ISSN: (Online) 2072-8050, (Print) 0259-9422

Page 1 of 8

Original Research

The implementation of new minister of religion of Brunei, Indonesia, Malaysia, and Singapore criteria towards the *Hijri* calendar unification



Authors:

Abdul Mufid^{1,2} Thomas Djamaluddin²

Affiliations:

¹Department of Ilmu Alquran and Tafsir, Faculty of Ushuluddin, Institut Agama Islam Khozinatul Ulum Blora, Blora, Indonesia

²Research Center for Space, National Research and Innovation Agency (BRIN), Bandung, Indonesia

Corresponding author: Abdul Mufid, abdu100@brin.go.id

Dates:

Received: 30 Mar. 2023 Accepted: 17 May 2023 Published: 30 June 2023

How to cite this article:

Mufid, A. & Djamaluddin, T., 2023, '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(1), a8774. https://doi. org/10.4102/hts.v79i1.8774

Copyright:

© 2023. The Author. Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

Read online:



Scan this QR code with your smart phone or mobile device to read online. This study aims to integrate *hadith*, astronomy and sociology studies in examining the implementation of *Hijri* calendar unification through a multidisciplinary approach. The *Hijri* calendar is based on the astronomical phenomena of the earth-moon-sun system and should refer to the provisions of Islamic law or *fiqh* to be implemented in worship. For the preparation of a good *Hijri* calendar, agreement on criteria, date line, and authority is necessary. Furthermore, agreement on criteria requires a valid argument based on astronomical studies. An agreement on the implementing region boundaries is necessary due to the round earth and the *hilal* [crescent moon] cannot be observed simultaneously anywhere. It is also needed to resolve unavoidable differences, specifically in the appearance of the *hilal* and in schools of Islamic law. The problems to be solved are as follows: What is the strategy for implementing *Hijri* calendar unification? This study is based on a review of *hadith* and *fiqh* literature, analysis of astronomical data related to criteria, and experiences of Indonesia and Islamic countries regarding the *Hijri* calendar unification. The results show that implementing the *Hijri* calendar unification through the three approaches above can be carried out and accelerated.

Contribution: This study contributes to showing the results of a multidisciplinary approach in the problem of implementation of the new Ministers of Religious Affairs of Brunei Darussalam, Indonesia, Malaysia, and Singapore (MABIMS) criteria towards unification of the *Hijri* calendar.

Keywords: calendar unification; *hilal* visibility; multidisciplinary approach; new MABIMS criteria; astronomy.

Introduction

The *Hijri* calendar unification is a regular issue discussed before Ramadhan, Shawwal, and Dzulhijjah months. At the beginning of these 3 months, Muslims need certainty in determining the first date because it relates to the implementation of worship. The need for certainty indicates the importance of the *Hijri* calendar. The existence of unity and uniformity in the Islamic calendar is the only solution to eliminate these differences (Aini 2022; Husna 2022; Mufid 2019).

Discussion on the new criteria drafts for the *hilal* visibility or *imkan rukyat* was carried out at a national level meeting in Jakarta on 14–15 August 2015 or 29–30 Shawwal 1436 H entitled 'Unification of Methods for Determining the Beginning of Ramadhan, Shawwal, and Dzulhijjah' by the Indonesian Ministry of Religious Affairs with the Indonesian Ulema Council (MUI) and Islamic organisations. This activity was followed up with a meeting of astronomers on 21 August 2015 or 06 Dzulqa'dah 1436 H in Jakarta. The main agenda is to determine the criteria for the beginning of the *Hijri* month to be submitted to the MUI before the 2015 National Conference. The result is an academic paper proposing astronomical criteria for determining the beginning of the *Hijri* Month, namely the *hilal* height and the elongation of 3 and 6.4 degrees, respectively (Djamaluddin et al. 2016; Fadholi 2019).

At the regional meeting in Malaysia, the Conference of the Ministers of Religious Affairs of Brunei Darussalam, Indonesia, Malaysia, and Singapore (MABIMS) on 02–04 August 2016 or 27 Shawwal to 01 Dzulqa'dah 1437 H resulted in a proposed draft of 'MABIMS new criteria', namely the *hilal* height of 3 degrees and elongation of 6.4 degrees, which the elongation is the angular distance from the centre of the moon to the sun. These criteria are a correction to *imkan rukyat* MABIMS, which are *hilal* height of 2 degrees and moon-sun distance of 3 degrees or moon age of

8 h (Fadholi 2019). The proposed new criteria are also listed in the 2017 Jakarta Recommendation.

The three new criteria drafts, namely MUI, MABIMS, and the 2017 Jakarta Recommendation, are expected to be alternative solutions for unifying the *Hijri* calendar in Indonesia and Southeast Asia. Before the criteria drafts are used and implemented, it is necessary to understand the opinions of Islamic organisations regarding their determination. Information is needed from every perspective, attitude and policy regarding the new criteria drafts to understand these opinions (Fadholi 2019; Maskufa et al. 2022). In 2022, the new MABIMS criteria has been implemented in Indonesia and come into force during the determination of Ramadhan 1443 (Djamaluddin 2022).

Several studies discussed the *Hijri* calendar unification but from different perspectives. Firstly, Ahmad et al. (2020) carried out a study based on 254 observations every month during the last 19 years in the Baitul Hilal Teluk Kemang Malaysia. The results showed a new criteria for the visibility in Malaysia are elongation of 7.8 degrees and *hilal* width of 7'. Other criteria also found are the *hilal* height and elongation of 3.38 degrees and 3.74 degrees, respectively.

Secondly, Moedji Raharto et al. (2019) stated that a unique criterion for the lunar *Hijri* calendar is using a light arc and one value, such as 6 or 6.4, depending on the moon visibility at the equator and subtropical observations. The unification of the *Hijri* calendar is in progress, and the proposed criteria can unify the Islamic calendar. Ideally, multiple moon visibility conditions and all the criteria are positioned worldwide.

Furthermore, Mufid (2019) stated that Yusuf al-Qaradawi's understanding regarding the issue of international *Hijri* calendar unification is an urgent hope for realising fasting and Muslim holiday unification in Europe. According to the study, the unification of Muslims worldwide is impossible.

Based on some of the literatures above, no analysis discussed the potential and strategies for implementing the *Hijri* calendar unification. This study answers three problems related to implementing the new MABIMS criteria, namely:

- What are the basic principles of *fiqh* related to the calendar system to unite the ummah?
- What are the fundamental astronomical principles for the established *Hijri* calendar?
- What is the *Hijri* calendar unification implementation strategy? The problems are studied using a multidisciplinary approach.

Method

This study used the Systematic Literature Review (SLR) method to explain theoretically and empirically the sociological approach in Islamic studies. It was in line with the aim of the SLR approach of finding empirical evidence that fulfils certain criteria to solve study problems.

According to Tranfield, Denyer and Smart (2003), the stages of SLR included review planning, study implementation, reporting and dissemination. Following Higgins and Green (eds. 2011); Moher et al. (2009) and Sutton, Higgins and Reeves (eds. 2008) review process as follows. First, identify the research question. Second, develop inclusion and exclusion criteria for the literature search to ensure that the search is focused and relevant to the research question. Third, conduct a systematic literature search to identify relevant studies or articles. Fourth, screen and select studies based on the inclusion and exclusion criteria. Fifth, extract relevant data from each study and assess the quality of the study using appropriate tools. Sixth, synthesise the results and draw conclusions related to the research question.

This study used data from books and scientific reports that explain the sociological approach to religion. The data were then analysed qualitatively following an interactive analysis model consisting of data reduction, analysis, conclusion and verification stages. This study was based on a review of *hadith* and *fiqh* literature, analysis of astronomical data related to criteria, and experiences of Indonesia and Islamic countries regarding the *Hijri* calendar.

Results and discussion Figh studies

The determination for the beginning of the month related to the *Hijri* calendar was initially applied locally with a limited coverage area. However, in the current globalisation era, different decisions for the beginning of the month in various countries often confuse. Therefore, the discourse on the *Hijri* calendar unification has emerged to prevent the differences regarding Eid al-Fitr and Eid al-Adha. According to Djamaluddin (2011a), there are three prerequisites for realising an established calendar, namely (1) boundaries on the enforceability area, (2) single authority and (3) agreed criteria. These three prerequisites should be agreed upon to obtain an established calendar.

Fiqh related to the '*matlak*' issue can expand the enforceability area. The concept of *matlak* was originally related to the enforceability of the testimony of *rukyat hilal*, which is an observation of the first crescent. However, it is also extended to the concept of calendar enforceability. *Matlak* is still a matter of debate, specifically when discussing global calendar unification. It is related to the enforceability of the *rukyat* and is limited to tracing this study from various sources, with no consensus (*ijma*') and general perspective.

Ulemas in addressing the issue of *matlak* are divided into several perspectives (Muhammad Hani Sa'i 2007). Firstly, each country refers to the results of its *rukyat*, and secondly, neighbouring nations should also fast when the *hilal* is sighted. Thirdly, when *rukyat* succeeds, all countries, far and near, are obliged to follow.

Meanwhile, regarding the enforceability area of *rukyat*, according to Abdurrahman al-Jaziri in *al-Fiqh' ala Mazahib al-*

Arba'ah (al-Jaziri 1999), three of the four well-known *fiqh ulemas* (Hanafi, Maliki, Hambali) (as-Sabuni 1999) tend to support global *rukyat* where a people's testimony applies to Muslims around the world. In contrast, the Shafi'iyah school of thought prefers local *rukyat*, which only applies to one matlak of around a 24 *farsakh* radius (about 120 km).

Wahbah az-Zuhaili, in the work of *al-Fiqh al-Islami wa Adillatuhu* (az-Zuhaili 1985), stated that the Shafi'iyah circle determines the radius related to the matlak between far and near areas. However, an-Nawawi in *al-Majmu' Syarh al-Muhazzab* reported that there are three perspectives related to the criteria of far and near areas according to Syafi'iyah. The first perspective is that it is considered as far for the area in different matlak and as near for area in the same *matlak*. This is the most valid opinion among them. The second is that the benchmark is territorial unity, indicating it is considered a near area when it is in the same area. The third perspective is that it is seen as a far area when it reaches the *qasar* distance (89 km) and as a near area when less than the *qasar* distance (an-Nawawi n.d.).

Based on the *fiqh* perspective, the enforceability area of the *Hijri* calendar can be global. However, local *rukyat* is still valid in many countries, which is also related to the perspective of *rukyat* proof [*hilal* observation]. The concept of *wilayah al-hukmi* initiated by Syafi'iyah can also bridge global calendar enforcement when one jurisdiction can be accepted. The idea of one jurisdiction will be discussed further in sociopolitical studies.

Astronomical studies

Astronomical studies contribute to the proposed *hilal* visibility criteria based on long-term *rukyat* data from various regions globally. Astronomical parameters related to the *hilal* visibility need to be studied in terms of the types and the value used as the minimum limit for the sighting. The parameter that describes the *hilal* physique and disturbances on the horizon are usually used (Qureshi 2005; Ahmed 2020:10; Ridpath 2012; Zainon et al. 2019, Djamaluddin 2011b)

Astronomy considers *rukyat* and *hisab* to be equivalent and can replace each other. *Hisab* is built with a formulation based on long-term *rukyat* data. Meanwhile, a very thin *rukyat hilal* is assisted with *hisab* results to make it easier to direct the sight and clarify the doubtful results. Astronomy can bridge *rukyat* and *hisab* without contradicting the arguments. *Rukyat* practitioners still believe in their arguments, while *hisab* can also stick with the beliefs of their arguments (Djamaluddin 2013).

The problem of determining the beginning of the *Hijri* month involves various aspects that are complexly interrelated, such as *fiqh*, scientific and socio-political. Astronomy plays a role as a tool in determining the beginning of the month from a scientific point of view. With the involvement of astronomy, the differences between Muslims in determining holidays and the preparation of the calendar can be unified (Setyanto 2008).

The position of science regarding the *hilal* is for operational purposes in implementing the Shari'a regarding the determination of the beginning of the Islamic month. The essence of *rukyat hilal* [observation] can be taken as a reference in hisab [calculation] to predict the hilal visibility. According to scientific studies, hisab and rukyat are a unit that synergises with one another. Hisab, or a model for calculating the precise positions of the moon and sun by including corrections, is impossible to be built without precise data from *rukyat*. Furthermore, hisab, for determining the beginning of the Islamic month, not only calculates the position of the moon and the sun but also uses the correct and careful criteria for the hilal visibility. Rukyat hilal is also used to test the hisab prediction results about hilal visibility. Repeated testing and theoretical understanding regarding the formation can create science about the hilal (Raharto 2009).

The *hilal*, understood from an astronomical perspective as a crescent of a certain size can have many definitions. In contrast, it is only one and can be recognised by the naked eye. The physique is part of the moon's phases, which is the only natural satellite of Earth (Raharto 2009). The visibility criteria is an astronomical study that continues to grow, not just to determine the beginning of the lunar month for Muslims. The physical condition of the *hilal* due to the illumination (lighting) on the moon and the scattering of sunlight by the atmosphere on the horizon are two important aspects of *hilal* of crescent visibility (Allawi 2022:186; Djamaluddin 2011a).

In general, to predict the *hilal* visibility, the following parameters are often used (Ahmad et al. 2020; Alhammadi et al. 2019; Alrefay et al. 2018; Fatoohi, Stephenson & Al-Dargazelli 1999; Ilyas 1994:425; N. Nugali pers. comm., 2023):

- Moon's age, namely the interval between *ijtimak* [new moon] and time of observation, usually at *Maghrib* [sunset].
- The difference between the setting time of the sun and the moon.
- Elongation (arc of light or ARLC), namely the angle of separation between the centre of the sun and moon.
- Arc of vision (ARCV), namely the difference of the angle in altitude in the vertical direction between the centre of the sun and moon or their height difference.
- DAZ (delta azimuth, relative azimuth), namely the difference of azimuth between the sun and moon.
- Width, W (crescent width), namely the thickness of the *hilal*, measured on the midline of the moon.

Socio-political studies

Muslims, as a religious group, have their own cultural identity. They are promoted to maintain and uphold their identity as part of Islamic civilisation and a manifestation of the faith. The identity of Muslims, called Islamic culture or civilisation, is based on Allah's revelation and the sunnah of the Prophet, including tradition, art, morality, customs, Arabic language, and knowledge system that contains the lunar (*Hijri*) calendar system (Butar-Butar 2014).

The history of Islamic civilisation is knowledge regarding all aspects of the progress of Muslims in history, which is oriented towards major religious events from the time of the Prophet Muhammad to the Caliph Umar bin Khattab known as the classical period. Islamic civilisation history is interpreted as the development or progress of the culture, which includes three different meanings. The first is the progress and level of intellectual intelligence produced in a period of Islamic rule, starting from the time of Prophet Muhammad until the development of Islam currently. The second is the results achieved in the fields of literature, science, and art. The third is political progress or Islamic power, specifically related to worship, use of language and social habits (Abdurrahman 2011).

The areas of experts and common people become the impact of the establishment of the *Hijri* calendar. The experts have a task in determining the *Hijri* calendar system, and the people who are unfamiliar with the knowledge can carry out their worship according to the correct time setting and the Shari'a (Satria Hamdani & Alhamuddin 2015).

From a sociological perspective, several types of approach theory can be applied to the *Hijri* calendar system, such as the structural-functional, the conflict, and the symbolicinteractionalism approach. The structural-functional approach is based on two basic assumptions. Firstly, society consists of substructures whose functions are interdependent. Therefore, changes in substructure can automatically be reflected in other structures. Secondly, each structure supports other activities or substructures in a social system (Farid Ahmad 1996).

The last theory is the symbolic-interactionism approach as a micro-perspective in sociology based on social interaction at the minimum level. This micro level is expected to broaden the scope of its analysis to capture the whole community as a determinant for the processes of many interactions. The community, unfamiliar with the science of *hisab* and *rukyat*, belongs to the micro-group category that cannot participate in determining the *Hijri* calendar. However, these experts expect this kind of support from the community to improve further groups who want to advance their schools. The community wants unity during worship time among Muslims in Indonesia. It is expected that harmony will be created in worship, fasting, Eid al-Fitr, and Eid al-Adha (Satria Hamdani & Alhamuddin 2015).

Problems with the International Islamic Calendar are felt in various countries inhabited by the Muslim community. This problem can be seen from several methods used in determining the beginning of the Hijri month. The differences are often described as disputes over the use of methods, namely *hisab* and *rukyat*. The unified Islamic calendar continues to grow, as evidenced by the creation of several Muslim scholars focused on this problem, with different methods and criteria. This is the initial hope for creating

an established calendar that can be used internationally (Yaqin 2020).

According to Spencer's theory, as quoted by Basthoni (2018), the evolution process of the Islamic calendar system entered the integration process. Attempts to unify the Islamic calendar began to bloom. In historical records, this effort continues to be carried out by astronomers and the government authority. The efforts revolve around determining mutually accepted criteria, enforceability limits, and date lines. Meanwhile, the global concern of Muslims regarding the sociological impact is that scientific products cannot be implemented in formulating the determination of the international Islamic calendar. This is an intellectual challenge to avoid differences in determining the implementation of worship times. The intellectual notion as an alternative solution is a process of metamorphosis closely related to social upheaval and political conditions, cultural acculturation, economic turmoil, and religious understanding. A unified Islamic calendar is needed to answer the global concerns of Muslims to avoid division or hostility.

Socio-political studies are needed relating to the elements of authority that determine the implementation of the *Hijri* calendar. In *fiqh* studies, *wilayah al-hukmi* can be a bridge to reach common ground, and in this concept, there are judges or authorities in a jurisdiction. The authority resolves the differences and defines the boundaries for the enforceability area of the calendar as well as the selection of criteria to be applied. It includes the Government of Indonesia or several others, such as MABIMS, as the collective government of Brunei Darussalam, Indonesia, Malaysia, and Singapore.

Proposed *Hijri* visibility criteria as a reference for the establishment of a unified *Hijri* calendar

According to Hasbi, as quoted by Azhari (2015), since Mu'awiyah and Ibn Abbas became caliph and governor in Damascus and Medina, there has been a difference of opinion in dealing with holidays. The lack of good relations between the central and regional governments triggers this difference. However, according to Syamsul Anwar in Azhari (2015), the difference between Mu'awiyah and Ibn Abbas, based on astronomical and historical analysis, is estimated to have appeared in 35 H or 655 AD before the killing of the Caliph Usman bin Affan. The difference in perspective occurs because Hasbi emphasised the hadith matan aspect, which sees an inharmonious relationship between the central and regional governments in starting and ending the Ramadhan fast. Meanwhile, Syamsul Anwar looked at the sanad aspect with an emphasis on Ramadhan's events, where rukyat can occur on Friday nights.

In the Indonesian context, efforts to unify the determination for the beginning of the lunar month have been conducted since the establishment of the *Hisab Rukyat* Board, Ministry of Religious Affairs in 1976 and are still being pursued. These unification efforts are in the form of deliberations, consultations, studies, training, joint observations, joint *hisab* work meetings, as well as preparation and dissemination of a relatively easy contemporary *hisab* system (Widiana 2005).

In the Indonesian context, at the national level, unification efforts occurred at the Cisarua meeting in Bogor in 2011. This meeting resulted in an agreement to modify the criteria for imkan rukyat as well as affirm its function as a temporary criterion before more acceptable criteria are realised (Sudibyo 2016). The new criteria drafts for the hilal visibility or imkan rukyat were also discussed at a national level meeting in Jakarta on 14-15 August 2015 M or 29-30 Shawwal 1436 H entitled 'Unification of Methods for Determining the Beginning of Ramadhan, Shawwal, and Dzulhijjah' by the Indonesian Ministry of Religious Affairs (Government) with the Indonesian Ulema Council (MUI) with Islamic organisations in Indonesia. This activity was followed up with a meeting of astronomers on 21 August 2015, M/6 Dzulqa'dah 1436 H in Jakarta. The main agenda was to discuss determining the criteria for the beginning of the Hijri month, and the results were submitted to MUI before the 2015 National Conference. The proposed 'MUI Criteria' drafts, namely the hilal height of 3 and the elongation of 6.4 degrees, are used to determine the beginning of the Hijri month (Djamaluddin 2016a).

The proposed new criteria in the form of a minimum moon height of 3 degrees refer to global data from Ilyas (1994) and Caldwell and Laney (2001). Based on these global data, there is no reliable *rukyat hilal* data when the difference between the moon and sun height is less than 4 degrees or the moon height is less than 3 degrees. Minimum elongation of 6.4 degrees is obtained from Odeh's compilation of global observational data (2006). The criteria for the moon height describe the disturbance factor of the twilight on the western horizon, where the higher the moon, the weaker the disturbance factor. Meanwhile, the elongation parameter describes the physical factors of the *hilal*, where the greater the elongation, the thicker the *hilal*.

At the Southeast Asian level, unification efforts have been conducted through the MABIMS conference. The last conference took place in Indonesia in 2014 and made several recommendations. For example, MABIMS countries need to jointly apply the criteria in determining the beginning of the lunar month by always carrying out coordination. Furthermore, a study is needed in the presence of relevant ulemas, astronomers and scholars to discuss and determine the new MABIMS criteria (Djamaluddin 2016a).

At a regional level meeting in Malaysia, the Conference of the MABIMS on 02–04 August 2016 M or 27 Shawwal to 1 Dzulqa'dah 1437 H produced proposed 'Ministers of Religious Affairs of Brunei Darussalam, Indonesia, Malaysia and Singapore new criteria' drafts, namely the *hilal* height of 3 and the elongation of 6.4 degrees, which the elongation is the angular distance from the centre of the moon to the sun (Djamaluddin 2016b). These are a correction to the criteria for *imkan rukyat* MABIMS from a *hilal* height of 2 degrees with a moon-sun distance of 3 or an age of 8 h (Kementerian Agama Republik Indonesia 1998).

The Implementation of new ministers of religious affairs criteria towards the *Hijiri* calendar unification

After the new MABIMS hilal visibility criteria were ratified on 08 December 2021 at the regional level by the Ministers of Religious Affairs of four Southeast Asian countries, the need to accept the criteria in determining the beginning of the Hijri month became important. According to Thomas Djamaluddin, there are at least six underlying reasons. Firstly, the MABIMS criteria are built based on long-term global observations. Secondly, the parameters are commonly used by Indonesian hisab experts, namely the hilal height and elongation. Thirdly, the physical aspects of the *rukyatul* hilal are described. Elongation analyses the physical thickness of the hilal, where the greater the value, the thicker the hilal. Fourthly, in the MABIMS criteria, a minimum height of 3 degrees is based on global data. Therefore, the hilal below 3 degrees cannot be seen because of the disturbance from the strong twilight. Fifthly, a minimum elongation of 6.4 degrees is based on the record for the closest moon, as reported by Mohammad Shawkat Odeh, one of the international astronomers. An elongation of fewer than 6.4 degrees is too thin and dim to beat the twilight. Sixthly, the new criteria built are common ground for users of the *rukyat* and *hisab* methods, such as Nahdlatul Ulama (NU) and Muhammadiyah, respectively (republika. co.id 2022).

The response of NU in applying the new criteria for *imkan rukyat* should also be discussed. This is because the nu.or.id website stated that Nahdliyin astronomical scholars can accept the new MABIMS criteria as NU's *imkan rukyah* criteria. However, NU is a *jam'iyyah* with its own rules and the acceptance of the criteria can formally cross its path. In other words, one of the determining factors is the determination of the Astronomical Institute for the Nahdlatul Ulama Executive Board (PBNU), with the administrators of other institutions in PBNU (Sudibyo 2022).

According to the Head of the Astronomical Observatory at the Muhammadiyah University of North Sumatra (OIF UMSU), Arwin Juli Butar-Butar stated that these new criteria in the future are predicted to face implementation challenges in the field. The difficulties and issues with MABIMS criterion 3–6.4 are attributable to the absence of a clear topocentricgeocentric formula for the moon's height and elongation, where variations in their application result in different parameter numbers (Ilham 2022).

The challenge of implementing the Neo MABIMS criteria is inseparable from the nature of the established calendar, which requires the agreement of the following: (1) boundaries of the enforceability area (national or global), (2) single authority and (3) criteria (Djamaluddin 2011a).

Ministers of Religious Affairs of Brunei Darussalam, Indonesia, Malaysia and Singapore is an intergovernmental organisation comprising of four Southeast Asian countries, namely Brunei Darussalam, Indonesia, Malaysia and Singapore. In 2021, MABIMS adopted a new criteria aimed at unifying the Islamic calendar of member countries to promote regional integration (Djamaluddin 2022). The agreement aims to establish a common calendar that will harmonise the holidays, festivals, and other important dates across the region.

The new MABIMS policy has the potential to create conflicts in society, particularly among communities that are deeply attached to their traditional calendars. The dynamics of managing such conflicts will depend on several factors, including the nature and extent of the conflicts, the level of involvement of the government of member states, and the strategies used to promote the policy.

One potential source of conflict is the religious and cultural diversity of the region. The proposed calendar would need to take into account the diverse religious and cultural traditions of the member states to be acceptable to all. Thus, the MABIMS policy will need to strike a balance between promoting regional integration and respecting the cultural and religious diversity of the member countries, as well as the Islamic organisations.

Another potential source of conflict is the varying degrees of readiness and willingness among member states to implement the policy. Some countries may be more enthusiastic about the policy than others, which could lead to resistance or reluctance to participate fully. Thus, the MABIMS policy will need to address these disparities to ensure that the unification of calendars is implemented effectively and smoothly.

To manage conflicts that arise in society about unifying calendars, MABIMS may employ a variety of strategies. For instance, it may engage in extensive consultations with stakeholders, including religious and cultural leaders, to build consensus on the proposed calendar. MABIMS may also conduct public awareness campaigns to educate the public about the benefits of the policy and address any concerns or misconceptions that may arise.

In conclusion, the new MABIMS policy aimed at unifying calendars has the potential to create conflicts in society. However, with the appropriate strategies in place, such conflicts can be managed effectively. The key to success will be striking a balance between promoting regional integration and respecting the cultural and religious diversity of the member countries, as well as addressing any disparities in readiness and willingness among member states to implement the policy.

The new MABIMS policy criteria as a unique perspective on the *Hijriyah* calendar is an interesting issue amid various differences of opinion. Approval and disapproval are volatile and potentially collide. This, if not handled properly, can trigger and maintain conflict. The government has tried and selected the MABIMS criteria as a state perspective, which has sparked various reactions from three aspects: acceptance, silence and rejection. The three of them ended up arguing, even in the latest case triggering the reporting of a religious organisation against a person suspected of carrying out hate speech on social media.

What is done by the government by 'choosing' the MABIMS criteria with various considerations as an extension of state policy is a necessity, but it is still very important to prioritise dialogue, especially for those who have different views from the government. The positioning that has been taken by the government so far has been on the track by providing sufficient space for differences, and not going as far as to ban things in the name of religious moderation.

In fact, the middle way that has been implemented and continues to be pursued by the government is indirectly welcomed by Muhammadiyah, which has given a positive signal regarding the concept of Hijriyah Calendar Unification. 'But of course everything needs a long friendship until the Global Islamic Calendar is realized, but we must not lose hope', said Haedar Nashir, General Chairperson of the Central Executive (PP) Muhammadiyah in the Eid Al-Fitr Gathering 1444 HPP Muhammadiyah at the Yogyakarta Muhammadiyah University Sportorium (UMY) on Sunday (30 April 2023).

It was further stated that the main thing that needs to be encouraged is through *silaturrahmi*, and the meaning of *silaturrahmi* in a deeper and broader context. Not just linking brotherhood as its root, namely *silah wa rahmi* which is ordinary social relations, in the form of greetings, forgiving each other, or ceremonial events. However, how to draw the meaning of *silaturrahmi* in broader social relations to build a more civilised life. If this is greeted with wisdom and tolerance, of course, it has the potential to be met in a more dynamic dialogue space so that conflicts can be avoided. Mutual respect is important to be encouraged, but it also needs to be in harmony with an attitude of tolerance without feeling that someone has a higher position, knowledge, and authority than the other. Isn't it conveyed in the rule of law that prioritising avoiding harm is far more important than seeking benefit?

Governments also have an important role to play in facilitating dialogue and formulating policies that take into account multiple perspectives. Using scientific data and a technically accountable approach can help reduce uncertainty and minimise conflict. In addition, education and awareness raising can also help reduce conflict in society. Understanding the differences and the importance of inter-religious harmony can promote mutual understanding and tolerance.

Conclusion

In conclusion, the *Hijri* calendar unification requires agreement on the boundaries of the enforceability area, criteria and authority through the multidisciplinary approach, *fiqh*, astronomy and socio-politics. The latest visibility criteria are called new MABIMS, namely the *hilal* height of 3 and the elongation of 6.4 degrees are only one of the prerequisites for realising the *Hijri* calendar unification. Even though these criteria have become an agreement among MABIMS

countries, they need to be socialised in their implementation to obtain an international and national agreement between Islamic organisations. A global agreement is also needed to expand into a global Islamic calendar.

Acknowledgements

The authors are grateful to the Research Center for Space, the National Research and Innovation Agency, for supporting this study through the Post-Doctoral programme. The authors are also grateful to the Deputy for Facilitation of Research and Innovation at the National Research and Innovation Agency for facilitating the 2022 Post-Doctoral programme.

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

Both authors contributed equally to the writing of this research article.

Ethical considerations

This article followed all ethical standards for carrying out a research without direct contact with human or animal subjects.

Funding information

This work was supported by the Research Center for Space, the National Research and Innovation Agency (BRIN), Indonesia.

Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

References

Abdurrahman, D., 2011, Metodologi Penelitian Sejarah Islam, Penerbit Ombak, Yogyakarta.

- Ahmad, N., Mohd Nawawi, M.S.A., Zainuddin, M.Z., Mohd Nasir, Z., Mohamad Yunus, R. & Mohamed, I., 2020, 'A new crescent moon visibility criteria using circular regression model: A case study of Teluk Kemang, Malaysia (Kriteria Baru Kebolehnampakan Bulan Sabit menggunakan Model Regresi Berkeliling: Suatu Kajian Kes Teluk Kemang, Malaysia)' *Sains Malaysiana* 49(4), 859–870. https:// doi.org/10.17576/jsm-2020-4904-15
- Ahmed, T., 2020, 'Predicting the visibility of the first crescent: Predicting the visibility of the first crescent', *KIET Journal of Computing & Information Sciences* 3(2), 10. https://doi.org/10.51153/kjcis.v3i2.52
- Aini, S., 2022, 'A discourse of MABIMS new criteria: Reading difference frequency between Wujud al-Hilal and Imkan ar-Rukyat', Justicia Islamica: Jurnal Kajian Hukum Dan Sosial 19(1), 113–131. https://doi.org/10.21154/ justicia.v1911.3394

al-Jaziri, A., 1999, Al-Fiqh 'ala Mazahib al-Arba'ah, Dar al-Kutub al-'Ilmiyyah, Beirut.

- Alhammadi, K., Bouchalkha, A., Al-Ali, H., Almarzooqi, M. & Almteiri, R., 2019, Moon crescent tracker, Ras Al Khaimah, United Arab Emirates.
- Allawi, Z.T., 2022, 'A pattern-recognizer artificial neural network for the prediction of new crescent visibility in Iraq', *Computation* 10(10), 186. https://doi.org/10.3390/ computation10100186
- Alrefay, T.Y., Alsaab, S., Alshehri, F. & Alghamdi, A., 2018, 'Analysis of observations of earliest visibility of the Lunar crescent', *Observatory* 138, 267–291.
- an-Nawawi, M., n.d., Al-Majmu' Syarh al-Muhazzab, Maktabah al-Irsyad, Jeddah.
- as-Sabuni, M.A., 1999, Tafsir Ayat al-Ahkam min al-Qur'an, Dar al-Kutub al-'Ilmiyyah, Beirut.
- az-Zuhaili, W., 1985, Al-Fiqh al-Islami wa Adillatuhu, Dar al-Fikr, Damaskus.
- Azhari, S., 2015, Perjumpaan Khazanah Islam dan Sains Modern, Suara Muhammadiyah, Yogyakarta.
- Basthoni, M., 2018, 'Diferensiasi Metode Penentuan Awal Bulan Hijriyah: Kajian Perspektif Teori Evolusi Sosial Herbert Spencer', Endogami: Jurnal Ilmiah Kajian Antropologi 1(2), 166–176. https://doi.org/10.14710/endogami.1.2.166-176
- Butar-Butar, A.J.R., 2014, Kalender Sejarah dan Arti Pentingnya dalam Kehidupan, CV. Bisnis Mulia Konsultama, Semarang.
- Caldwell, J.A.R. & Laney, C.D., 2001, 'First visibility of the lunar crescent', *African Skies/ Cieux Africains* 5, 15–23.
- Djamaluddin, T., 2011a, Astronomi Memberi Solusi Penyatuan Ummat, LAPAN, Bandung. Djamaluddin, T., 2011b, Hisab dan Rukyat Setara: Astronomi Menguak Isyarat Lengkap dalam Al-Quran tentang Penentuan Awal Ramadhan, Syawal, dan Dzulhijah, viewed 16 January 2023, from https://tdjamaluddin.wordpress. com/2011/07/28/hisab-dan-rukyat-setara-astronomi-menguak-isyarat-lengkap-
- dalam-al-quran-tentang-penentuan-awal-ramadhan-syawal-dan-Dzulhijjah/. Djamaluddin, T., 2013, Agustus, Peran Astronomi dalam Penyatuan Penetapan Awal Bulan Qamariyah, viewed 20 January 2023, from https://tdjamaluddin.wordpress. com/2013/08/05/peran-astronomi-dalam-penyatuan-penetapan-awal-bulanqamariyah/.
- Djamaluddin, T., 2016a, Menuju Kriteria Baru MABIMS Berbasis Astronomi, viewed 20 December 2022, from https://tdjamaluddin.wordpress.com/2016/10/05/ menuju-kriteria-baru-mabims-berbasis-astronomi/.
- Djamaluddin, T., 2016b, Naskah Akademik Usulan Kriteria Astronomis Penentuan Awal Bulan Hijriyah, viewed from https://tdjamaluddin.wordpress. com/2016/04/19/naskah-akademik-usulan-kriteria-astronomis-penentuan-awalbulan-hijriyah/.
- Djamaluddin, T., 2022, Bismillah, Indonesia Menerapkan Kriteria Baru MABIMS, viewed 20 October 2022, from https://tdjamaluddin.wordpress.com/2022/02/23/ bismillah-indonesia-menerapkan-kriteria-baru-mabims/.
- Fadholi, A., 2019, 'Akseptabilitas Draf Kriteria Baru Penentuan Kalender Hijriah Menurut Ahli Falak di Indonesia', *Edugama: Jurnal Kependidikan Dan Sosial Keagamaan* 5(1), 101–114. https://doi.org/10.32923/edugama.v5i1.961
- Farid Ahmad, I.B.-Y., 1996, Islamic sociology: An introduction, Mizan, Bandung
- Fatoohi, L.J., Stephenson, F.R. & Al-Dargazelli, S.S., 1999, 'The Babylonian first visibility of the Lunar crescent: Data and criterion', *Journal for the History of Astronomy* 30(1), 51–72. https://doi.org/10.1177/002182869903000103
- Higgins, J.P. & Green, S. (eds.), 2011, Cochrane Handbook for Systematic Reviews of Interventions, 2nd Edition, Chichester (UK), John Wiley & Sons.
- Husna, A.H., 2022, 'Unifikasi Kalender Hijriah Nasional Menurut Perspektif Muhammadiyah dan Nahdatul Ulama', Al-Afaq: Jurnal Ilmu Falak Dan Astronomi 4(1), 1–19. https://doi.org/10.20414/afaq.v4i1.4169
- Ilham, 2022, Catatan Kritis untuk Kriteria Imkan Rukyat yang Baru dari MABIMS, viewed 15 December 2023, from https://muhammadiyah.or.id/catatan-kritisuntuk-kriteria-imkan-rukyat-yang-baru-dari-mabims/.
- Ilyas, M., 1994, 'Lunar crescent visibility criterion and Islamic calendar', Quarterly Journal of the Royal Astronomical Society 35, 425.
- Kementerian Agama Republik Indonesia, 1998, Almanak Hisab Rukyat, Direktorat Jenderal Pembinaan Kelembagaan Agama Islam, Jakarta.
- Maskufa, M., Sopa, S., Hidayati, S. & Damanhuri, A., 2022, 'Implementation of the new MABIMS crescent visibility criteria: Efforts to unite the Hijriyah calendar in the Southeast Asian Region', Ahkam: Jurnal Ilmu Syariah 22(1), 209–236. https://doi. org/10.15408/ajis.v22l1.22275
- Moher, D., Liberati, A., Tetzlaff, J. & Altman, D.G., 2009, 'Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement', *PLoS Medicine* 6(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097
- Mufid, A., 2019, 'Unifikasi Kalender Hijriah Internasional dalam Perspektif Yusuf Al-Qaradawi', Hikmatuna: Journal for Integrative Islamic Studies 5(1), 71–83. https:// doi.org/10.28918/hikmatuna.v5i1.1856
- Muhammad Hani Sa'i, M.N., 2007, Mausu'ah Masa'il al-Jumhur fi al-Fiqh al-Islami, Kairo, Dar as-Salam.
- Odeh, M.S., 2006, 'New criterion for lunar crescent visibility', *Experimental Astronomy* 18, 39–64.
- Qureshi, M.S., 2005, Computational astronomy and the earliest visibility of Lunar crescent, Institute of Space and Planetary Astrophysics, University of Karachi, Karachi.
- Raharto, M., 2009, Kalendar Islam: Sebuah Kebutuhan dan Harapan. Mencari Solusi Kriteria Visibilitas Hilal Dan Penyatuan Kalender Islam Dalam Perspektif Sains Dan Syariah, Observatorium Bosscha ITB, Bandung.
- Raharto, M., Sopwan, N., Hakim, M.I. & Sugianto, Y., 2019, 'New approach on study of new young crescent (Hilal) visibility and new month of Hijri calendar', *Journal of Physics: Conference Series* 1170, 012080. https://doi.org/10.1088/1742-6596/1170/1/012080
- Republika.co.id, 2022, Kriteria MABIMS Perlu Diterima? Ini Penjelasan Peneliti LAPAN, viewed 17 May 2023, from https://ihram.republika.co.id/berita/r8sjma313/ kriteria-mabims-perlu-diterima-ini-penjelasan-peneliti-lapan.

Ridpath, I., 2012, Oxford Dictionary of Astronomy, England, Oxford University Press.

Satria Hamdani, F.F.R. & Alhamuddin, A., 2015, 'Penyatuan Kalender Hijriah Untuk Kebangkitan Islam (Sebuah Tinjauan Sosiologis)', in Proceeding international conference of Islamic education: Reforms, prospects and challenges faculty of Tarbiyah and teaching training, Malang, Maulana Malik Ibrahim State Islamic University.

Setyanto, H., 2008, Membaca Langit, Al-Ghuraba, Jakarta.

- Sudibyo, M.M., 2016, 'Bulan Sabit Tidak di Kaki Langit, Beberapa Pertanyaan tentang (Usulan) Kalender Hijriyyah Persatuan Internasional', in Seminar Kalender Global Islam (Pasca Muktamar Turki 2016) Di Universitas Muhammadiyah Sumatera Utara (UMSU), Universitas Muhammadiyah Sumatera Utara, Sumatera Utara.
- Sudibyo, M.M., 2022, Akankah NU Terapkan Kriteria Baru Imkan Rukyah?, viewed 23 December 2023, from https://www.nu.or.id/opini/akankah-nu-terapkan-kriteriabaru-imkan-rukyah-KOaFF.

- Sutton, A.J., Higgins, J.P. & Reeves, B.C. (eds.), 2008, Cumulative meta-analysis of interim data and event times, CRC Press, Boca Raton.
- Tranfield, D., Denyer, D. & Smart, P., 2003, 'Towards a methodology for developing evidence-informed management knowledge by means of systematic review', *British Journal of Middle Eastern Studies* 14, 207–222. https://doi.org/10.1111/1467-8551.00375
- Widiana, W., 2005, 'Aspek Astronomi dalam Kalendar Bulan dan Kalendar Matahari di Indonesia', in Penentuan Awal Bulan Qomariyah dan Permasalahannya di Indonesia, FMIPA ITB, Bandung.
- Yaqin, A.A., 2020, 'Peluang dan Tantangan Kalender Islam Internasional Mohammad Ilyas', Azimuth: Journal of Islamic Astronomy 1(1), 32–51.
- Zainon, O., Ali, H.R., & Abu Hussin, M.F., 2019, 'Comparing the New Moon Visibility Criteria for International Islamic Calendar Concept', 6th International Conference on Space Science and Communication (IconSpace), Johor Bahru, Malaysia, pp. 144–149. https://doi.org/10.1109/IconSpace.2019.8905945.