


Lunar Crescent Visibility Criteria in Determining the New Islamic Month in Malaysia

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Article Info	ABSTRACT
<p>Article History Received 13-11-2024 Revision 15-11-2024 Accepted 21-11-2024</p> <p>Keywords: Lunar Crescent Malaysia Criteria</p>	<p>The visibility of the lunar crescent holds fundamental importance in determining the start of new months in the Islamic calendar, a practice deeply embedded in Islamic culture and religious obligations. In Malaysia, the method of establishing the beginning of an Islamic month has evolved, reflecting a blend of historical tradition and modern scientific advancements. This article comprehensively analyses the historical, cultural, and religious factors that have shaped the criteria for lunar crescent visibility in Malaysia. Traditional methods, primarily reliant on naked-eye observations known as rukyah, have long played a central role, guided by religious teachings and communal practices. However, with growing advancements in astronomical knowledge, Malaysia has incorporated hisab (astronomical calculations) to predict and verify the visibility of the crescent Moon more accurately.</p> <p>In recent years, adopting the NEO MABIMS has marked a significant advancement. This framework combines traditional practices with scientific precision, offering standardized guidelines incorporating parameters such as the Moon's altitude, elongation, and age at sunset. This study underscores the complexities and regional challenges in determining the start of Islamic lunar months. The committee's findings indicate that the 1978 Istanbul Resolution, while foundational, was not directly applicable to Malaysia due to its unique geographical latitude and visibility conditions.</p> <p>This is an open-access article under the CC-BY-SA license.</p> 

I. Introduction

The Islamic calendar (Hijri) is a lunar calendar based on the Moon's cycles. Determining the start of a new month is a crucial element in Islamic worship. The beginning of months, such as Ramadan and Shawwal, determines the timing of fasting, Eid al-Fitr, and other religious obligations. In many other Muslim-majority countries, the methods for determining the new Islamic month have evolved, incorporating traditional and modern scientific techniques.

Traditionally, Islamic months were determined by the sighting of the Moon with the naked eye, a practice rooted in the teachings of Prophet Muhammad. This method, known as rukyah, is still followed in many parts of the Muslim world, including Malaysia. However, with the advancement of astronomical knowledge, they have adopted hisab, or astronomical calculations, to predict the visibility of the new Moon.

Malaysia's history of using these methods dates to colonial times when various local rulers used different moon-sighting methods, leading to discrepancies in the observance of religious events. In the post-independence era, a concerted effort has been made to unify these methods under a central authority, ensuring consistency and avoiding confusion among the Muslim population.

Previously, studies reported the criteria based on variables measured in crescent moon sighting activities. Among the early Arabic astronomers, Al-Tabari utilized the Sun's depression angle to determine the crescent Moon's visibility. The crescent would be considered visible during the moonset if the Sun's altitude was 9.5° below the horizon [1].

The sighting of the lunar crescent is a vital practice in Islam, marking the commencement of new months in the lunar calendar. In Malaysia, this practice reflects both religious significance and cultural identity. This article investigates the origins of lunar crescent visibility criteria in Malaysia, focusing on historical practices and the integration of modern methodologies such as NEO MABIMS [2].

Traditionally, determining the lunar crescent's visibility was based on direct visual observation. Early Islamic jurisprudence established Moon sighting as a method to initiate months [3]. In Malaysia, local communities played a pivotal role in observing the Moon, with decisions often made based on collective sightings, influenced by the geographical and climatic conditions unique to the region.

Lunar crescent visibility is influenced by several astronomical factors, including the Moon's age, altitude, and atmospheric conditions. Standard criteria for visibility typically require that the Moon be at least 18 degrees above the horizon and 30 hours old to enhance the likelihood of successful observation. These criteria were traditionally guided by empirical observations but lacked standardization, leading to discrepancies in the Islamic calendar [4].

The significance of lunar crescent sightings in Malaysia extends beyond the religious context; it fosters community engagement and cultural cohesion. Gatherings for moon sightings serve as social events that reinforce collective identity among Muslims. However, varying practices across regions often lead to confusion regarding the start of important religious events, necessitating a more uniform approach. While Malaysia's combination of rukyah and hisab provides a balanced approach to determining the new Islamic month, challenges remain [5]. Occasionally, there are discrepancies between the sighting reports and the hisab calculations, leading to debates among scholars and the public. These differences

can be confusing, mainly when neighbouring countries such as Indonesia and Brunei make different announcements.

Malaysia's method of determining the Islamic month is significant for its local Muslim population and neighbouring countries. Malaysia works closely with Brunei, Indonesia, and Singapore to ensure they follow similar practices, promoting regional unity in observing Islamic events. Malaysia's approach has also been influential in the broader Muslim world, where discussions about integrating astronomical calculations with traditional moon-sighting practices continue to evolve.

The observation process begins by observing the Sun first until sunset or the Sun is not visible because it is covered with clouds. Once the Sun sets, the officers point the observation device toward the Moon's position. Observation of the hilal is carried out until the hilal is visible, or if the hilal is not visible, the observation is carried out until the sunset of the Moon, according to the data that has been provided.

Officers on duty at each location must report the Moon sighting results to the Mufti, who acts as the Chairman of the Rukyah Anak Bulan Committee. The Mufti will then report the results to the Great Seal Guard Office Kingdom (PMBRR). Important information that must be reported to PMBRR includes observation results, sunset data, observation start time, horizon conditions, and weather at the observation time [6].

All procedures for moon sightings must be carried out so that the moon sightings can run and be accepted by all parties and the appearance of the Moon can be ensured [7]. Several lunar belief procedures must be met To ensure a confirmed sighting of the Moon:

- a. Observations of the Moon are done through the eyes or eyepieces.
- b. The appearance of the Moon is acceptable with the help of technical equipment such as theodolites, telescopes, binoculars, and the like.
- c. The rule of seeing the Moon with the naked eye with the help of optical equipment is a must.
- d. The appearance of the Moon using imaging techniques is required with the parameters set by JAKIM through the Guidelines/Procedures for Belief in the Sighting of the Moon Through Imaging Techniques. (2021 Malaysian National Council for Islamic Religious Affairs (MKI) Conference)
- e. If witnessed by someone other than the committee, the group leader must conduct further investigation with the help of an experienced person. Their appearance can be rejected at the discretion of the Group Chairman or Rukyah Committee Member.
- f. The appearance of the hilal in the context of the official appearance of Ramadan, Syawal, and Zulhijjah must be reported to the Keeper of the Great Seal of Kings by the appointed Mufti/Leader of the Group/Reporter.
- g. The number of witnesses proving the month of Ramadan should consist of one fair witness for the month of Ramadan and two witnesses for non-Ramadan. Meanwhile, the imaging technique must be witnessed by two impartial Muslim witnesses and the women's testimony at the Moon's sighting.
- h. The hilal should be observed after sunset until the Moon has completely set.

II. Method

This research utilizes a qualitative approach, focusing on in-depth analysis through library-based methods. Data collection was conducted through a rigorous examination of academic resources available in various electronic databases, including prominent sources such as the International Journal. The primary emphasis was extracting insights related to lunar observations, a critical area in Islamic Astronomy. The search strategy involved several specific keywords to identify relevant articles and studies. These keywords included "crescent," used to locate studies on the lunar crescent; "naked eye," targeting articles on unaided observational methods; "telescope," aimed at gathering resources on telescopic usage; "binocular," associated with the use of binoculars in observation, "image processing," focusing on digital techniques in lunar imagery, and "observation," which broadly encompassed scholarly insights on various aspects of lunar observation practices. By employing these keywords strategically, this study ensures a comprehensive and nuanced collection of literature directly relevant to the research objectives.

III. Results and Discussion

It is known that the Moon is the only natural satellite of the Earth that can be seen showing different phases through the point of view of an observer on Earth. In general, we as Muslims know that when we see the full Moon, it is a sign that we have arrived in the middle of the Hijrah month, while if we do not see it directly (with the naked eye), we are already in the middle of the Hijrah month – the end of the month and approaching the new Moon.

From the perspective of sharia, the appearance of the moon (hilal) as a (physical) sign that determines the beginning of the new month of Hijrah, is contained in several verses of the Quran, such as in the 189th verse of Surah al-Baqarah:

﴿يَسْأَلُونَكَ عَنِ الْأَهْلِ قُلْ هِيَ مَوَاقِيتُ لِلنَّاسِ وَالْحَجِّ ۗ وَلَيْسَ الْبِرُّ بِأَنْ تَأْتُوا الْبُيُوتَ مِنْ ظُهُورِهَا وَلَكِنَّ الْبِرَّ مَنِ اتَّقَىٰ ۗ وَأْتُوا الْبُيُوتَ مِنْ أَبْوَابِهَا ۗ وَاتَّقُوا اللَّهَ لَعَلَّكُمْ تُفْلِحُونَ ۝ ١٨٩﴾

Meaning "They asked you (O Muhammad) about the (circulation) of the moon children. Say: "(The circulation) of the children of the Moon marks the times (affairs and deeds) of man, especially the Hajj. And it is not a matter of virtue: you enter the house from behind (when you wear ihram), but that virtue is the deed of a pious person, and enter into the house through its door, and fear Allah that you may be lucky."

In 1983, Malaysia introduced the Imkanur Rukyah criteria, a system derived from the Istanbul Resolution yet adapted with specific modifications to suit local contexts better. This adaptation introduced several changes to the visibility criteria, including a minimum altitude requirement of 5.5° for the crescent Moon, an elongation of 7.5°, and an age criterion of 8 hours, considering this as the minimum threshold for a new lunar crescent, or "child of the Moon," to be visible as shown in figure 1.

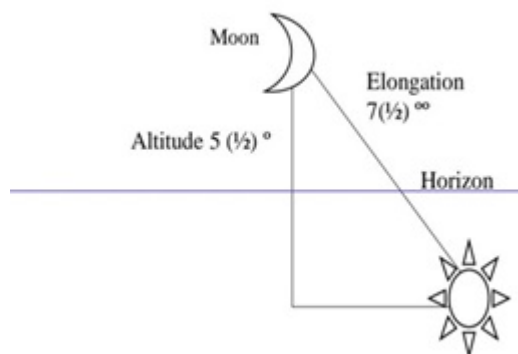


Figure 1. Showing configuration of Hijri's new month

Since 1984, Malaysia has officially implemented these *Imkanur Rukyah* criteria to standardize the determination of crescent visibility. *Imkanur Rukyah*, derived from Arabic, translates to "expected visibility" and establishes a set of minimum conditions under which the Moon can be sighted. These criteria form the foundation of Malaysia's approach to lunar observations, defining parameters that ensure visibility aligns with Islamic and scientific principles. Theoretically and practically, the issue of IIC science was initiated. The book's publication marked this phase: *A Modern Guide to Astronomical Calculations of Islamic Calendar, Times and Qibla* [8].

The criteria were later modified by the Ministers of Religion of Brunei, Indonesia, Malaysia, and Singapore (MABIMS) Meetings in 1992, which indicates that the Moon's altitude should not be more than 2 degrees, the elongation of the moon-sun should not be more than 3 degrees at sunset, and the age of the young crescent Moon must not be less than 8 hours after conjunction.

In Brunei, the *imkan al-ru'yah* (possibility of sighting) criteria are applied explicitly to all months in the Islamic calendar except for Ramadan, Shawwal, and Dzulhijjah. For these three important months, which mark the beginnings of fasting, Eid celebrations, and Hajj, respectively, the *rukayah al-hilal* method is used. This approach requires the physical sighting of the young crescent Moon to ensure that the start of these months is determined accurately, in alignment with traditional Islamic lunar observation practices.

After examining regional and scientific requirements, Malaysia officially adopted the *imkan al-ru'yah* criteria in 1995. These criteria were developed to streamline and standardize the observation process, making it more predictable and based on specific, observable conditions. Malaysia's criteria were set to ensure that the crescent Moon is considered sightable if it meets a minimum altitude of 2° above the horizon and an elongation of 3° from the Sun, thresholds that were determined suitable based on calculations that the crescent would generally be about 8 hours old by this point. This age threshold is considered adequate to identify the crescent as a "child of the Moon" – a term that signifies it is newly formed and potentially visible [9].

These parameters are critical because they provide a precise formula under which the imkan al-ru'yah criteria operate, removing much of the ambiguity associated with lunar sightings. Since 1995, Malaysia has adhered to this system, which has created consistency in the sighting process across the country and provided a framework that aligns with religious observance and scientific calculation. The minimum altitude of 2° ensures that the crescent has risen enough above the horizon to reduce atmospheric distortion and is sufficiently separated from the Sun for its faint light to be discerned. In contrast, the 3° elongation supports adequate angular distance for better visibility. This standardized approach meets the technical criteria for lunar visibility and harmonizes with the cultural and religious significance of crescent sightings in Islamic practice. This system establishes the following minimum thresholds that must be met for a crescent sighting to be considered possible:

- During sunset:
The altitude is not more than 2° , AND
The elongation of the moon-sun is not more than 3° .
- During the moonset:
The age of the Moon is not less than 8 hours.

Therefore, further research is necessary to explore the origins and development of the lunar crescent visibility criteria and to assess whether these selection criteria are grounded in scientific principles. This paper investigates the historical process of formulating these criteria chronologically, examining how standards for crescent sighting have evolved within the region. A notable instance of divergence in criteria application occurred in 1983, when the states of Perak and Johor marked the beginning of Ramadan 1403 on June 12, while other states in Malaysia commenced the observance on June 13. This discrepancy was due to differing methods for determining the lunar month's start. The Perak and Johor state governments based their decision on the presence of al-hilal, which signifies that the Moon is positioned above the horizon at sunset, even if it is not necessarily visible. This method emphasizes the presence of the Moon as the primary criterion for beginning the month.

In contrast, under national guidance, other states in Malaysia adopted the imkan al-ru'yah (expected visibility) criteria, which require not only the presence of the Moon but also the potential for it to be sighted under specific conditions. The imkan al-ru'yah method incorporates minimum altitude and elongation, providing a framework to estimate the likelihood of the crescent being seen. This approach, which aligns with astronomical standards and religious observance, aims to reduce inconsistencies in lunar month commencement by relying on standardized visibility parameters. Thus, This paper seeks to analyze these criteria and their historical applications, evaluating whether they are scientifically justified and how they have shaped regional practices. By tracing the development of these methods, this research seeks to clarify the basis for current standards in crescent sighting and address the implications of these differing approaches in the Islamic astronomical context.

The Review Committee was then formed by the Department of Islamic Religious Affairs (under the Prime Minister's Office) on December 14 1989, after realizing the nature of the differences that arose. This committee. Majid Abd. Hamid. The committee argued that the criteria for the appearance of the Moon in the Istanbul Resolution were not appropriate

for Malaysia due to the difference in latitude. Following their geographical location, the resolution's provisions are suitable for application in several European countries. Observation of the sighting of the Moon child at 15 observation locations in Malaysia, review of observation reports, and study of the Moon's age criteria (8 hours) have been actively carried out.

However, observations at 15 observation sites are not the only alternative to reaching an agreement on determining the best Moon sighting criteria. Observations at Rombang Beach, Melaka, witnessed the sighting of the Moon with an extension at sunset of $4^{\circ} 46'$, while the Moon's height was recorded at $1^{\circ} 43'$, with the Moon's age at sunset 15 hours 39 minutes. These findings prove. The child of the Moon can be seen based on the provisions agreed in the Istanbul Resolution.

The Eight (8) Hour Criterion

In November 1978, the International Conference for Determining the Beginnings of Lunar Months was held in Istanbul, bringing together experts and representatives to establish standardized criteria for crescent visibility. A key outcome of this conference was the Istanbul Resolution, which outlined essential visibility conditions to determine when the crescent Moon could be considered visible. The resolution specified that one of the following conditions must be met: (1) the angular separation between the Sun and Moon at sunset should be at least 8° , or (2) the altitude of the crescent Moon at sunset should not be less than 5° . These conditions aimed to set a reliable baseline for determining the start of each lunar month.

Malaysia was represented at the Istanbul Conference by three prominent figures: Md. Khair Md. Taib, an expert in Islamic astronomy (ahl falak); Abdul Hamid Mohd Tahir, a professor from the University of Technology; and the Mufti of Kuala Lumpur, Mohsein Salleh. During the conference, Md. Khair Md. Taib proposed an additional requirement for determining crescent visibility: he recommended that the age of the crescent Moon should be no less than 8 hours after conjunction. This additional criterion was intended to provide further visibility assurance, ensuring the crescent had developed sufficiently to be potentially sighted.

Several pieces of evidence support Md. Khair's introduction of the 8-hour criterion:

1. Md. Khair's Written Accounts (1987). In 1987, Md. Khair documented his involvement in the Istanbul Conference and mentioned his proposal to incorporate the 8-hour age criterion into the resolution. His writings confirm that he advocated adding this criterion to refine the visibility requirements further.
2. Md. Khair's Presentation in July 1987. At an Islamic Astronomy Conference held in July 1987, Md. Khair discussed the crescent Moon's visibility from a Syariah perspective. In his address, he emphasized that the 8-hour criterion had been endorsed as one of the guiding principles by the religious council, stipulating that the crescent Moon must have been formed at least eight hours before sunset on the observation day for it to be considered.
3. Correspondence with the Director of the Muslim Centre (1983). In a letter dated May 12, 1983, addressed to the Director of the Muslim Centre in Kuala Lumpur, Md. Khair

referred to his suggestion of the 8-hour criterion as a critical addition to the Istanbul Resolution. This correspondence highlights his commitment to advocating for this criterion in official communications.

However, it is notable that Abdul Hamid Mohd Tahir, another Malaysian delegate at the Istanbul Conference, did not support the inclusion of the 8-hour criterion. Upon his return from Istanbul, Abdul Hamid gave a public talk on the Istanbul Resolution, where he only discussed the two original conditions (the 8° separation and 5° altitude criteria) without mentioning the 8-hour criterion proposed by Md. Khair. The divergence in perspective was further highlighted by Abdullah Ibrahim, the President of the Malaysian Islamic Astronomy Society, who reported that Abdul Hamid exclusively presented the two established resolutions from the Istanbul Conference, omitting the third criterion proposed by Md. Khair. This difference in views among the Malaysian representatives illustrates the initial debates surrounding the adoption of the 8-hour criterion. This aspect became a distinguishing element of Malaysia's approach to crescent visibility standards. This historical context highlights the significance of the 8-hour criterion in shaping Malaysia's criteria for lunar crescent visibility, underscoring the nuanced discussions that influenced its adoption as part of Malaysia's imkan al-ru'yah guidelines.

The Altitude 2° and Elongation 3° Criteria

Following the 1978 Istanbul Resolution, which provided foundational guidelines for determining the beginning of lunar months, further developments in crescent visibility criteria significantly influenced regional practices. These advancements were notably shaped by the need for more precise, practical criteria that could be applied consistently.

On April 5 and April 25, 1983, Malaysia's Committee for Marking Early Ramadan and Syawal reviewed and refined the criteria for determining the lunar month's start. They established that the crescent Moon could be considered visible if it met one of the following minimum conditions:

- The altitude of the crescent Moon at sunset must be at least 2° above the horizon.
- The elongation, or angular separation, between the Moon and the Sun, must be no less than 3°.

These criteria were developed to provide a practical and scientifically informed standard for determining the lunar month's start, complementing the Istanbul Resolution's original requirements. By setting the altitude to a minimum of 2°, the criteria ensured that the Moon was positioned high enough above the horizon to account for atmospheric interference, which can obstruct visibility when the crescent is too close. Additionally, the 3° elongation requirement was designed to allow for an adequate angular distance between the Moon and the Sun, increasing the likelihood of the crescent being visible at dusk.

Adopting these refined criteria provided a standardized method that balanced scientific rigour with the requirements of Islamic lunar observance. These 2° altitude and 3° elongation parameters have since become integral to Malaysia's imkan al-ru'yah framework, establishing a consistent approach applied to sight the crescent Moon for significant lunar months, such as Ramadan and Syawal.

In 1983, polemics arose in certain parts of Malaysia while applying these criteria. For instance, the states of Perak and Johor set the date of early Ramadan 1403 for June 12 1983, while the rest of the country set it for June 13. Consequently, to solve this issue, on December 14 1989, the Department of Muslim Affairs, under the Prime Minister's Office, formed a revision committee and appointed Abd Majid Abd Hamid as its Chairman. It was recognized that the existing lunar crescent visibility criteria in Malaysia could lead to discrepancies and potential disputes among the Muslim community. A dedicated committee was formed with the following tasks:

1. **Re-examining the 1978 Istanbul Resolution on Crescent Moon Visibility.** The committee undertook a comprehensive review of the 1978 Istanbul criteria, which had initially guided crescent visibility standards. However, they found these criteria unsuitable for Malaysia due to differences in geographical latitude, which affected the visibility conditions specific to the region. The committee's findings were supported by prior research, including studies from the French astronomer André Danjon (1932), who had explored limits on crescent visibility, and observational data from Turkey's Kandili Observatory. These sources highlighted the need for latitude-specific adjustments to the criteria.
2. **Collecting and Analyzing Historical Crescent Moon Sightings.** The committee gathered and reviewed records of past lunar sightings, including data from prominent Islamic astronomers such as Haron Din (1983) and Rasli Ramin (1981) and documentation from the 1987 Islamic Astronomy Conference. However, the committee found these records incomplete, indicating a need for more consistent and systematic data collection to support reliable crescent sighting standards.
3. **Conducting Systematic Observations Across Malaysia.** Due to the incomplete historical data, the committee organized systematic crescent observations in 1991. These observations were conducted by the Department of Religious Affairs (*Jabatan Agama Islam*), the Department of Survey and Mapping Malaysia, and members of the Islamic Astronomy Committee and Revision Committee. Observations were conducted at 15 locations across Malaysia from January to June 1991 to gather current sighting data. However, in six months of observations, only the Pantai Rombang site in Melaka produced visible crescent results. According to the Istanbul criteria, the crescent's altitude should have been $4^{\circ} 46'$ at sunset, but the observed altitude was only $1^{\circ} 43'$. The age of the Moon at sunset on this day was 15 hours and 39 minutes, further indicating that the existing criteria did not fully match actual visibility outcomes in Malaysia.
4. **Seeking Additional Data from Indonesia.** The committee sought crescent sighting data from Indonesia, a neighboring country with similar latitude and visibility conditions to supplement their findings. Committee members visited religious departments and councils in Jakarta and Bandung, reviewing 29 reports of crescent sightings documented between 1964 and 1990. After careful examination, the committee verified and accepted 12 reports as credible, providing additional insight into regional crescent visibility.

The committee's findings underscored the need to refine Malaysia's lunar visibility criteria to reflect regional conditions better and improve lunar month determinations' accuracy and consistency. Through their extensive analysis and cross-border data collection, the committee laid a foundation for revising the crescent sighting standards to align with scientific findings and the practical realities of observing the Moon in Malaysia. From the research conducted by the revision committee during a meeting on November 4 1991, suitable criteria were proposed for application in Malaysia, along with the approval from the committee responsible for determining early Ramadan and Syawal. The requirements are as follows:

The crescent Moon is considered seen when the calculations fulfil one of the following requirements:

- During sunset:
The altitude of the crescent Moon is not more than 2° , AND
The elongation of the moon-sun is not more than 3° .
- During moonset:
The age of the Moon is not less than 8 hours.

Challenges faced in observing the Moon include light pollution that affects the brightness of the night sky (generally, the appearance of celestial bodies is determined by the brightness of the object of observation compared to the brightness of the sky) at the time of its appearance, new moons, and meteorological factors such as weather.

The determination of the beginning of the month of Ramadan is not only based on observing the Moon but also supported by other methods such as calculation (calculation), witnessing (which is undoubted), and practising traditional tips. Without raising any technique to dominate the determination of the beginning of the Islamic month, this diversity can be considered as "triangulation" in qualitative research. Each has its advantages and disadvantages, balancing each other.

Malaysia and the New Criteria

Experts in Shariah, astronomy, and Islamic authorities have met in MABIMS countries since 2016 to discuss moon sightings and the Islamic calendar. In 2019, based on a thorough analysis of Moon sighting data within the countries, they agreed to use a new criterion based on analyzing Moon sighting data within the country. This new imkan al-rupiah criterion requires the Moon's altitude be at least 3 degrees and the sun-moon elongation to be at least 6.4 degrees at sunset on the 29th day of the Hijri month. Since 2021, MABIMS countries have used this new criterion [2].

The support of the state's Department of Islamic Religion and the joint efforts of astronomers, religious scholars, and mathematicians are important to increase the need to establish new criteria. Malaysia has implemented the Hilal apparition rule (by MABIMS) since Muharram 1443. Malaysia, which practices the rukyah (crescent moon sighting) and hisab (star counting) methods, refers to the condition for the appearance of the Moon (imkanur rukyah) to compile the Hijrah calendar - meaning that we practice calculations but still want to know the position of the Moon; which is the data researched on 29 Ramadan

(May 1, 2022). The Child of the Moon is considered invisible if it does not meet the new requirements at sunset; the next day is completed as the 30th day of Ramadan.

The NEO MABIMS initiative emerged to address the inconsistencies in lunar crescent visibility practices among Malaysia, Brunei, Indonesia, and Singapore. This framework emphasizes the integration of scientific principles into traditional moon-sighting practices. NEO MABIMS provides standardized guidelines for determining crescent visibility, incorporating criteria such as the Moon's elongation, altitude, and the observer's location. It encourages using astronomical software and calculations to accurately predict crescent visibility accurately, thus reducing reliance on subjective visual observations [10]. By doing so, NEO MABIMS enhances the reliability and consistency of moon sightings across member countries, promoting unity in the Islamic calendar.

The adoption of NEO MABIMS has led to a significant cultural shift in how lunar crescent sightings are approached in Malaysia. While traditional practices remain valued, scientific methods are increasingly accepted among communities. This dual approach facilitates more accurate determination of the Islamic months and strengthens community ties through organized, collaborative Moon sighting efforts [11].

The criteria for lunar crescent visibility in Malaysia have evolved from traditional observational practices to a more scientifically informed approach through initiatives like NEO MABIMS. This evolution reflects a broader trend of integrating modern scientific understanding with cultural and religious practices. As Malaysia continues to navigate these changes, the interplay between tradition and science will shape the future of lunar crescent visibility criteria, ensuring the timely observance of important Islamic dates.

IV. Conclusion

The review and analysis of Malaysia's lunar crescent visibility criteria underscore the complexities and regional challenges in determining the start of Islamic lunar months. The committee's findings indicate that the 1978 Istanbul Resolution, while foundational, was not directly applicable to Malaysia due to its unique geographical latitude and visibility conditions. Supported by insights from both local observations and international data, including studies from astronomers like André Danjon and sighting records from Indonesia, the committee found that modifications were necessary to create a more accurate and consistent standard.

The historical records and recent observations highlighted gaps in data that hindered reliable crescent visibility predictions. Through extensive observational efforts, the committee gathered new data from multiple sites across Malaysia, though successful sightings were limited, emphasizing the need for locally adapted criteria. Collaborative efforts with Indonesia also provided valuable comparative insights that reinforced the regional distinctions affecting lunar visibility.

This investigation reaffirms the importance of adapting lunar sighting criteria to local conditions, balancing scientific precision with the practical requirements of religious observance. The findings support the need for ongoing research and regional data collection

to refine these criteria further, ensuring that they meet both astronomical and religious standards for crescent sightings in Malaysia.

References

- [1] M. Ilyas, "Lowest Limit of W in the New Moon's First Visibility Criterion of Bruin and its Comparison with the Maunder Criterion," *Q. J. R. Astron. Soc.*, vol. 22, no. 1, pp. 154–159, 1981, [Online]. Available: <https://adsabs.harvard.edu/full/1981QJRAS..22..154I>
- [2] Maskufa, Sopa, S. Hidayati, and A. Damanhuri, "Implementation of the New MABIMS Crescent Visibility Criteria: Efforts to Unite the Hijriyah Calendar in the Southeast Asian Region," *Ahkam J. Ilmu Syariah*, vol. 22, no. 1, pp. 209–236, 2022, doi: 10.15408/ajis.v22i1.22275.
- [3] M. S. A. Mohd Nawawi, M. S. Faid, M. H. M. Saadon, R. A. Wahab, and N. Ahmad, "Hijri Month Determination in Southeast Asia: An Illustration Between Religion, Science, and Cultural Background," *Heliyon*, vol. 10, no. 20, p. e38668, Oct. 2024, doi: 10.1016/j.heliyon.2024.e38668.
- [4] M. H. Safiai, E. A. Jamsari, and I. A. Ibrahim, "Malaysian observatories and those of the Islamic civilization era: General similarities," *Middle - East J. Sci. Res.*, vol. 20, no. 12, pp. 2164–2171, 2014, doi: 10.5829/idosi.mejsr.2014.20.12.21115.
- [5] I. A. Ibrahim, M. H. Safiai, and E. A. Jamsari, "Functions of Astrofiqh Observatories in Malaysia in Solving Astrofiqh Issues," *Mediterr. J. Soc. Sci.*, vol. 6, no. 1S1, pp. 112–119, 2015, doi: 10.5901/mjss.2015.v6n1s1p112.
- [6] K. Ismail, F. Asillam, and A. A. M. Zin, "Human Resource Development Issues in the Field of Islamic Astronomy: Analysis of the Langkawi National Observatory, Malaysia," *Int. J. Soc. Sci. Humanit.*, vol. 4, no. 6, pp. 463–467, 2014, doi: 10.7763/IJSSH.2014.V4.399.
- [7] I. A. Ibrahim and M. H. Safiai, "The role of amateur observatories in falak education in malaysia," *Mediterr. J. Soc. Sci.*, vol. 5, no. 29, pp. 40–48, 2014, doi: 10.5901/mjss.2014.v5n29p40.
- [8] M. Ilyas, *A Modern Guide To Astronomical Calculations of Islamic Calendar, Times & Qibla*. Kuala Lumpur: Berita Publishing, 1984.
- [9] A. Wahidi, N. Yasin, and A. Kadarisman, "THE BEGINNING OF ISLAMIC MONTHS DETERMINATION IN INDONESIA AND MALAYSIA: Procedure and Social Condition," *ULUL ALBAB J. Stud. Islam*, vol. 20, no. 2, pp. 322–345, 2019, doi: 10.18860/ua.v20i2.5913.
- [10] M. F. Rohman Karim and M. Mahsun, "Kriteria Baru Mabims 3-6,4: Upaya Penyatuan Kalender Hijriah di Indonesia Dalam Perspektif Maqāṣid Al-Syarī'ah," *Astroislamica J. Islam. Astron.*, vol. 3, no. 1, pp. 51–75, Jun. 2024, doi: 10.47766/astroislamica.v3i1.2735.
- [11] N. Nursodik and T. Djamaluddin, "Applicability of the New MABIMS Criteria and

Its Impact in the Southeast Asia Region," 2024. [Online]. Available:
<https://proceedings.uinsa.ac.id/index.php/ICOSLAW/article/view/1247>