

ANALYSIS OF THE GOVERNMENT AND MUHAMMADIYAH'S DETERMINATION OF THE BEGINNING OF RAMADAN AND EID AL-FITR

Julia Zain¹, Arwin Juli Rakhmadi², Sumiati³

^{1,3} Universitas Islam Sumatera Utara, ² Universitas Muhammadiyah Sumatera Utara
Email. zuliazain@gmail.com, arwinjuli@umsu.ac.id, sumideksisi@gmail.com

Abstrak

Penelitian ini bertujuan menganalisis penetapan awal Ramadan dan Idul Fitri oleh pemerintah dan Muhammadiyah ditinjau dari perspektif Hukum Islam dan Ilmu Falak, serta mengkaji perkembangan metode Muhammadiyah dari Wujudul Hilal menuju Kalender Hijriah Global Tunggal (KHGT). Penelitian menggunakan pendekatan kualitatif dengan metode studi kepustakaan (library research). Data diperoleh dari Al-Qur'an, hadis, dokumen resmi pemerintah, dokumen Muhammadiyah, buku ilmu falak, literatur fikih, dan artikel ilmiah yang relevan. Analisis dilakukan secara deskriptif-analitis dan komparatif dengan menelaah dasar hukum, metode, kriteria astronomis, mekanisme penetapan, dan implikasi sosial masing-masing pendekatan. Hasil penelitian menunjukkan bahwa pemerintah menetapkan awal bulan melalui integrasi hisab dan rukyat dalam sidang isbat dengan kriteria MABIMS berupa tinggi hilal minimal 3° dan elongasi minimal 6,4°. Muhammadiyah secara historis menggunakan Wujudul Hilal, kemudian mengembangkan KHGT yang berorientasi global dengan prinsip satu hari satu tanggal dan kriteria imkanur rukyat 5° dan 8°. Perbedaan tersebut merupakan dinamika ijtihad yang dipengaruhi dalil, astronomi, dan otoritas. Penyatuan kalender membutuhkan dialog, kajian ilmiah, dan penghormatan terhadap perbedaan untuk mewujudkan kepastian waktu ibadah serta memperkuat persatuan umat.

Kata Kunci: Awal Ramadan, Idul Fitri, Hisab dan Rukyat

Abstract

This study aims to analyze the determination of the beginning of Ramadan and Eid al-Fitr by the Indonesian government and Muhammadiyah from the perspectives of Islamic Law and Islamic Astronomy, as well as to examine the development of Muhammadiyah's method from Wujudul Hilal to the Global Hijri Calendar (KHGT). This study employs a qualitative approach using library research. Data were obtained from the Qur'an, Hadith, official government documents, Muhammadiyah documents, Islamic astronomy literature, Islamic jurisprudence references, and relevant scientific articles. The data were analyzed descriptively, analytically, and comparatively by examining the legal foundations, methods, astronomical criteria, determination mechanisms, and social implications of each approach. The findings indicate that the government determines the beginning of the lunar month through the integration of hisab and rukyat within the isbat session, applying the MABIMS criteria of a minimum lunar altitude of 3° and elongation of 6.4°. Muhammadiyah historically applied Wujudul Hilal and subsequently developed KHGT, which promotes a global calendar based on the principle of one day, one date, using imkan al-rukyat criteria of 5° altitude and 8° elongation. These differences represent dynamic ijtihad influenced by religious texts, astronomy, and institutional authority. Calendar unification requires dialogue, scientific research, and mutual respect for diverse interpretations to ensure certainty in worship and strengthen Muslim unity.

Keywords: Beginning of Ramadan, Eid al-Fitr, Hisab and Rukyat

INTRODUCTION

The determination of the beginning of the Islamic lunar months, particularly Ramadan and Shawwal, occupies an important position in Muslim religious life because it directly determines the commencement of fasting and the celebration of Eid al-Fitr. Unlike the Gregorian calendar, which is based on the Earth's revolution around the Sun, the Islamic calendar is based on the lunar cycle and the movement of the Moon. Consequently, determining the beginning of a lunar month is not merely an astronomical matter but also involves Islamic jurisprudence, religious authority, social practice, and institutional decision-making. The determination of Ramadan and Shawwal therefore represents an intersection between normative religious teachings and the development of astronomical knowledge. In the Indonesian context, this intersection has generated a long-standing discourse concerning the interpretation of the lunar crescent, the relationship between *hisab* and *rukyat*, and the authority responsible for determining the beginning of religiously significant months (Azhari, 2007; Djamaluddin, 2005).

The development of Islamic astronomy has produced two major methodological approaches to determining the beginning of the lunar month: *hisab* and *rukyat*. *Hisab* employs astronomical calculations to determine the positions and movements of celestial bodies, particularly the Sun and the Moon, whereas *rukyat* emphasizes direct observation of the crescent (*bilal*) after sunset. Contemporary astronomical development has significantly improved the precision of calculations involving conjunction, lunar altitude, elongation, sunset, and other parameters associated with crescent visibility. At the same time, empirical observation remains an important component in validating the actual visibility of the crescent. Recent astronomical studies have demonstrated that crescent visibility can be examined through increasingly sophisticated mathematical and statistical models, indicating that the relationship between calculation and observation can be approached through scientific methodologies rather than being treated simply as an opposition between two mutually exclusive methods (Ahmad et al., 2020; Syarif et al., 2025). In this regard, the discourse on *hisab* and *rukyat* should be understood as a methodological dialogue involving scriptural interpretation, Islamic jurisprudence, astronomical evidence, and religious authority (Azhari, 2013).

The Indonesian experience illustrates the complexity of this relationship. The government, through the Ministry of Religious Affairs, determines the beginning of Ramadan, Shawwal, and Dhu al-Hijjah through the *Sidang Isbat* mechanism, which brings together astronomical calculations, crescent observations, religious scholars, Islamic organizations, and relevant experts. The contemporary development of the Indonesian system has also been influenced by the MABIMS crescent visibility criteria. The implementation of the revised MABIMS criteria represents an effort to establish a more measurable astronomical standard while maintaining the role of observation in the determination process. Research on the new MABIMS criteria indicates that the development of a common visibility threshold has been closely associated with efforts to harmonize the Hijri calendar among Southeast Asian Muslim communities (Maskufa et al., 2022). Similarly, research on the *imkān al-ru'yah* criteria

demonstrates that astronomical parameters have become an increasingly significant component of the institutional determination of the beginning of the Hijri month (Fuscha, 2021). Thus, the government's approach reflects an effort to integrate astronomical calculation, empirical observation, Islamic legal considerations, and institutional authority.

The governmental determination of the Islamic calendar also raises an important question concerning the relationship between religious authority and public law. The determination of Ramadan and Eid al-Fitr does not take place exclusively within the domain of individual religious interpretation but also affects collective religious life. The institutionalization of the *Sidang Isbat* mechanism demonstrates the government's attempt to provide an authoritative framework for determining dates that have broad social consequences. Holis et al. (2025) argue that the determination of the Islamic calendar in Indonesia is closely connected to public law, religious authority, and the need for institutional legitimacy. This perspective is particularly important because differences in astronomical calculations and methods of lunar observation may produce different dates, while the resulting differences affect the social organization of religious communities. Accordingly, the issue of government authority in determining the Islamic calendar cannot be separated from broader discussions concerning the relationship between Islamic jurisprudence, public policy, and the principle of collective benefit.

In contrast, Muhammadiyah has historically developed a strong methodological orientation toward astronomical calculation in determining the beginning of the Islamic lunar month. The concept of *wujudul bilal* represents an important stage in the development of Muhammadiyah's calendar methodology, emphasizing astronomical certainty concerning the occurrence of conjunction and the position of the Moon above the horizon at sunset. Azhari (2013) describes *wujudul bilal* as a conceptual position situated between the calculation of conjunction and the theory of crescent visibility, while contemporary studies continue to examine its implications for the unification of the Islamic calendar. Darsono (2026), for example, explains that Muhammadiyah's approach places considerable emphasis on astronomical calculation and the principle of *nilāyatul hukmi* in determining the beginning of the lunar month throughout Indonesia. This methodological orientation distinguishes Muhammadiyah from approaches that give greater emphasis to the actual observation of the crescent as a condition for establishing the beginning of the month.

The Muhammadiyah approach has subsequently developed beyond the framework of *wujudul bilal* through the formulation of the Global Islamic Calendar, particularly the Kalender Hijriah Global Tunggal (KHGT). The KHGT represents an effort to address the problem of differences in the beginning of Islamic lunar months through a global calendar system. Rather than treating the determination of Ramadan, Shawwal, and Dhu al-Hijjah solely within national or local boundaries, the global calendar seeks to establish a system in which a single date can be applied consistently across the Muslim world. Kurniawan (2026) identifies the development of KHGT as an effort to respond to persistent differences arising from divergent interpretations of *hisab* and *rukyat*, as well as differences concerning *ittihad al-matali'* and *ikhtilaf al-matali'*. The

transition from a locally oriented calendar methodology toward a global calendar framework therefore represents not merely a technical change in astronomical calculation but also a transformation in the conception of religious authority, geographical scope, and calendar unification.

The differences between the government and Muhammadiyah should consequently not be reduced to a simple opposition between *hisab* and *rukyat*. Previous studies indicate that the determination of the Islamic calendar involves multiple dimensions, including astronomical criteria, jurisprudential interpretation, institutional authority, and the social need for calendar uniformity. Studies of the Indonesian Hijri calendar have shown that efforts toward unification have repeatedly encountered differences in methodological principles and interpretations of the relationship between astronomical visibility and the commencement of a new lunar month (Hosen, 2017; Azhari, 2013). More recent studies have further demonstrated that the discussion has expanded from the traditional debate between *hisab* and *rukyat* toward questions of public law, global calendar systems, and the legitimacy of religious authority (Holis et al., 2025; Kurniawan, 2026). Comparative research on Indonesia, Malaysia, and Saudi Arabia also demonstrates that different countries may employ different crescent visibility criteria, illustrating the broader complexity of establishing a universally accepted Hijri calendar system (Fikri et al., 2025).

The differences in the determination of Ramadan and Eid al-Fitr are therefore significant not only from a theological and astronomical perspective but also from a social perspective. Different dates for fasting or Eid may affect religious gatherings, family activities, educational schedules, workplaces, public services, and broader patterns of social interaction. The persistence of these differences may also influence public perceptions of religious authority and create tensions when methodological differences are interpreted as competing claims of religious correctness. The historical development of Islamic calendar discussions in Indonesia demonstrates that attempts to achieve calendar unification have repeatedly involved negotiations between astronomical methods, jurisprudential interpretations, organizational traditions, and institutional authority (Hosen, 2017; Azhari, 2007). Consequently, methodological differences should be examined objectively as part of the dynamics of Islamic legal and astronomical thought rather than being framed merely as disputes between religious organizations.

The contemporary development of crescent visibility research further strengthens the need for an interdisciplinary analysis. Advances in astronomical observation, mathematical modeling, digital imaging, and data-based prediction have expanded the scientific capacity to analyze the visibility of the crescent. Syarif et al. (2025) demonstrate that contemporary research on crescent visibility increasingly incorporates astronomical models, technological developments, and data-driven approaches. Similarly, Ahmad et al. (2020) demonstrate the application of statistical modeling to establish crescent visibility criteria. These developments indicate that Islamic astronomical discourse is not static but continues to respond to advances in scientific knowledge. At the same time, astronomical precision alone cannot resolve all differences because

the determination of the beginning of the Islamic month remains connected to different interpretations of religious texts and jurisprudential principles. The challenge, therefore, lies in establishing a constructive relationship between scientific evidence and Islamic legal reasoning.

Against this background, the present study analyzes the determination of the beginning of Ramadan and Eid al-Fitr by the Indonesian government and Muhammadiyah through the perspectives of Islamic law and Islamic astronomy. The study focuses on the normative foundations, methodological principles, astronomical criteria, and institutional mechanisms employed by both authorities. Particular attention is given to the government's use of the *Sidang Isbat* mechanism and MABIMS-based crescent visibility criteria, as well as Muhammadiyah's development from *wujudul hilal* toward the Global Islamic Calendar through KHGT. The study also examines how differences in *hisab*, *rukyat*, *imkan al-ru'yah*, *wilayatul hukmi*, and global calendar principles contribute to differences in determining the beginning of Ramadan and Eid al-Fitr. By bringing Islamic jurisprudence and Islamic astronomy into a single analytical framework, this study seeks to move beyond the conventional dichotomy between *hisab* and *rukyat* and instead explain how religious texts, jurisprudential interpretation, astronomical development, institutional authority, and the aspiration for calendar unification interact in contemporary Indonesia.

The study is expected to contribute both theoretically and practically. Theoretically, it contributes to contemporary Islamic jurisprudence and Islamic astronomy by examining the determination of Ramadan and Eid al-Fitr as an interdisciplinary issue involving normative, astronomical, and institutional dimensions. Practically, it may provide a more balanced understanding of why differences between the government and Muhammadiyah occur and how such differences can be situated within the broader tradition of Islamic *ijtihad*. Rather than seeking to determine which institution is absolutely correct, the study emphasizes the importance of understanding the methodological and epistemological foundations underlying each determination. Such an approach is particularly relevant amid the growing discussion of Islamic calendar unification, including the development of KHGT, and the continuing search for a calendar system that is astronomically accurate, legally legitimate, socially acceptable, and capable of accommodating the diversity of contemporary Muslim communities.

METHOD

This study employs a qualitative approach using a library research design to examine the legal, methodological, astronomical, and institutional foundations underlying the determination of the beginning of Ramadan and Eid al-Fitr by the Indonesian government and Muhammadiyah. A qualitative approach is appropriate because the study focuses on interpreting textual sources, understanding differences in Islamic legal reasoning, and examining the relationship between *hisab*, *rukyat*, crescent visibility criteria, and religious authority. Rather than measuring numerical relationships, the study analyzes concepts, arguments, policies, and methodological principles contained in relevant documentary sources. Previous studies on Islamic calendar development demonstrate that the determination of the beginning of the lunar month involves an interaction

between Islamic jurisprudence, astronomical calculations, institutional authority, and efforts toward calendar unification (Azhari, 2013; Hosen, 2017; Holis et al., 2025).

The data consist of primary and secondary sources. Primary sources include Qur'anic verses and prophetic traditions concerning fasting and the beginning of the lunar month, official documents issued by the Indonesian Ministry of Religious Affairs, regulations concerning the *Sidang Isbat*, official Muhammadiyah documents concerning the determination of the Hijri calendar, and documents related to the implementation of the Global Islamic Calendar or KHGT. Secondary sources include peer-reviewed journal articles, books on Islamic astronomy and jurisprudence, academic theses, and previous studies addressing *hisab*, *rukyat*, *imkān al-ru'yah*, MABIMS criteria, *wujudul hilal*, and Islamic calendar unification. Particular attention is given to recent studies examining MABIMS criteria and crescent visibility, as well as the development of KHGT (Maskufa et al., 2022; Ahmad et al., 2020; Kurniawan, 2026).

Data collection was conducted through systematic identification, selection, classification, and documentation of relevant literature. Sources were selected according to their relevance, scholarly credibility, institutional authority, and accessibility of bibliographic information. The collected materials were then subjected to critical reading to identify information concerning normative foundations, astronomical parameters, institutional procedures, and methodological differences between the government and Muhammadiyah.

Data validity was established through source triangulation and cross-checking. Information from government documents, Muhammadiyah publications, astronomical studies, and Islamic legal scholarship was compared to identify consistency and differences in interpretation. Data analysis employed descriptive-analytical and comparative techniques. The analysis proceeded through data reduction, thematic organization, interpretation, and conclusion verification. The main analytical themes comprised the Islamic legal foundations of calendar determination, governmental *hisab-rukyat* and MABIMS criteria, Muhammadiyah's *wujudul hilal* and KHGT, and the implications of these methodological differences. Comparative interpretation was then used to identify similarities, differences, underlying epistemological assumptions, and implications for Islamic calendar unification. This analytical framework enables the study to examine the issue not merely as a technical disagreement over astronomical calculations but as an interaction between Islamic legal interpretation, astronomical development, institutional authority, and the broader aspiration for a unified Islamic calendar (Azhari, 2013; Musonnif, 2024; Fikri et al., 2025).

RESULTS AND DISCUSSIONS

Analysis of the Determination of the Beginning of Ramadan and Eid al-Fitr by the Government

Based on the findings of the study, the determination of the beginning of Ramadan, Shawwal, and Dhu al-Hijjah in Indonesia is an issue with religious, astronomical, social, and institutional dimensions. Differences in determining the beginning of the Islamic lunar month are not caused solely by differences in astronomical calculations but are also related to

differences in understanding the Islamic legal evidence concerning *rukyat* and *hisab*. In the Indonesian context, the issue becomes increasingly complex because several Islamic organizations employ different methods and criteria for determining the beginning of a new lunar month. This condition places the government in an important position in developing a determination mechanism that can serve as a common reference for the wider Muslim community. Historical studies of the Indonesian Hijri calendar demonstrate that attempts to establish a unified calendar have continuously encountered differences in methodological approaches and interpretations (Azhari, 2013; Hosen, 2017).

The government, through the Ministry of Religious Affairs, seeks to position itself as an institution with the authority to coordinate the determination of the beginning of the Islamic lunar month. This mechanism is implemented through a series of activities involving crescent observation, collection of observation reports, coordination with relevant institutions, and the implementation of the *Sidang Isbat*. Before the observation process, the Ministry of Religious Affairs coordinates with regional offices, relevant astronomical institutions, Religious Courts, Islamic mass organizations, and observers. When the crescent is successfully observed, the observation results are reported and the testimony is examined. Observations from various locations subsequently become material for consideration during the *Sidang Isbat*. This institutional mechanism illustrates the government's effort to combine astronomical information with religious and observational considerations in determining important dates in the Islamic calendar (Holis et al., 2025).

The implementation of the *Sidang Isbat* demonstrates that the government does not determine the beginning of the lunar month unilaterally. The process involves Islamic organizations and institutions with expertise in astronomy and *ilmu falak*. Within this process, astronomical calculations, weather forecasts, crescent observations, and inputs from participants are presented and discussed. After the available information has been considered, the results of the discussion become the basis for the government's decision. Such a mechanism reflects the institutional character of calendar determination in Indonesia, in which astronomical knowledge, Islamic legal considerations, and public authority interact with one another. Research on the relationship between Islamic law and astronomical science in Indonesia similarly indicates that the determination of the lunar calendar cannot be separated from interactions among religious organizations, scientific approaches, and institutional authority (Musonnif, 2024).

The *Sidang Isbat* mechanism therefore has a broader function than merely announcing the results of astronomical calculations. It provides a forum for dialogue between religious and scientific approaches. *Hisab* provides information concerning the astronomical position of the Moon, while *rukyat* provides empirical information regarding the possibility or actual visibility of the crescent. By bringing these approaches together, the government seeks to produce decisions that possess a scientific basis while remaining acceptable within an Islamic legal framework. Consequently, the *Sidang Isbat* can be understood as a form of institutionalized deliberation for managing differences in determining the beginning of the Islamic lunar month. This approach is consistent with the broader historical development of Islamic calendar unification efforts in

Indonesia, which have sought to bridge differences between astronomical calculation, crescent observation, and Islamic legal interpretation (Azhari, 2007; Hosen, 2017).

Regarding the criteria for crescent visibility, the study indicates that the government employs an *imkān al-ru'yab* approach. The relevant criteria involve astronomical parameters such as lunar altitude, elongation, and the age of the Moon. However, the criteria used in Indonesia have undergone developments over time. The revised MABIMS criteria have become an important reference in the contemporary development of the Indonesian system, reflecting an effort to establish measurable astronomical standards for crescent visibility. Maskufa et al. (2022) explain that the implementation of the new MABIMS criteria represents an effort to strengthen the unification of the Hijri calendar in Southeast Asia. Research on crescent visibility likewise demonstrates that altitude and elongation are important parameters in determining whether the crescent can potentially be observed (Ahmad et al., 2020).

The development of different criteria has become one of the important factors contributing to differences in determining the beginning of Ramadan and Eid al-Fitr. The government applies *imkān al-ru'yab* criteria, Muhammadiyah has historically employed the *Wujudul Hilal* criterion, while other Islamic organizations may adopt their own methodological approaches. Differences in crescent visibility criteria may involve lunar altitude, lunar age, elongation, and the relative positions of the Moon and Sun. Such differences can produce different conclusions even though the astronomical object being calculated is exactly the same. Comparative research on Indonesia, Malaysia, and Saudi Arabia demonstrates that differences in *imkān al-ru'yab* criteria can produce different outcomes in determining the beginning of the Hijri month (Fikri et al., 2025). Research on the verification of astronomical calculation systems also confirms the importance of examining astronomical parameters in relation to the determination of the Islamic calendar (Fuscha, 2021).

Therefore, differences in the beginning of Ramadan and Eid al-Fitr should not be viewed simply as a disagreement between those who use *hisab* and those who use *rukyat*. The issue is considerably more complex because variations exist within both *hisab* and *rukyat* approaches. Even groups that employ astronomical calculation may reach different conclusions when they use different criteria. Similarly, groups that emphasize *rukyat* may apply different standards in accepting observational testimony or determining the possibility of crescent visibility. This demonstrates that differences in determining the beginning of the lunar month are part of the dynamics of *ijtihad* in understanding the relationship between religious texts, astronomical reality, and the needs of Muslim society (Azhari, 2013; Musonnif, 2024).

Differences in the Interpretation of *Hisab* and *Rukyat* Evidence

One of the major challenges faced by the government in achieving a unified determination of the beginning of the Islamic lunar month is the existence of different interpretations of Qur'anic and prophetic evidence concerning *rukyat*. The issue involves different understandings of the meaning and legal position of *rukyat* in the Prophetic tradition.

Some scholars regard *rukyat* as a practice that should be conducted directly, so that when the crescent cannot be observed, the current month should be completed to thirty days through *istikmal*. This approach gives *rukyat* a strong normative and ritual dimension.

On the other hand, some perspectives allow the meaning of *rukyat* to be understood in conjunction with rational reasoning and developments in scientific knowledge. From this perspective, *rukyat* is not necessarily restricted to direct visual observation but can also be related to efforts to establish the existence and visibility of the crescent through scientifically accountable indicators. The difference between these perspectives has contributed to the emergence of different methodological tendencies in Indonesia, including approaches that emphasize direct observation and approaches that provide greater methodological space for astronomical calculation. The historical discourse surrounding the unification of the Islamic calendar confirms that differences in interpreting *hisab* and *rukyat* have played a central role in the development of the Indonesian Hijri calendar (Azhari, 2013; Hosen, 2017).

These differences demonstrate that the determination of the beginning of the lunar month is not merely a technical astronomical issue but also an epistemological question within Islamic jurisprudence. The fundamental question concerns whether the Prophetic instruction to observe the crescent should be understood as a literal religious requirement or as a means whose implementation may develop alongside advances in scientific knowledge. Different answers to this question consequently produce different determination methods. Accordingly, the government's effort to unify the beginning of the lunar month faces a more fundamental challenge than simply establishing a common numerical threshold for lunar altitude or elongation. The issue involves the interpretation of religious evidence, the epistemological status of astronomical calculation, and the relationship between scientific certainty and religious practice (Musonnif, 2024).

Government Authority in Determining the Beginning of Ramadan and Eid al-Fitr

From an institutional perspective, the government has a strategic position in managing these differences. The study indicates that the government regards the determination of the beginning of the Islamic lunar month as an issue requiring coordination and collective decision-making. The government seeks to bring together Islamic organizations, experts in *ilmu falak*, astronomical institutions, and religious authorities in the decision-making process. Such an approach is consistent with the principle of deliberation and reflects an institutional effort to manage differences arising from diverse interpretations and methodologies. Research on public law and the Islamic calendar in Indonesia demonstrates that calendar determination is closely connected with questions of public authority and institutional legitimacy (Holis et al., 2025).

Government authority in this context does not mean that the government is the only institution capable of performing astronomical calculations or observing the crescent. Islamic organizations and individual experts continue to have opportunities to conduct studies, calculations, and observations. The government, however, has a coordinating and administrative function in producing a decision that can serve as a reference for the broader population. The

distinction between an authoritative governmental determination and information or announcements (*ikbhar*) issued by religious organizations or individuals with expertise is important in understanding the institutional structure of Islamic calendar determination.

From the perspective of public welfare, this authority has a strong practical rationale. If every group were to independently determine the beginning of Ramadan and Eid al-Fitr according to its own criteria without an effective coordination mechanism, society could face uncertainty. Differences could affect collective religious activities, including Eid prayers, Ramadan activities, educational schedules, and other social practices. Therefore, the government requires a mechanism capable of reducing potential conflict while still providing space for legitimate differences in *ijtihad*. The historical development of the Indonesian Hijri calendar demonstrates that calendar unification has consistently been connected to the need to reconcile methodological diversity with the social need for greater certainty (Hosen, 2017).

Nevertheless, the study also indicates limitations to governmental authority. Not all Islamic organizations accept the government's determination as the sole basis for determining the beginning of the lunar month. Muhammadiyah, for example, has historically employed a different astronomical methodology from the criteria adopted by the government. Consequently, a governmental decision does not automatically eliminate differences within Muslim society. This situation demonstrates that authority in determining the beginning of the lunar month exists at the intersection of state authority and the freedom of religious organizations to conduct independent *ijtihad*. Contemporary discussions of the Islamic calendar increasingly address precisely this relationship between religious authority, astronomical methodology, and public law (Holis et al., 2025; Marwadi et al., 2026).

Analysis of the Determination of the Beginning of Ramadan and Eid al-Fitr According to Muhammadiyah

Historically, Muhammadiyah has employed the *hisab hakiki* method with the *Wujudul Hilal* criterion. Within this approach, the crescent is considered to have come into existence when the Sun sets before the Moon, even if the difference is extremely small. Thus, the existence of the crescent does not have to be demonstrated through direct visual observation. As long as astronomical calculation indicates that the Moon is above the horizon at sunset, the crescent is conceptually considered to exist. This methodological position distinguishes Muhammadiyah's historical approach from systems that require actual crescent visibility as a condition for establishing the beginning of the month (Azhari, 2013; Darsono, 2026).

The *Wujudul Hilal* criterion used by Muhammadiyah requires three conditions to be fulfilled cumulatively. First, conjunction or *ijtimak* must have occurred. Second, the conjunction must occur before sunset. Third, at sunset, the Moon must remain above the horizon. When all three conditions are fulfilled, the new lunar month begins. Conversely, if one of these conditions is not fulfilled, the new month has not yet begun. This method emphasizes astronomical certainty obtained through calculation rather than physical observation of the crescent. The

methodological characteristics of *Wujudul Hilal* have been discussed in the broader discourse on Islamic calendar unification in Indonesia (Azhari, 2013).

This approach demonstrates a central characteristic of Muhammadiyah's historical *hisab* methodology: certainty of time based on astronomical calculation. In this method, physical visibility of the crescent is not a primary condition. This position is connected with Muhammadiyah's interpretation of the Prophetic tradition concerning *rukyat*. Within this interpretation, the instruction to observe the crescent and to complete the month through *istikmal* is understood in relation to the circumstances of the Muslim community during the Prophetic period. Consequently, *rukyat* can be understood in relation to a particular legal rationale or *'illah* associated with the conditions of that historical context.

This approach provides the basis for the argument that developments in *ilmu falak* can be used to determine the Moon's position with greater precision. Through astronomical calculation, the position and movement of the Moon can be determined without waiting for the physical observation of the crescent. This is one of the principal reasons why Muhammadiyah's historical methodology differs from approaches that place direct *rukyat* at the center of determination. The methodological difference can ultimately produce different dates for the beginning of Ramadan or Eid al-Fitr compared with governmental decisions. Contemporary scholarship continues to identify the relationship between Islamic law and astronomical science as a central issue in understanding the differences between NU, Muhammadiyah, and other approaches to lunar calendar determination (Musonnif, 2024).

Muhammadiyah's Transition from *Wujudul Hilal* to KHGT

An important development in Muhammadiyah's calendar thought is the transition from the *Wujudul Hilal* methodology toward the Kalender Hijriah Global Tunggal (KHGT). KHGT represents an Islamic calendar concept oriented toward global application and calendar unification. The development of this concept demonstrates an evolution in Muhammadiyah's *ijtihad*, from a calendar framework primarily operating within a national context toward a system intended to address the calendar needs of Muslims across the world. Recent scholarship identifies KHGT as an important development in contemporary Indonesian discussions concerning the unification of the Islamic calendar (Kurniawan, 2026).

The difference between *Wujudul Hilal* and KHGT concerns the concept of the crescent, geographical scope, and astronomical criteria. *Wujudul Hilal* is based on the astronomical existence of the Moon under particular conditions, even when the crescent may not be physically visible. KHGT, by contrast, incorporates the concept of crescent visibility and *imkān al-ru'yah* within a global calendar framework. This represents a significant methodological development because the question is no longer limited to whether the Moon has technically risen above the horizon in a particular locality, but also concerns whether the astronomical conditions are sufficient to support a globally coherent calendar system. The broader development of crescent visibility criteria demonstrates the increasing role of measurable astronomical parameters in contemporary Islamic calendar discussions (Ahmad et al., 2020; Syarif et al., 2025).

This transition represents an important development because it demonstrates that Muhammadiyah does not maintain a single calendar methodology in a static manner. The movement from *Wujudul Hilal* toward KHGT reflects a response to the need for Islamic calendar unification at the global level. Whereas *Wujudul Hilal* historically addressed the question of when a new month begins within the Indonesian context, KHGT addresses a broader question: how Muslims in different parts of the world can use a common calendar system. This development corresponds with broader scholarly discussions concerning the need to move from local or national calendar systems toward mechanisms capable of supporting global calendar integration (Azhari, 2013; Kurniawan, 2026).

One of the principal orientations of KHGT is the principle of one day and one date throughout the world. This principle seeks to prevent a single Hijri date from corresponding to different calendar dates in different parts of the world. Through this principle, the beginning of Ramadan, Shawwal, and Dhu al-Hijjah is expected to be determined more uniformly at the global level. The global orientation of KHGT therefore represents not only an astronomical project but also a broader effort to address the social and religious implications of fragmented calendar systems.

KHGT also incorporates the principle of transferring *imkān al-ru'yah* across geographical regions. When the crescent has been observed or has fulfilled the prescribed visibility conditions in a particular region, that condition can become a basis for determining the beginning of the month in other regions within the framework of the global calendar. This principle distinguishes KHGT from a purely local approach because the astronomical occurrence of the crescent is considered within a global geographical framework. The use of visibility criteria in calendar construction is consistent with contemporary astronomical studies emphasizing the importance of lunar altitude, elongation, and other measurable parameters in assessing crescent visibility (Ahmad et al., 2020; Syarif et al., 2025).

Comparison of the Government, *Wujudul Hilal*, and KHGT

When compared, the governmental approach, *Wujudul Hilal*, and KHGT demonstrate fundamental methodological differences. The governmental approach employs *imkān al-ru'yah* as an attempt to establish a relationship between astronomical calculation and crescent observation. Historically, *Wujudul Hilal* places greater emphasis on the astronomical existence of the Moon without requiring physical visibility. KHGT, meanwhile, integrates astronomical calculation with crescent visibility parameters within a global calendar framework. These differences illustrate the evolution of Islamic calendar methodology from local astronomical determination toward broader efforts at calendar unification (Maskufa et al., 2022; Kurniawan, 2026).

These differences can be understood through three aspects. First is the epistemological aspect, namely how the existence and beginning of the new lunar month are established. The government combines *hisab* and *rukyat*, *Wujudul Hilal* emphasizes astronomical certainty through calculation, while KHGT combines astronomical calculation with crescent visibility criteria.

Second is the geographical aspect, namely the scope within which a determination applies. The government operates primarily within the national context of Indonesia, while *Wujudul Hilal* has historically been applied within the Indonesian context. KHGT, by contrast, has a global orientation and seeks to establish a single calendar system applicable to Muslims across different geographical regions. Third is the social dimension, namely the purpose of calendar construction. The government seeks national order and coordination, whereas KHGT is directed toward Islamic calendar unification at the international level. Comparative research on different crescent visibility criteria in Indonesia, Malaysia, and Saudi Arabia illustrates how geographical scope and methodological criteria influence calendar determination (Fikri et al., 2025).

The Muhammadiyah transition toward KHGT also demonstrates flexibility within Islamic legal thought. The adoption of a system incorporating *imkān al-ru'yah* does not necessarily mean that Muhammadiyah rejects *rukyat*. Rather, it demonstrates a methodological effort to integrate astronomical calculation, crescent visibility, and the broader objective of calendar unification. This development is consistent with contemporary scholarship showing that Islamic calendar determination should not be reduced to a simple opposition between *hisab* and *rukyat*, because both approaches have developed through interactions between Islamic law and astronomical science (Musonnif, 2024).

Accordingly, the transition from *Wujudul Hilal* to KHGT can be viewed as a process of developing *ijtihad* rather than merely replacing one calculation technique with another. It reflects considerations of scientific development, the need for calendar certainty, the aspiration for Muslim unity, and changes in Muslim life within an increasingly global context. The emergence of KHGT thus represents a significant stage in the continuing development of Islamic calendar thought and the search for a system that can accommodate both astronomical precision and the social need for calendar uniformity (Kurniawan, 2026).

Implications of Methodological Differences for Muslim Unity

Differences in determining the beginning of Ramadan and Eid al-Fitr have two dimensions. On the one hand, such differences are a consequence of the diversity of *ijtihad*, supported by religious and scientific arguments. Within the Islamic intellectual tradition, differences of opinion can arise as long as each position is supported by an accountable argument. Therefore, differences between the government, Muhammadiyah, and other Islamic organizations should not automatically be understood as religious conflict. The historical development of the Indonesian Hijri calendar demonstrates that methodological diversity has been a persistent feature of Islamic calendar discourse (Hosen, 2017; Azhari, 2007).

On the other hand, if such differences are not managed appropriately, they can create confusion and tension within society. Consequently, mutual respect for methodological differences is necessary. The government needs to maintain dialogue with Islamic organizations, while Islamic organizations need to communicate their decisions and underlying arguments proportionally to the public. Through such an approach, methodological differences can remain part of legitimate intellectual diversity without developing into social conflict. The role of public

institutions in coordinating calendar determination is particularly relevant in this regard because calendar differences have consequences extending beyond individual religious practice (Holis et al., 2025).

In this context, KHGT offers a new perspective. KHGT is oriented toward establishing greater certainty and unification of the Islamic calendar at the global level. This orientation responds to the reality that differences in calendar systems can result in Muslims in different countries beginning Ramadan, celebrating Eid al-Fitr, or observing Eid al-Adha on different days. KHGT is therefore presented as one possible approach to addressing this issue through a global calendar based on clearly defined astronomical parameters. Recent scholarship identifies calendar unification as an increasingly important issue in contemporary Islamic astronomy and jurisprudence (Kurniawan, 2026; Syarif et al., 2025).

Nevertheless, KHGT is not free from criticism. The transition from a long-established system toward a new system may generate resistance from different perspectives. Criticism may concern Islamic legal evidence, astronomical considerations, or practical implementation. Consequently, the implementation of KHGT requires continuous socialization, scholarly examination, dialogue, and evaluation. Academic criticism can contribute positively to the refinement of the concept when it is based on accountable evidence and rational argumentation. The continuing debate over crescent visibility criteria itself demonstrates that the development of the Islamic calendar remains an open scholarly field involving both scientific and jurisprudential considerations (Ahmad et al., 2020; Syarif et al., 2025).

Synthesis of the Findings

Based on the overall findings, differences in determining the beginning of Ramadan and Eid al-Fitr in Indonesia can be understood as the result of interaction among three principal elements: religious evidence, astronomical methodology, and institutional authority. Differences in the interpretation of religious evidence produce different understandings of the position of *rukyat* and *hisab*. Differences in astronomical methodology produce different criteria for determining when the Moon is considered to have entered a new lunar month. Meanwhile, differences in institutional authority determine which institution has the capacity to establish a decision intended to serve as a reference for the wider Muslim community.

The government seeks to address these differences through the *Sidang Isbat* mechanism by accommodating *hisab* and *rukyat* and involving Islamic organizations and relevant experts. This strategy demonstrates an institutional effort to develop decisions through deliberation, scientific evidence, and consideration of public welfare. However, governmental authority has not completely eliminated differences because Islamic organizations retain their respective methodological and scholarly authorities. This condition confirms that the unification of the Islamic calendar involves not only astronomical standardization but also questions of religious authority and legal interpretation (Holis et al., 2025; Marwadi et al., 2026).

Muhammadiyah, meanwhile, demonstrates a significant development in its calendar thought. From *Wujudul Hilal*, which emphasizes the astronomical existence of the crescent and has historically operated within a local or national context, Muhammadiyah has moved toward KHGT, which integrates *hisab* and *imkān al-ru'yah* within a global framework. This development indicates that Islamic calendar methodology is a form of *ijtihad* capable of evolving in response to changes in scientific knowledge, social circumstances, and the needs of the Muslim community. The development of KHGT therefore represents not merely a technical modification but also a transformation in the geographical and conceptual orientation of Islamic calendar construction (Kurniawan, 2026).

Thus, the findings demonstrate that differences in determining the beginning of Ramadan and Eid al-Fitr do not necessarily indicate an irreconcilable conflict between the government and Islamic organizations. Rather, they represent a dynamic process of *ijtihad* concerning the Islamic calendar. The government emphasizes certainty, coordination, and national administrative order, whereas Muhammadiyah's KHGT provides a framework oriented toward calendar unification at the global level. Despite their methodological differences, both orientations share an underlying concern with establishing greater certainty in determining the timing of religious observances and reducing the social consequences of calendar differences.

Therefore, resolving differences in determining the beginning of Ramadan and Eid al-Fitr cannot be achieved merely by standardizing decisions. It also requires sustained dialogue among the government, Islamic organizations, experts in *ilmu falak*, astronomers, and the wider Muslim community. Each method should be evaluated on the basis of the strength of its religious evidence, jurisprudential reasoning, astronomical accuracy, and social benefits. Through such an approach, differences in *ijtihad* can be preserved as an intellectual dimension of Islamic tradition while the community's need for certainty and social order can also be addressed. From this perspective, the government's *Sidang Isbat* mechanism and Muhammadiyah's development of KHGT can both be understood as expressions of an ongoing effort to develop an Islamic calendar capable of responding to the needs of Muslim society at both national and global levels.

CONCLUSIONS

This study concludes that the determination of the beginning of Ramadan and Eid al-Fitr in Indonesia is shaped by the interaction of Islamic legal interpretation, astronomical methodology, and institutional authority. The Indonesian government determines the beginning of the lunar month through the *Sidang Isbat* mechanism by integrating astronomical calculations, crescent observations, and the *imkān al-ru'yah* criteria within an institutional framework. This approach seeks to provide national certainty while accommodating differences among Islamic organizations and astronomical perspectives. Muhammadiyah, meanwhile, has historically employed the *Wujudul Hilal* method, which emphasizes the astronomical existence of the Moon based on conjunction and its position above the horizon. Its subsequent development toward the Global Islamic Calendar (KHGT) demonstrates a significant transformation from a local or national calendar orientation toward a global framework based on astronomical visibility criteria

and calendar unification. The differences between the government and Muhammadiyah therefore cannot be reduced to a simple opposition between *hisab* and *rukyat*. They reflect differences in interpreting religious evidence, establishing astronomical criteria, determining geographical scope, and understanding religious authority. Nevertheless, both approaches share the objective of providing certainty in determining religious dates and reducing the social consequences of calendar differences. The study emphasizes that sustainable calendar unification requires continuous dialogue among the government, Islamic organizations, Islamic astronomy scholars, astronomers, and Muslim communities. Methodological diversity should be understood as part of Islamic *ijtihad* while remaining oriented toward accuracy, social harmony, and the broader aspiration for an integrated Islamic calendar.

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