strong opinion is that the ruling is like studying the signs for determining the qibla, making it *farḍ 'ain* for travelers and *farḍ kifāyah* for those residing).[27]

Maṭlā' comes from the Arabic word *al-mathla'* or *al-mathāli'*, meaning the place of rise or emergence. *Maṭlā'* refers to the place where the Sun, Moon, or dawn rises. The *maṭlā'* in this context is the geographical boundary where the *ru'yat* (moon sighting) is applicable. The terminology of *maṭlā'* arises due to the astronomical process of the Moon's cycle around the Earth.[28] The varying times of sunset (*ikhtilāf al-maghārib*) at different places are caused by differences in sunrise times (*ikhtilāf al-mathāli'*) as well as the dawn.

Generally, *maṭlā'* can be divided into two types: *ikhtilāf maṭlā'* (local *maṭlā'*) and *ittihâd maṭlā'* (global *maṭlā'*). The concept of *ikhtilāf maṭlā'* refers to the sighting of the *hilāl* (whether by *hisāb* or *ru'yat*) that is only valid in a specific area. This is also called local *maṭlā'*. On the other hand, *ittihâd maṭlā'* refers to the sighting of the *hilāl* in a specific area that applies universally across all regions on Earth. This is known as global *maṭlā'*. Astronomically, the difference in *maṭlā'* arises from variations in the latitude and longitude of a region.[29]

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[26] Susiknan Azhari, "Ilmu Falak: Perjumpaan Khazanah Islam Dan Sains Modern," Suara Muhammadiyah, 2007, https://www.suaramuhammadiyah.or.id/products/detail/ilmu-falak-perjumpaan-khazanah-islam-dan-sains-modern-569.

[27] Youla Afifah Azkarrula and Sartika, "An Analytical Evaluation of Fiqh and Science Perspective Concerning Hajj: Tarwiyah Dan Arafat," *Al Qalam* 39, no. 1 (2022): 40–54, https://doi.org/10.32678/alqalam.v39i1.

[28] James Evans and Alexander Jones, "The History and Practice of Ancient Astronomy," *American Journal of Physics*, 2000, https://doi.org/10.1119/1.19412.

[29] Marpaung, *Pengantar Ilmu Falak*.

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According to T.M. Ali Muda, the concept of *maṭlā' al-hilāl* can be divided into two categories: one that measures distance and the other that measures travel time.[30] More specifically, in the *fiqh* tradition, only two of these concepts are found for discussing *maṭlā' al-hilāl*:

1. Travel Distance Concept. There is no uniformity in the concept of travel distance for *maṭlā' al-hilāl*. The first group believes that a travel distance of 16 *farsakh*, equivalent to approximately 88,704 kilometers, is considered a difference in *maṭlā' al-hilāl*. This group includes scholars such as Imam al-Fauranī, Imam al-Haramain, Imām al-Ghazālī, Imām al-Baghāwī, Imām al-Rāfi'ī, and Imām Nawawī. The second group believes that a travel distance of 24 *farsakh*, or approximately 132,056 kilometers, is required to consider a difference in *maṭlā' al-hilāl*. This group includes scholars such as Sheikh 'Abd Allāh al-Syarkawī, Muhammad al-Ramli, al-Khatib al-Syarbaini, and al-Tibrizi.[31]
2. Distance Concept. The concept of distance for *maṭlā' al-hilāl* also lacks uniformity among the fuqaha (Islamic jurists). The first group argues that a difference in *maṭlā' al-hilāl* occurs with a longitudinal difference of 1 degree, disregarding the difference in latitude. This group includes scholars such as Ibn Ḥajar al-Haitamī, al-Syarwānī, al-Qaliyūbī, Sulaimān al-Bujairamī, Sayyid al-Bakrī, and al-Kurdī. The second group argues that the *maṭlā' al-hilāl* difference occurs with a longitudinal difference of 8 degrees, also disregarding latitude differences. This group includes scholars such as Abū Makhramah, Sayyid 'Abdurrahmān Bā 'Alawī, Muḥammad Arshad al-Banjārī, Zubir 'Umar al-Jīlānī, and Sayyid Muḥammad al-Shāli.[32]

The differences in the concepts for calculating the radius of *maṭlā' al-hilāl* indicate that the issue of *maṭlā' al-hilāl* radius falls into the category of *ijtihadi* (derived through scholarly interpretation) or *khilafiyah* (matters of difference) among the *fiqh* scholars.[33]

According to T.M. Ali Muda, the concept of *maṭlā' al-hilāl* cannot be overlooked in determining the beginning of the Hijri month, as the boundaries of *maṭlā' al-hilāl* can be easily and clearly understood through the approach of astronomy (*'ilm falak*). The difference in *maṭlā' al-hilāl*

[30] T.M Ali Muda, *Rumus Falak Sistem J. Meeus*.

[31] T.M Ali Muda.

[32] T.M Ali Muda.

[33] Imam al-Rafi'i, *Fath Al-Aziz Syarah Wajiz* (Beirut: Dar al-Fikr, n.d.).

is as evident as the difference in the *maṭlā'* of the Sun, which is used for determining prayer times. In *fiqh* (Hanafī, Malikī, Shāfi'ī, and Hanbalī schools), there are two opinions regarding the difference in *maṭlā' al-hilāl* when determining the Hijri month.[34]

The first opinion holds that the difference in *maṭlā' al-hilāl* is *mu'tabarah* (acknowledged) when determining the beginning of the Hijri month, meaning that if the *hilāl* is sighted in one region, its ruling is only applicable to areas within the same *maṭlā' al-hilāl*. The second opinion posits that the difference in *maṭlā' al-hilāl* is *not mu'tabarah* (not acknowledged) in determining the Hijri month, meaning that if the *hilāl* is seen in one region, it applies to regions far beyond the boundaries of the *maṭlā' al-hilāl*.[35]

In the classical text, it is mentioned,

> In this issue, there are two opinions. The first, if the *hilāl* is sighted in one town and not in another, and if the two towns are close together (within one *maṭlā' al-hilāl*), then the ruling for both towns is the same. If the towns are far apart (not within the same *maṭlā'*), then according to the stronger opinion, fasting is not obligatory for the distant town based on the hadith of Kuraib. This opinion was also held by Abū Hanifah, as followed by Sheikh Abū Ḥamīd al-Ghazālī.[36]
>
> The second opinion asserts that fasting is mandatory even for distant areas. This is the view of al-Qāḍī Abū al-Taib and is narrated from Aḥmad because the Earth is flat. Therefore, if the *hilāl* is sighted in some regions, we understand that the reason it is not visible in others is due to an external factor, not because the *hilāl* is not present in the place of *ru'yat*.[37]

This argument has been used by T.M. Ali Muda to support his conclusion regarding the differences in *maṭlā' al-hilāl*. According to him, the *mu'tabarah* opinion for determining the beginning of the Hijri month involves considering the differences in *maṭlā' al-hilāl* (*ikhtilāf maṭlā' al-hilāl*), as this concept aligns with the development of astronomical knowledge, which recognizes

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[34] Mohammaddin Abdul Niri et al., "Astronomy Development since Antiquity to Islamic Civilization from the Perspective of Islamic Historiography," *Journal of Al-Tamaddun* 18, no. 1 (June 19, 2023): 169–77, https://doi.org/10.22452/JAT.VOL18NO1.14.

[35] T.M Ali Muda, *Jadwal Miqat II Standard Thn 2000*.

[36] Imam al-Rafi'i, *Fath Al-Aziz Syarah Wajiz*.

[37] Imam al-Rafi'i.

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the Earth as spherical. The opinion stating that there is no difference for distant regions in determining the beginning of the Hijri month assumes of a flat Earth. It presumes that if the *hilāl* is 5 degrees above the western horizon in one region, the same condition would apply to the entire Earth's surface.

Here, it is clear how knowledgeable, objective, and professional T.M. Ali Muda was in explaining the issue of *hisāb* and *ru'yat*, mastering both *fiqh* and astronomy literature. His extensive knowledge in the field of astronomy is one of the reasons why his ideas on this subject should be referred to when addressing the *hisāb-ru'yat* issue in Indonesia. His contributions are essential in answering the current problems of *hisāb* and *ru'yat* in Indonesia. In the field of Islamic calendaring, almost all perspectives have been presented, offering highly objective answers.[38]

In the perspective of Max Weber's theory of authority, T.M. Ali Muda's thoughts on astronomy reflect both rational-legal and charismatic authority. Rational-legal authority emerges from the application of scientific principles and legitimate regulations, which is reflected in his detailed construction of astronomical formulas. Through in-depth and methodical studies, such as the use of various *hisāb* systems in determining the beginning of the Hijri month, T.M. Ali Muda demonstrated a rational approach that is widely accepted, both among academics and the Muslim community in general. For instance, in the concept of *maṭlā' al-hilāl* and the differing opinions regarding the measurement of distance and location, his thoughts not only valued *fiqh* principles but also integrated them with the latest astronomical knowledge. His expertise and dedication in combining these two dimensions reinforced the rational-legal authority he held and solidified his influence in the field of astronomy.

Additionally, T.M. Ali Muda's thoughts also reflect charismatic authority, particularly in the context of personal influence gained through integrity and deep expertise in astronomy. Weber's concept of charismatic authority is often associated with individuals who possess exceptional skills and can inspire followers through their knowledge and personal influence. T.M. Ali Muda, with his objective thinking, mastery of various *fiqh* and astronomy literatures, and profound understanding of the differences in *maṭlā' al-hilāl*, proves that he was a respected figure not only because of his formal position but also due to his remarkable contributions in

[38] T.M. Ali Muda, "Pengaruh Beda Matlak Terhadap Penaggalan Syar'i Dan Hubungan Nya Dengan Idul Al Adha 1417 H" (Medan, 1997).

resolving the issues of *hisāb* and *ru'yat* in Indonesia.[39] His works, which continue to serve as references, demonstrate that T.M. Ali Muda was not only honored as a scholar but also as a figure with charismatic influence in the world of Islamic scholarship.

Conclusion

Based on the explanations presented, several conclusions can be drawn: T.M. Ali Muda is one of Indonesia's prominent figures in *'ilm falak* (Islamic astronomy) and a skilled jurist who demonstrates remarkable objectivity and professionalism in integrating Islamic jurisprudence with *'ilm falak*. The issue of the *maṭlā' al-hilāl* in determining the beginning of the Hijri month has been a topic of scholarly discourse among jurists (*fuqahā'*) throughout history. According to T.M. Ali Muda, the concept of the *maṭlā' al-hilāl* among jurists is divided into two approaches: one based on travel distance and the other on geographical distance. The travel distance approach is further divided into two measures: 16 *farsakh* and 24 *farsakh*. The geographical distance approach is also divided into two: 1 degree of longitude and 8 degrees of longitude.

In determining the beginning of the Hijri month, T.M. Ali Muda advocates for the *ikhtilāf al-maṭlā' al-hilāl* (local *maṭla'*) approach as it aligns with the scientific understanding of the Earth's sphericity, particularly in the field of astronomy. On the other hand, the *ittiḥad al-maṭlā' al-hilāl* (global *maṭlā'*) approach is inconsistent with the advancements in *'ilm falak* or astronomy, as it is based on the outdated concept of a flat Earth, which has long been rejected by modern scientific paradigms.

T.M. Ali Muda can be seen as a figure embodying Max Weber's three forms of authority: charismatic, traditional, and rational-legal. As an expert in *'ilm falak*, he established charismatic authority through his expertise and integrity, inspiring many both within Indonesia and internationally. At the same time, he held traditional authority through his role in Islamic education at *dayah* (Islamic boarding schools), preserving Islamic scientific traditions. His contributions to *'ilm falak* also reflect rational-legal authority through the systematic and widely accepted application of scientific principles, particularly in addressing the differences in *maṭlā' al-hilāl*. T.M. Ali Muda is respected not only for his formal positions but also for his significant

[39] Niri et al., "Astronomy Development since Antiquity to Islamic Civilization from the Perspective of Islamic Historiography."

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intellectual contributions to the development of *'ilm falak* and his extraordinary personal influence.

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