

THE ONGOING DEBATE ON THE UMM AL-QURA CALENDAR IN THE GLOBAL ISLAMIC CONTEXT

A Thesis

**Submitted to the Master's Study Program of Islamic Studies at the Faculty of
Islamic Studies in partial fulfillment of the requirements for the degree of**

Master of Arts (M.A.)



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ABSTRACT

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The Umm al-Qura calendar is a universal Islamic calendar developed by the Research Institute of Astronomy and Geophysics at the King Abdulaziz City for Science and Technology (KACST) in Saudi Arabia. It is a lunar calendar based on astronomical calculations and is followed by many countries, including those in the Arabian Peninsula and Europe. This calendar was created by observing and calculating the phases and movements of the moon to determine the beginning and end of Islamic months and Hijri years. This calendar contains two types of dates: civil dates to regulate Muslim life, and dates for religious events, including the beginning of Ramadan and Eid, which is vital for the Muslim communities. In addition to calculations, the Kingdom relies on the naked sighting of the crescent moon to determine sacred days, which is why official announcements sometimes do not coincide with the dates previously set in the calendar. This calendar has been controversial, especially since actual crescent sightings often align with the calendar, even if it is scientifically incorrect; hence, many countries have refrained from adopting it. However, Saudi Arabia still maintains that its aim is to establish a universal calendar that can unify Muslims globally. This qualitative research uses a descriptive and analytical approach to answer two questions. First, why do some Muslim communities accept the Umm al-Qura calendar while others reject it? Second, can the Umm al-Qura calendar unite Muslims on a universal calendar? This research draws data from secondary sources of books and articles related to the Umm al-Qura calendar. It will also rely on public sources such as media reports and articles published on the websites of crescent-sighting institutions.

Keywords: Saudi Arabia, Umm al-Qura Calendar, crescent sighting, astronomical calculation, traditional sighting

TABLE OF CONTENTS

TITLE PAGE	i
STATEMENT OF AUTHENTICITY	ii
ANTI-PLAGIARISM STATEMENT	iii
THESIS ATTESTATION	iv
THESIS DEFENSE APPROVAL	v
ABSTRACT	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	viii
INTRODUCTION	1
LITERATURE REVIEW	3
METHODS	6
DISCUSSION	7
Historical Background of the Umm al-Qura Calendar	7
Muslim Attitudes Toward Umm al-Qura Calendar	10
<i>Religious debates on calculated calendars</i>	12
<i>Scientific debate in the Umm al-Qura calendar</i>	13
<i>Government Positions on Islamic Calendars</i>	15
Controversies Around Saudi Arabia's Lunar Calendar	16
<i>Within Saudi Arabia border</i>	16
<i>Outside Saudi Arabia border</i>	18
CONCLUSION	22
REFERENCES	24

LIST OF TABLES

Table 1	Moonsighting Report for Dhu al-Hijjah in 1440 H, 1443H, and 1446 H
Table 2	A Comparison of Umm al-Qura dates with Astronomically Possible Moonsighting for the start of the months Ramadan, Shawwal, and Dhu al-Hijjah from 1443 H to 1446 H

INTRODUCTION

Islam is often referred to as a lunar religion, not because the crescent is a symbolic element depicted in images and used on flags to represent Islam, as it was a symbol of the Ottoman Empire.¹ Rather, the moon holds great religious significance, and most texts on regulating Muslim time refer to reading the moon phases. The holy texts of the Quran and the Sunnah taught Muslims how to determine, organize, and measure time. Regarding days, Islam indicated that the day is divided into several times, beginning at night with the sighting of the moon in the evening sky.² As for the months, a new month begins at sunset with the sighting of the new crescent moon.³ God stated in the Quran (9:36) that the year is divided into twelve months, starting from the month of al-Muharram and ending with Dhu al-Hijja. These instructions motivated Muslims to create a calendar for Muslims to record and document their events, or what is known as the Hijri calendar.⁴

The most important part of regulating the timings is that related to religious rituals, and it is for this reason that the timings were mentioned. Islamic practices such as Zakaat, Hajj, fasting, and fiqh issues (i.e, the waiting period of women, etc) are based upon the lunar month.⁵ Therefore, observing the moon is considered a communal obligation for the entire Muslim community. Muslims hold the sighting of the crescent moon (in Arabic, it refers to *Ru'yah Hilal*) sacred, especially when determining important days such as Eid-ul-Adha and Eid-ul-Fitr, and the beginning of sacred months like Ramadan. It is an old Islamically prescribed methodology that has been practiced through the centuries by many Muslim societies. The Prophet of Islam emphasized the importance of moon sighting in the determination of the commencement of Islamic months.

Discussing the Hijri calendar also involves a part of Islamic sciences: Islamic astronomy. In this field, Islam requires Muslims to observe the moon and the sun throughout the year and informs them of the results to help plan their calendars, which is fundamentally linked to Islamic worship. As Muslim astronomers interacted with astronomers worldwide and witnessed advanced technologies that made sightings more reliable, they collaborated with them to develop these new technologies and attempted to apply this science to their Islamic community. Today,

¹ H. E. E. Hayes, "The Crescent as Symbol of Islam," *The Muslim World* 9, no. 2 (1919), p. 149, <https://doi.org/10.1111/j.1478-1913.1919.tb01761.x>.

² Barbara Freyer Stowasser, *The Day Begins at Sunset: Perceptions of Time in the Islamic World* (Bloomsbury Publishing, 2014).

³ Ibid, p. 35.

⁴ Based on the Prophet Muhammad's migration or Hijra from Mecca to Medina in 622 CE. See Hisham Abad, *Towards an Islamic Lunisolar Calendar: A Historical Account* (Hisham Abad, 2021), p. 79.

⁵ Muhammad Yusuf Danka, "Sighting of the Crescent Moon and the Signs of Qiyamah," *Moon Sighting UK* (UK), 2011, <https://www.moonsighting.org.uk/moon/publications/fatawa/sighting-of-the-crescent-moon-and-the-signs-of-qiyamah.html>.

Muslims can predict the crescent moon's birth in advance through modern astronomical calculations.

When Muslims realized that Islam emphasizes unity based on the principle of the unity of the Ummah, they were motivated to unify Muslims in religious rituals. Some scholars, such as Jamaluddin Abd ar-Razek, realized that it was possible to establish universal mathematical standards for predicting the sighting of the crescent moon. They envisioned unifying the dates of religious observances based on these standards. This led to the idea of creating a unified Hijri calendar so that Muslims could celebrate on the same day and promote unity within the Islamic Ummah. Scholars around the world have developed numerous Islamic calendars, including the one from Saudi Arabia called the Umm al-Qura calendar. This calendar is one of the most famous Islamic calendars, developed by the Kingdom of Saudi Arabia, which incorporated accurate astronomical calculations to determine the beginning and end of lunar months.⁶ It is followed by many Arab and Islamic countries, such as Qatar and Bahrain, as well as by many Muslim communities in countries with Islamic minorities, such as the Philippines, Taiwan, and the United Kingdom.⁷

The problem with this calendar, which scholars are calling for critical reflection on, is that the actual sighting results, announced by the Supreme Judicial Council (Majlis al-Qadā' al-A'lā) in Saudi Arabia at the beginning of each holy month, often coincide with the calendar used primarily for civil purposes. For this reason, countries such as Egypt, Iran, Libya, and Turkey have refrained from adopting it.⁸ Many scholars, such as Anwar, Budiwati, and Rulamsyharin, have argued that the creation of the calendar is a positive strategy toward unifying the Islamic calendar globally.⁹ Therefore, the adoption of this calendar by many countries would unify Islamic rituals and enhance cohesion within global Muslim communities. Jawaid, however, argues that the actual sighting does not align with the Umm al-Qura calendar, and that reported sightings are significantly influenced by the Umm al-Qura calendar.¹⁰ For this reason, some have proposed alternative

⁶ The Research Institute of Astronomy and Geophysics - Saudi Arabia, "Umm Al-Qura Calendar," Umm Al-Qura Calendar, accessed June 22, 2025, <https://ummalquracalendar.com/>.

⁷ Mahmood Jawaid, "Saudi Moon Sighting Reports - A Review," 2014, p. 8-9, https://www.academia.edu/13362419/Saudi_Moon_Sighting_Reports_A_Review.

⁸ Areeb Ullah, "The Politics of Moon Sighting: Why Some UK Muslims Stopped Following Saudi Arabia," *Middle East Eye*, 2021, <https://www.middleeasteye.net/news/ramadan-moon-sighting-saudi-arabia-uk-muslims>.

⁹ Syamsul Anwar, *Diskusi & Korespondensi Kalender Hijriah Global* (Yogyakarta - Indonesia: Suara Muhammadiyah, 2014); Anisah Budiwati, "Telaah Awal Kalender Hijriah Global Tunggal Jamaluddin Abd Al-Razik: Sebuah Upaya Menuju Unifikasi Kalender," *Bimas Islam Journal* 10, no. 3 (September 2017): 3, <https://doi.org/10.37302/jbi.v10i3.29>; Tirta Rulamsyahrin, "The Establishment of the Ummul Qura Calendar as An Effort To Unify the Global Islamic Calendar," *Proceeding of International Conference on Sharia and Law* 1, no. 1 (September 2022): 1.

¹⁰ Mahmood Jawaid, "Celebrating Eid-UI-Adha – by Saudi Moon or Local Moon?," 2015, p. 16, https://www.academia.edu/15607272/Celebrating_Eid_ul_Adha_by_Saudi_Moon_or_Local_Moon.

models based on precise measurements that can effectively predict the crescent sighting.¹¹

Despite increasing interest in Islamic calendars, there remains a gap in critically assessing the Ummul Qura calendar's feasibility as a unifying calendar. Most existing studies focus on the establishment and technical aspects of the calendar without fully exploring the debates in international contexts, given its status as a global calendar project. This research is an in-depth study of the Ummul Qura calendar, examining the debates surrounding it. The purpose of this study is to evaluate the feasibility of adopting the Ummul Qura calendar as a global calendar system. It aims to explore the prevalence of the Umm al-Qura calendar and how countries' policies regarding Saudi standards have changed over time. Accordingly, it will analyze whether this Islamic calendar can serve the broader international community, considering the debate surrounding this calendar.

The Islamic world today has multiple versions of the Islamic calendar, all based on a single Islamic calendar system: the lunar Hijri calendar. Other Islamic communities are encouraged to adopt their model in their project to unify Islamic calendars. This was one of the goals of the Saudi Arabian calendar (Umm al-Qura). However, this calendar was rejected by several countries due to its demonstrated shortcomings, including adherence to Islamic tradition, astronomical accuracy, and consideration of local contexts.

LITERATURE REVIEW

The idea of unifying the Hijri calendar based on the principle of the unity of the Islamic nation was initiated by early thinkers such as Ibn Taymiyyah (d. 1328 C.E.)¹² and al-Shatibi (d. 1388 C.E.).¹³ However, their idea was based on deductions without any evidence supported by modern science. With the advancement of science and technology, scholars have been able to support their ideas with scientific and mathematical foundations. Scholars view the various Eid dates and constantly changing dates in the Islamic world as problematic. Without a unified calendar system, the unity of the Islamic nation cannot be achieved. Mohammad Ilyas maintains that astronomy must be utilized and considers himself accountable for addressing the issue of the unity of the Islamic nation, including the issue of unifying the Islamic calendar.¹⁴ Azhari says that the desire to find a solution to the problem of the constant change in determining the beginning of the month is not

¹¹ Gamal Hafez, "Empirical Model for Moon Sighting," *Yanbu Journal of Engineering and Science* 19, no. 2 (March 2025): 22–29, <https://doi.org/10.53370/001c.38803>.

¹² Ahmad Ibn Taymiyyah, *Majmū' al-Fatāwā [Compilation of Fatawa]* (Saudi Arabia: King Fahd Complex for the Printing of the Holy Quran, 2004), http://archive.org/details/ar_22_Fatawa_Ibn_Taymiyyah.

¹³ Ibrahim ibn Musa al-Shatibi, *al-Muwāfaqāt fī Uṣūl al-Sharī'a* (Beirut - Lebanon: Dar Al Kotob Al Ilmiyah, 2004), http://archive.org/details/20200129_20200129_0618.

¹⁴ Mohammad Ilyas, "Calendars in Islam," in *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures* (Springer, Dordrecht, 2016), 1044–47, https://doi.org/10.1007/978-94-007-7747-7_8997.

limited to individuals alone, but is also shared by many Islamic organizations.¹⁵ He argues that the conflicting feelings of optimism and skepticism about this project cannot hinder the efforts of each party to unify the Hijri calendar. However, these unification efforts are bound to be affected by obstacles that hinder their full implementation. Musonnif suggests that the system for formulating the Islamic calendar in any given country must be influenced by two factors: the society's acceptance of science and political interests.¹⁶ In my opinion, it is imperative to understand all the factors that influence the acceptance of any Islamic calendar.

Today, there are several Islamic calendars with different standards, including that developed by Jamaluddin Abd ar-Razek, for which he wrote a book in 2004. Scholars Rakhmadi and Hidayat studied the universal Hijri calendar developed by Jamaluddin Abd ar-Razek and concluded that Muslims today are in dire need of a universal Islamic calendar, and that what matters in the calendar is the start date of the new month, not how they are determined.¹⁷ Furthermore, Turkish scholars, in collaboration with scholars from the European Council for Fatwa and Research, adopted unified calendar criteria in 2016. Hidayat and others assert that these criteria are the most suitable and accurate for formulating a unified Islamic calendar, and that if other calendars were to follow these criteria, they would become more acceptable.¹⁸ Anwar was among the scholars who advocated a unified calendar and the formulation of a Hijri calendar, and he has published several books arguing that Muslims should refer to universal calendar criteria.¹⁹

While many aspire to this unification, other scholars, including Özlem, are skeptical of achieving unified global standards, whether at the regional or global level.²⁰ Then we find that the Kingdom of Saudi Arabia has the Umm al-Qura calendar, which is considered the most widely used criterion currently. It relies on the location of Mecca as the reference for sighting the crescent. Aris argues that this calendar is different from the Muhammadiyah calendar (a local calendar in Indonesia).²¹ They aim to contradict the views of Anwar and Oman Fathurrahman,

¹⁵ Susiknan Azhari, "Penyatuan Kalender Islam: Satukan Semangat Membangun Kebersamaan Umat," *UIN Sunan Kalijaga*, 2011, <https://www.scribd.com/doc/135342849/Penyatuan-Kalender-Islam-Oleh-Susiknan-Azhari>.

¹⁶ Ahmad Musonnif, "KALENDER UMM AL-QURA (Studi Pergeseran Paradigma Sistem Kalender Di Kerajaan Arab Saudi)," *Ahkam: Jurnal Hukum Islam* 3, no. 2 (November 2015): 165–86, <https://doi.org/10.21274/ahkam.2015.3.2.165-186>.

¹⁷ Arwin Juli Rakhmadi and Muhammad Hidayat, "The Issues and Prospects of the Global Islamic Calendar," Atlantis Press, October 20, 2020, 109–12, <https://doi.org/10.2991/assehr.k.201017.025>.

¹⁸ Muhammad Hidayat et al., "PROBLEM AND SOLUTIONS FOR ACCEPTING A SINGLE GLOBAL ISLAMIC CALENDAR," *Journal of Law and Governance* 7, no. 1 (December 2024): 1.

¹⁹ Syamsul Anwar, "Unifikasi Kalender Hijriah Global Problem Dan Tantangan," *Al-Marshad: Jurnal Astronomi Islam Dan Ilmu-Ilmu Berkaitan* 2, no. 2 (2016): 2, <https://doi.org/10.30596/jam.v2i2.2548>.

²⁰ Abdurrahman Özlem, *The Extended Crescent Visibility Criterion*, 2014, <https://doi.org/10.13140/RG.2.2.22614.46407>.

²¹ Nur Aris, "PENENTUAN AWAL BULAN QAMARIYAH DALAM SISTEM PENANGGALAN HIJRIYAH (Studi Komparasi Konsep Wujudul Hilal Muhammadiyah Dengan

who claim that the two calendars are very similar.²² The Muhammadiyah calendar differs in its system and relies on the city of Yogyakarta as the reference for sighting. Formulating a unified calendar like the Muhammadiyahs' is not impossible. Rather, it is feasible if certain conditions are met, the barriers surrounding it are recognized, and efforts are made to address them with awareness and realistic planning.

Al-Mustafa argues in numerous articles that the Umm al-Qura calendar, based on its current criteria, can be a universal calendar and is compatible with Sharia.²³ However, Rulamsyahrin disagrees, arguing that the Umm al-Qura calendar cannot achieve universality and that the current criteria are only suitable for civil purposes, not for determining the beginning of the month.²⁴ In this sense, many scholars question the inaccuracy of Umm al-Qura's calculations. This is because the government annually requests that residents sight the crescent moon on the 29th of each month and announces this in conjunction with the sightings of the holy months of Ramadan, Shawwal, and Dhu al-Hijjah. The government accepts all reports, even those with erroneous sightings. Ayman Kordi, an astronomer at King Saud University, has scientifically proven these cases.²⁵ Of the 42 crescent sighting reports he observed between 1962 and 2001, he found that 24 of the crescent sighting reports in Saudi Arabia were erroneous, meaning they were scientifically inaccurate and impossible to sight. This was also confirmed by Ghadi's study, which spanned 45 years, from 1380 H to 1425 H, and reached the same conclusion.²⁶ Similarly, Jawaid observed Saudi Arabia's announcements of the crescent moons for Ramadan, Eid al-Fitr, and the beginning of Dhu al-Hijjah, comparing them with astronomical data from 2001 to 2014.²⁷ He found that seven of the reported sightings were impossible, as the moon set before sunset. Jawaid believes these sightings were attributable to a bright star, planet, or aircraft trail seen near the western horizon. Therefore, Faid and others believe that a methodology is needed to confirm crescent sighting reports, as although crescent sighting practitioners

Wiladatul Hilal Ummul Qura Saudi Arabia)," *Research and Community Service Center of State Islamic College of Kudus*, IAIN Kudus, 2011, <http://repository.iainkudus.ac.id/10238/>.

²² Syamsul Anwar, *Hari raya dan problematika hisab-rukyat* (Yogyakarta: Muhammadiyah Voice, 2008); Oman Fathurrahman, "Kalender Muhammdiyah: Konsep Dan Implementasinya," *Mushawarah Ahl Hisab Muhammdiyah*, 2006, Yogyakarta.

²³ Zaki al-Mustafa, "al-asbāb al-'ilmiyya li-'ālamīyyat taqwīm Umm al-Qurā [The Universality of Um Al-Qura calendar The scientific reasons]," *King Fahad National Library*, 2004, <http://masder.kfml.gov.sa/Dspace/handle/123456789/25827>.

²⁴ Rulamsyahrin, "The Establishment of the Ummul Qura Calendar as An Effort To Unify the Global Islamic Calendar."

²⁵ A. Kordi, "The Psychological Effect on Sightings of the New Moon," *The Observatory* 123 (August 2003): 219–22.

²⁶ Adnan A Gadi, "A Historically Comparative Study of the Beginning of Ramadan (1380-1425H) between Announced Dates and Astronomical Dates in Saudi Arabia," paper presented at Applications of Astronomical Calculations, Abu-Dhabi, United Arab Emirates, *Proceedings of the First Emirates Astronomical Conference, Held at the Center for Documentation and Research*, International Astronomical Center, 2006, https://astronomycenter.net/article/gadi_error.html.

²⁷ Jawaid, *Celebrating Eid-Ul-Adha*.

currently rely on digital photography, there are still cases of false sightings without any digital evidence to support them.²⁸ Reports of incorrect crescent sightings continue to emerge despite the astronomically impossible sighting and the agreement of the official announcement with the Umm al-Qura calendar.

METHODS

This study adopts a qualitative, descriptive, and analytical approach to address the topic of Global Hijri calendars, as defined by Kumar, in which this approach attempts to describe a problem or phenomenon and analyze the causes and relationships between its variables.²⁹ This paper focuses primarily on the religious and social aspects of the debate surrounding the Umm al-Qura calendar. However, I recognize that political factors often overlap with religious positions, especially in research on a calendar in which the government plays a role in its acceptance or rejection. Therefore, I will briefly mention them when they influence the context of calendar creation. The conclusion of this study is reflected in the following research questions: Why do some Muslim communities accept the Umm al-Qura calendar while others reject it? Can the Umm al-Qura calendar unite Muslims on a universal calendar? In this research process, the analysis will be based on secondary data from sources such as books, scholarly articles, media outlets such as newspapers, and other materials that address the same topic, relying on the following set of keywords: "Umm al-Qura calendar," "unified calendar," "Saudi calendar," and "universal Hijri calendar."

In analyzing the Umm al-Qura calendar, the researcher will refer to news and data published on the website (www.moonsighting.com) and (www.astronomycenter.net), and use observation and sighting data, calendar records, and crescent sighting announcements in the Kingdom of Saudi Arabia. This will then be compared with astronomical sighting data issued by several astronomical institutes around the world to assess the reliability of previous calculations of the Umm al-Qura calendar and crescent sightings of religious occasions in Saudi Arabia over several years. Moreover, the analysis will combine scientific analysis with religious or *fiqhi* reflection on the Umm al-Qura calendar and the factors influencing the acceptance of this calendar across the globe. This approach of analyzing contents sheds light on the Umm al-Qura calendar, its local and transnational debates, and determines the reasons for disparity in its acceptance. Therefore, it is suited to the nature of the study.

²⁸ Muhamad Syazwan Bin Faiz, Mohd Saiful Anwar Mohd Nawawi, and Mohd Hafiz Mohd Saadon, *Design, Development and Analysis of Lunar Crescent Visibility Criterion With Python* (Boca Raton: CRC Press, 2024), <https://doi.org/10.1201/9781003536192>.

²⁹ Ranjit Kumar, *Research Methodology: A Step-by-Step Guide for Beginners*, 3rd ed (Los Angeles: SAGE, 2011).

DISCUSSION

Historical Background of the Umm al-Qura Calendar

Classical sources assert that Muslim scholars in the Hejaz began observing the positions and phases of the moon and sun to develop the Umm al-Qura calendar during the Rashidun Caliphate, under the reign of Umar ibn al-Khattab.³⁰ However, at that time, the Hijri calendar was issued monthly and relied entirely on the actual sighting of the crescent moon, and there was no annual calendar yet.³¹ After the unification of the Saudi state and the development of printing facilities at the end of the 20th century, the government realized that developing a calendar spanning a full year would make it easier to organize their schedules. Therefore, it decided to issue an annual calendar and officially adopt the Umm al-Qura calendar as the calendar for use by citizens in Saudi Arabia. The government thus took two important steps. First, it established a committee responsible for constructing the calendar, performing astronomical calculations to predict the beginning and end of lunar months. This committee was comprised of Muslim scholars from the Institute of Astronomical and Geophysical Research at the King Abdulaziz City for Science and Technology in Riyadh. Second, it appointed the Supreme Judicial Council as the committee overseeing the actual sighting of the *hilal* and the announcement of Ramadan and the two Eid holidays. This implies that the government adopted a mixed approach that reconciles scientific advances with adherence to Islamic tradition.

In the Saudi context, the Umm al-Qura calendar is not the first calendar on a regional level. Two calendars preceded it, published during the reign of King Abdulaziz: *taqwīm al-awqāt li-‘arḍ Najd* (Prayer timetable for the Najd region) and *taqwīm al-awqāt li-‘arḍ al-mamlaka al-‘arabiyya al-sa‘ūdiyya* (Prayer timetable for the regions of Saudi Arabia).³² Therefore, this calendar is not the first in its category, but rather the successor to the two previous calendars.³³ If we look at the first edition of the annual calendar in the book "The Comparative Calendar from 1300 H to 1429 H,"³⁴ we find that the Ministry of Finance and Economy was responsible for issuing the Hijri calendar, as it needed to organize state affairs, particularly concerning government employment and the management of Hajj affairs. Since the Saudi state was in its early stages of establishment, there was no

³⁰ F. E. Peters, *A Reader on Classical Islam* (Princeton University Press, 1993), p. 287.

³¹ Nur Aris, "Dinamika Kriteria Penentuan Awal Bulan Kamariah Dalam Penanggalan Umm Al-Qura Sejak 1346 H/1927 M – 1436 H/2015 M" (Dissertation, Walisongo State Islamic University, 2016), p. 131.

³² "Al-Faisal Magazine," *King Faisal Center for Research and Islamic Studies*, no. 268 (February 1999), p. 110; Hamadi A. Muhammad, *awā'il al-maṭbū'āt al-sa'ūdiyya [Early Arabic imprints: Saudi Arabia]* (King Fahad National Library, 1999), p. 7.

³³ Gadi, "A Historically Comparative Study of the Beginning of Ramadan (1380-1425H) between Announced Dates and Astronomical Dates in Saudi Arabia."

³⁴ The Institute of Astronomy and Geophysics at King Abdulaziz City for Science and Technology, *Taqwīm Umm Al-Qurā al-Muqāran Li-Thalāthīn 'āman: : 1300-1429 HQ, 1882-2007 Mīlādīyah, 1261-1386 HSh*, 1 (Riyadh: Ministry of Finance and National Economy, 1992).

Ministry of Religious Affairs or Saudi Astronomical institutions. The Ministry of Finance and Economy worked with Muslim scholars to coordinate the calendar and published the first issue of the Umm al-Qura calendar in 1346 H.³⁵ It was published monthly by the government printing press in Mecca. This perhaps explains why the calendar is called Umm al-Qura.³⁶

In 1370 H, the government formed two committees responsible for the calendar, under the supervision of the Ministry of Finance and Economy. These committees then published calculation criteria for the beginning of the crescent moon, which was sunset on the 29th of the month, with the moon at an elevation of 9 degrees above the horizon. These criteria caused disagreement among scholars, as the crescent moon could sometimes be clearly seen at an elevation of less than 9 degrees under clear weather conditions.³⁷ Therefore, the government asked Fadl Ahmed, an astronomer and director of the Astronomical Research Institute at King Abdulaziz City for Science and Technology, to correct the Umm al-Qura calendar. Fadl Ahmed responded that there was no problem in changing prayer times, but that determining the beginning of the lunar months of the year would have to be based on new criteria.³⁸ Thus, the criteria used from 1393 H to 1419 H were changed, and based on the astronomical birth of the crescent (or the occurrence of conjunction) before midnight GMT. Since the time difference between Mecca and Greenwich is 3 hours, the lunar month begins before its birth in Mecca.³⁹ Therefore, the entry of the new month is illegitimate and unscientific.

In 1419 H, a major change officially occurred, with the country adopting the coordinates of Mecca as the location for crescent observation. The new criteria stipulated that the new month would begin if the moon set after sunset in Mecca on the 29th day, regardless of the astronomical birth of the crescent. However, these criteria did not hold for long, as the new month could begin without conjunction and the moon set after sunset, resulting in Saudi Arabia being one day ahead in determining the crescent's appearance.⁴⁰ Therefore, in the final stage, the Saudi

³⁵ KACST, "The official Saudi calendar – Umm al-Qura Hijri and Gregorian calendar," accessed July 25, 2025, <https://www.ummulqura.org.sa/>.

³⁶ Umm Al-Qura is another name for the city of Mecca. It was mentioned in the Quran (6:92), "So that you warn umm al-qura and those around it." There are other institutions in Saudi Arabia that bear the same name, such as Umm Al-Qura University and Umm Al-Qura Development and Construction Company, all of which were established in Mecca.

³⁷ Zaki al-Mostafa and Yasir Hafiz, "Umm Al-Qura Calendar: The Officially Adopted Calendar in the Kingdom of Saudi Arabia," The Institute of Astronomical and Geophysical Research at the King Abdulaziz City for Science and Technology, 2001, https://astronomycenter.net/pdf/almostafa_hafize_2001.pdf.

³⁸ Nur Aris, "Dinamika Kriteria Penentuan Awal Bulan Qamariah dalam Penanggalan Umm Al-Qura Saudi Arabia," *Al-Ahkam: Journal of Sharia and Legal Studies*, 2016, <https://jurnal.hukumonline.com/a/5cb49c6001fb73000fcec1620/dinamika-kriteria-penentuan-awal-bulan-qamariah-dalam-penanggalan-umm-al-qura-saudi-arabia/>.

³⁹ Rulamsyahrin, "The Establishment of the Ummul Qura Calendar as An Effort To Unify the Global Islamic Calendar," p. 141.

⁴⁰ al-Mostafa and Hafiz, "Umm Al-Qura Calendar: The Officially Adopted Calendar in the Kingdom of Saudi Arabia."

Shura Council issued a resolution stating that the reference for determining the beginning of the Hijri month would be the moon setting after sunset and the conjunction before sunset.⁴¹ Accordingly, the Saudi Hijri calendar meets two criteria: a Sharia requirement based on the traditional method applied by religious scholars at the Supreme Judicial Council, and a scientific requirement based on calculations performed by astronomers at the Astronomical Research Institute.

In the Umm Al-Qura calendar, the day begins at sunset. The calendar includes the Arabic days (Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday) and the twelve Islamic months (Muharram, Safar, Rabi' al-Awwal, Rabi' al-Akhir, Jumada al-Awwal, Jumada al-Akhira, Rajab, Sha'ban, Ramadan, Shawwal, Dhul-Qadah, Dhul-Hijjah). The month ends on either the 29th or 30th of each month, but cannot be more than 30 days. The lunar year is completed by completing 354 or 355 days. The calendar divides the day into two times: morning (ص), which is equal to AM (Ante Meridiem), that starts at 12:00 AM, and evening (م), which is equal to PM (Post Meridiem), that begins at 12:00 PM. It also contains the five prayer times (Fajr, Dhuhr, Asr, Maghrib, and Isha) and the sunrise time.

This pre-calculated lunar calendar is Islamic in that it is influenced by religion (based on the Hijri calendar) and designed to organize the schedules of citizens, the majority of whom are Muslims, and to determine the Hijri months and the dates of official holidays. It is also designed for Islamic rituals, as it is used to determine the Hajj and Umrah seasons, prayer times, the start and end of Ramadan, and religious holidays. However, Ramadan and the two Eids are determined by actual sighting, which is a method recommended in Islamic texts, and therefore, the actual sighting may not match the calendar.⁴² In addition, jurists continue to criticize the moon-sighting method using astronomical calculations. Some believe that seeing the moon with the naked eye is a primary condition for determining the beginning and end of the sacred months, while others believe otherwise, relying entirely on astronomical calculations.⁴³

It is worth noting that in 1972 (in Hijri 1392), Saudi Arabia invited all countries to a conference of senior scholars. The conference sought to establish a unified calendar for the Islamic lunar months and to rely on the birth of the crescent moon or *wilādat al-hilāl* for astronomical calculations. The outcome of the conference did not satisfy Saudi Arabia's aspirations, as not all attendees agreed, and some scholars did not accept the criteria set by the Saudi scholars for determining the beginning and end of the lunar months. Consequently, they held further meetings until 1985, and at the sixth conference, they received the approval of 14 government representatives from the attending Islamic countries. Today,

⁴¹ Rulamsyahrin, "The Establishment of the Ummul Qura Calendar as An Effort To Unify the Global Islamic Calendar." P. 141.

⁴² Jawaid, *Celebrating Eid-Ul-Adha*, p. 12.

⁴³ Zulfiqar Ali Shah, *The Astronomical Calculations and Ramadan: A Fiqhi Discourse: A Fiqhi Discourse* (International Institute of Islamic Thought (IIIT), 2009), p. 50.

many Islamic countries and communities in non-Islamic countries follow the Saudi declaration.

Various Islamic calendars prevail in the Islamic world, other than the Umm al-Qura calendar, each aiming to have a broad social base and gain acceptance by its members spread across the globe. Some seek regional adoption, while others seek global adoption. For example, in Turkey, its residents rely on criteria agreed upon by many scholars at the Istanbul Conference in 2016.⁴⁴ Meanwhile, Jamal al-Din Abd al-Raziq, a Moroccan astronomer, previously proposed a universal calendar with simple universal criteria.⁴⁵ At the beginning of the new Islamic year 1447/2025, Muhammadiyah, an Islamic group in Indonesia, published a universal calendar called the Unified Global Hijri Calendar (UGHC), and aimed at global adoption, adopting a combination of Saudi and 2016 Turkey Conference criteria. Religious calendars in some countries are a multi-purpose tool, serving not only as sources of time management and religious education but also as repositories of moral principles. They incorporate Quranic verses and hadiths and include information about historical events and facts, such as the Turkish calendar, thereby fostering a sense of national identity.

Muslim Attitudes Toward Umm al-Qura Calendar

The Umm al-Qura criteria for determining the beginning of the Hijri months, based on astronomical calculations, are among the most prominent contemporary models that have sparked widespread debate in Islamic spheres. These criteria have transcended the local framework and have become a subject of consideration in a number of countries and Islamic organizations. However, these criteria witness varying degrees of acceptance and reservation among Islamic societies. Table 1 shows data compiled from Moonsighting.com, run by Khaled Shawkat, an

⁴⁴ When establishing religious dates, such as Eid and the beginning of Ramadan, Turkey fully adopted astronomical calculations to sight the crescent moon. They consider the calculation of the beginning and end of lunar months to be more reliable than physical sighting. In this sense, the religious affairs (*Diyanet*) decreed a fatwa justifying the use of calculations in the matter of crescent sighting. The Turkey 2016 criteria are:

- The entire world is considered one moon sighting zone.
- The crescent moon must be at least 5 degrees above the horizon and an elongation of at least 8 degrees from any location on Earth before 00:00 GMT.
- If the above conditions are met, the following day will mark the beginning of a new month for the entire world.

See: Universiteit Utrecht, "The Islamic Calendar of Turkey," accessed July 9, 2025, https://webspace.science.uu.nl/~gent0113/islam/diyanetcalendar_rules.htm; and Syamsul Anwar, "Tindak Lanjut Kalender Hijriah Global Turki 2016 'Tinjauan Usul Fikih,'" *Tarjih: Jurnal Tarjih dan Pengembangan Pemikiran Islam* 13, no. 2 (2016): 99–124.

⁴⁵ He developed this calendar in his book, *al-taqwīm al-qamarī al-islāmī al-muwahḥad*, in 2004, and it was the first attempt to unify the Hijri calendar and establish global criteria. His global lunar calendar has three principles. First, it uses hisab or calculations. Second, the principle of transferring (*ru'yah*) crescent sightings to the east, meaning if the western countries see the *hilal*, the sighting is transferred to eastern countries, even without the possibility of sighting. Third, using midnight at 180 degrees longitude as the start of the day.

See: Rakhmadi and Hidayat, "The Issues and Prospects of the Global Islamic Calendar."

astronomer and crescent observer.⁴⁶ It compares crescent sighting practices to determine the beginning of Dhu al-Hijjah across three different years in the Hijri calendar: 1440, 1443, and 1446. One of the categories is the number of countries that rely on the Saudi declaration.

Basis for Declaration	Number of Countries in 1440 H	Number of Countries in 1443 H	Number of Countries in 1446 H
Countries following Saudi Announcement	54	44	47
Countries doing local sighting	48	49	48
Countries using calculation or following Turkey Criteria	-	12	12

Table 1. Moonsighting Report for Dhu al-Hijjah in 1440 H, 1443H, and 1446 H

Source: www.moonsighting.com, 1440 H, 1443 H, 1446 H

The data in the table shows that the number of countries following the Saudi Arabian criteria or declaration decreased between 1440 and 1443 H. However, it increased slightly in 1446 H, but not to the same number as in 1440 H. This indicates that there is a shift in crescent sighting policies in some countries, possibly due to jurisprudential, scientific, or even political factors. Therefore, despite the aspirations of many countries, religious institutions, and individuals to achieve unity through a unified Hijri calendar, no calendar has yet achieved global acceptance. International conferences aimed at unifying the Hijri calendar, such as those held in Istanbul from 1978 to 2017, did not achieve acceptance from all participating countries.⁴⁷ This is due to international, institutional, and individual objections. For instance, Umm al-Qura calculations are accepted in many Islamic societies, with over 40 countries following its declaration of Eid. However, even in this case, it is not always accepted, as some mosques in the United Kingdom have abstained from following the Saudi Arabian announcement, or it is consistently rejected.⁴⁸

Furthermore, Islamic calendars, especially those aiming for global consistency, face religious, political, and scientific challenges. As a result, many proposals exist to create an acceptable global calendar or improve existing

⁴⁶ Khalid Shaukat, "Moonsighting For World," May 15, 2022, <https://www.moonsighting.com/how-countries.html>.

⁴⁷ Ahmad Adib Rofiuddin, "Dinamika Sosial Penentuan Awal Bulan Hijriah di Indonesia," *istinbath* 18, no. 2 (2019): 2, <https://istinbath.or.id/index.php/ijhi/article/view/166>.

⁴⁸ Ullah, "The Politics of Moon Sighting."

standards for more accurate astronomical calculations. Djamaluddin and Mufid argue that unifying the Hijri calendar requires consensus on several aspects, including its scope of application, criteria for implementation, and frame of reference.⁴⁹ This consensus should involve multidisciplinary voices, including experts in jurisprudence, astronomy, and social policy. Ultimately, a unified calendar's acceptance is uncertain due to various factors—religious, scientific, political, and social. Therefore, current calendar standards must be comprehensive, addressing all these aspects while considering the political systems and diverse cultures of the Islamic world.

Religious debates on calculated calendars

From a religious perspective, the Hijri calendar is acceptable and even legitimate for regulating Muslim times. However, relying on it solely to determine religious occasions generates controversy among jurists. Anwar says that the root of this debate lies in the dispute over the text and the reality they face, and the failure to reach a jurisprudential position that gives them a strong justification for establishing a unified calendar or not.⁵⁰ Some scholars, including al-Nawawi, believe the hadith on actual sighting makes it a legal requirement for determining lunar months.⁵¹ Early jurists rejected the shift to astronomical calculations, considering it *bid'ah* (innovation) that was not present during the Prophet's time.⁵² However, jurists do not dispute that astronomical calculations are permissible. Some Hanafi scholars believe there is no issue with trusting astronomers' opinions. Muhammad ibn Muqatil, a Hanafi scholar, even consulted them and relied on their calculations if they agreed.⁵³

We also find some scholars relying on different approaches to support their arguments, such as relying on the objectives of Islamic law, including the objective of achieving *maslaha* (public interest) and *taysir* (facilitating) the welfare of the Islamic nation.⁵⁴ Formulating a calendar achieves numerous social benefits and facilitations, such as organizing society and social relations among Muslims within

⁴⁹ Abdul Mufid and Thomas Djamaluddin, "The Implementation of New Minister of Religion of Brunei, Indonesia, Malaysia, and Singapore Criteria towards the Hijri Calendar Unification," *HTS : Theological Studies* 79, no. 1 (n.d.), p. 6, <https://doi.org/10.4102/hts.v79i1.8774>.

⁵⁰ Syamsul Anwar, "Unified Islamic Calendar in the Perspective of Islamic Legal Philosophy," *Al-Jami'ah: Journal of Islamic Studies* 54, no. 1 (June 25, 2016), p. 206, <https://doi.org/10.14421/ajis.2016.541.203-247>.

⁵¹ Salih Ud Din Haqqani, "Shari' Status Of Moon Sighting In The Perspective Of Modern Technology: A Critical Review," *VFAST Transactions on Islamic Research* 2, no. 1 (January 26, 2014), p. 41.

⁵² Zachariah Matthews, "The Ruling for Sighting the Moon in Ramadan According to the Four Madhabs: Calculation versus Physical Sighting,," *Charles Sturt University*, 2014, https://www.academia.edu/14005529/The_ruling_for_sighting_the_moon_in_Ramadan_according_to_the_four_madhabs_Calculation_vs_physical_sighting.

⁵³ Ahmad al-Jassas, *Ahkam Al-Qur'an*, vol. 2 (Beirut: Dar Ihya al-Turath al-Arabi, 1992), p. 47.

⁵⁴ Abdul Mufid, "Unification of Global Hijrah Calendar In Indonesia: An Effort To Preserve The Maqasid Sunnah of The Prophet (SAW)," *Journal of Islamic Thought and Civilization* 10, no. 2 (November 25, 2020), p. 30-32, <https://doi.org/10.32350/jitc.102.02>.

and outside its environment. Even better than that is unifying the Islamic nation. Al-Qaradawi argued that the traditional method (actual sighting) is used as *wasila* (method) of Islamic law.⁵⁵ It was used during the Prophet's time (actual sighting) because it was the easiest way for the ummah to determine the time of fasting and breaking the fast. Al-Qaradawi believes that *wasila* can be changed if necessary, if another method is found can achieve the same goal and is less prone to error and illusion. Therefore, replacing abstract sighting with precise astronomical calculations is acceptable under Islamic law and achieves the objectives of Islamic law.

Despite strong arguments for the legitimacy and accuracy of calculations in predicting the crescent's birth and likely sighting conditions, some scholars and institutions, such as those in Saudi Arabia, reject total reliance on this method. They view it as disregarding definitive Islamic texts. Ibn Qudamah, Imam al-Nawawi, and the majority of scholars believe that calculations alone are not sufficient; actual sighting is required.⁵⁶ Furthermore, sighting the crescent moon is not an act of worship itself but a practice for determining time, connected to religious rituals performed by Muslims annually, and has become part of Islamic traditions. Replacing it with scientific calculations and adopting a unified calendar based entirely on these would mean abandoning these collective practices.

Scientific debate in the Umm al-Qura calendar

While Islam respects science and encourages Muslims to practice it, debates in astronomy are still ongoing. The chronological history of Islam reveals a nonlinear trajectory for the Islamic calendar due to its connection, as a religious component, to broader social movements and events.⁵⁷ Muslim scholars have been divided in this debate between those who believe in the potential of science and technology and those who oppose it.⁵⁸ Proponents of astronomical calculations see them as *wasilah* (support) to crescent sighting, while in the present era, some have relied entirely on astronomical calculations, achieving a degree of certainty (such as in countries that follow the criteria of Turkey and Muhammad). Opponents, however, see this aid as a de facto authority in determining the beginning and end of the lunar month. Despite these debates, they demonstrate the usefulness of calculations in today's Islamic context.

⁵⁵ Yusuf al-Qardawi, *Kayfa nata'āmal ma'a al-sunna al-nabawiyya: ma'ālim wa-dawābiṭ* (USA: International Institute of Islamic Thought, 1992), p. 145, http://archive.org/details/20210220_20210220_1822.

⁵⁶ Dr Mufti Muhammad Iltimas Khan, "The Shari'ah Implications of the Variations in Distance between the Sun and the Moon (Perigee & Apogee): Differing Perspectives of Scholars," 3, no. 02 (April 15, 2025), p. 151.

⁵⁷ Na'eel Cajee, "Circular Calculus and Elliptical Realities: The Standardization of the Islamic Lunar Calendar in the United States, 1966–2006," *Journal of Muslim Minority Affairs* 31, no. 3 (September 2011): 441–62, <https://doi.org/10.1080/13602004.2011.599548>.

⁵⁸ "Maulana Maududi Answers Questions," *Newsletter of the Muslim Students' Association of US & Canada*, 1971, 15–17.

Moreover, science has shown that unnatural changes in global climate have negative effects on many aspects, including social systems.⁵⁹ Climate change in the modern era is one of the factors challenging the traditional method of sighting the crescent moon. Climate change-related phenomena, such as increased light pollution, increased cloud cover (as seen in Singapore), and increased dust storms in the UAE, significantly impact the naked sighting of the crescent moon.⁶⁰ They make sighting more difficult and less reliable for many Muslims around the world. This difficulty leads to frequent reliance on the 30-day crescent moon, in accordance with the Prophet's hadith:

Adam narrated to us, Shu'bah narrated to us, Muhammad b. Ziyad narrated to us, he said: I heard Abu Hurairah r.a. said: The Prophet (peace be upon him) said: fast based on seeing it (the new moon of Ramadan) and break your fast based on seeing it (the new moon of Shawwal), if it is covered by a cloud or dust, then complete 30 days. (Narrated by Bukhari).⁶¹

This means that if the crescent moon cannot be sighted at the end of the month, the full moon must be completed. Compared to the results of astronomical calculations, the sighting may or may not occur, and Muslims must celebrate religious occasions on different days.

In this sense, can we fully rely on astronomical calculations and thus accept the global Hijri calendars? In the modern era, there are many instances of sighting being impossible due to climate change. This happens annually, although not in all countries. Ahmed Shaker, a contemporary jurist, says that

"If the reason for prohibiting astronomical calculations is gone, then reference should be made to them alone. He then stipulates that turning to the calculations should be based on accurate calculations related to the new lunar month and the possibility of its sighting."⁶²

Since climate change is a global problem that cannot be solved with individual or immediate solutions, modern crescent sighting strategies must be adopted that predict the possibility of sighting and eliminate the impossibility of sighting. This eliminates the pretext for prohibiting astronomical calculations. On the other hand, some scholars like Ibn Abidin argue that the Prophet's hadith also affirm that there is no justification for climate change, whether clouds or dust

⁵⁹ Abad, *Towards an Islamic Lunisolar Calendar*.

⁶⁰ Laraib Anwer, "2 Weeks to Eid in UAE: From Longer Fasting Hours to Hotter Weather, How Residents Are Prepping for End of Ramadan.," *Khaleej Times (Dubai, United Arab Emirates)*, SyndiGate Media Inc., March 25, 2024, NA-NA; Muhammad Syazwan Faid et al., "Assessment and Review of Modern Lunar Crescent Visibility Criterion," *Icarus* 412 (April 2024): 115970, <https://doi.org/10.1016/j.icarus.2024.115970>.

⁶¹ Muhammad bin Ismail al-Bukhari, *Ṣaḥīḥ al-Imām al-Bukhārī*, 4 9 (Beirut: Dar Tauq an-Najah, 2001), p. 452, http://archive.org/details/sa71mir_gmail_P03.

⁶² Jamal al-Din Muhammad ibn Abd Allah Zayla'i, *Naṣb Al-Rāyah Takhrīj Ḥadīth al-Hidāyah*, vol. 3 (Dar al-Hadith, n.d.)p. 40.

storms.⁶³ That is because the first condition is the sighting of the crescent moon, and the second condition is the completion of thirty days. However, since the climate problem is a factor affecting many countries, relying on calculations in the present era is the most appropriate *fiqhi* and scientific position as long as the condition of the month limit (thirty days) remains or does not exceed it.

Government Positions on Islamic Calendars

Official calendars today are almost always supported by the government. Government institutions, such as the Organization of Islamic Cooperation (OIC), consistently demonstrate strong and unwavering support for the unification of the Islamic calendar.⁶⁴ Their resolutions encourage member states to participate in seminars and conferences dedicated to unifying the calendar based on accurate astronomical calculations. It is also worth noting that the International Islamic Fiqh Academy (IIFA) participates in academic activities at scientific seminars for the unification of the calendar to demonstrate its alignment with the OIC, the academy's umbrella organization.⁶⁵ The activities of international political and religious institutions indicate that they similarly aim to support the Islamic community and promote harmony among nations.

Every Islamic community strives to achieve religious consensus, especially since the calendar is considered a religious symbol and is linked to sacred religious rituals. However, despite the efforts of scholars to agree on a single calendar, the final decision rests with the local religious authority or governments. The criteria applied to astronomical calculations are often modified for political interests.⁶⁶ Therefore, proposals for a unified calendar cannot be reached easily.⁶⁷ Rather, it requires the collective and genuine participation of public bodies, religious authorities, and community leaders. This complexity extends to the challenge of coordinating calendar decisions between sovereign states due to overlapping political interests,⁶⁸ as each state has its own unique political priorities and legal system.

⁶³ Khan, "The Shari'ah Implications of the Variations in Distance between the Sun and the Moon (Perigee & Apogee)," p. 152.

⁶⁴ "Unified Hijri Calendar: OIC Initiative yet to Be Materialised | The Financial Express," accessed July 11, 2025, <https://thefinancialexpress.com.bd/views/opinions/unified-hijri-calendar-oic-initiative-yet-to-be-materialised-1556552829>.

⁶⁵ Hamdun, "Upaya Penyatuan Kalender Islam Internasional Oleh Organisasi Kerjasama Islam (OKI)," *Jurnal Bimas Islam* 10, no. 3 (September 30, 2017), p. 494, <https://doi.org/10.37302/jbi.v10i3.32>.

⁶⁶ Musonnif, "KALENDER UMM AL-QURA (Studi Pergeseran Paradigma Sistem Kalender Di Kerajaan Arab Saudi)."

⁶⁷ Ahmad Musonnif et al., "Government Position in Religious Authority Contestation in Indonesia: Reviewing the Government Authority in Determining the Beginning of Islamic Months," *De Jure: Jurnal Hukum Dan Syar'iah* 16, no. 2 (December 17, 2024), p. 337, <https://doi.org/10.18860/j-fsh.v16i2.27517>.

⁶⁸ Ahmad Adib Rofiuddin and Ahmad Izzuddin, "Optimist and Pessimist Moon-Sighting: The Study of Islamic Calendar Determination In Indonesia," *Muàsarrah: Jurnal Kajian Islam Kontemporer* 4, no. 2 (December 2022): 119–27, <https://doi.org/10.18592/msr.v4i2.7543>.

In addition, religious interpretations between states may sometimes differ, such as the difference between Indonesia, Iran, and Saudi Arabia. In Indonesia, the state adopts a moderate approach based on harmony between different religions, even within its own Islamic community. In Iran, Shiism is the officially recognized religious interpretation, whereas Saudi Arabia is undergoing a gradual transition from a strict religious approach, following the Wahhabi interpretation, to a more moderate approach. Both Saudi Arabia and Iran criticize each other's interpretations, both openly and implicitly. Thereby, the different religious approaches of these states determine whether one can accept the calendar of one state or that of another state.

Furthermore, internal stability within a state is an aspect of the social factor for unifying the Hijri calendar. This issue is not only relevant to the relationship between governments, but also to the relationship between the government and its religious groups.⁶⁹ Saudi Arabia, for example, appears to achieve consistency in the acceptance of its astronomical calculations within the country, while this incompatible relationship is evident in Indonesia, especially when two bodies (the government and Muhammadiyah, for example) make official announcements of the crescent sighting.⁷⁰ As a result, unification efforts become increasingly complex, and unified calendar projects will be met with resistance on religious and social grounds. Stakeholders must provide more than moral support; they also need to offer material assistance. Ismail and others argue that the moonsighting process must be supported with financial resources, technological foundation, and human capital development (by training scholars of Islamic law and astronomy).⁷¹ This support is essential to improve the accuracy of astronomical calculations and maintain the trust of the Muslim community.

Controversies Around Saudi Arabia's Lunar Calendar

Within Saudi Arabia border

When discussing the calendar within the Saudi community, local scholars focus on the prayer times specified in the Umm al-Qura calendar. Many scholars have criticized the accuracy of this calendar, including Al-Thunayan, a Saudi jurist, who monitored the Fajr time for an entire year and found that the calendar was more than 15 minutes ahead of the actual Fajr time.⁷² Sheikh Muhammad ibn Uthaymeen, a Hanbali jurist and member of the Saudi Council of Senior Scholars, also said:

⁶⁹ Ahmad Fadholi, "Sidang Isbat, Urgensi Dan Dinamikanya," *Asy-Syar'iyah Journal*, 2019, p. 162, <https://doi.org/10.32923/asy.v4i2.1000>.

⁷⁰ Musonnif et al., "Government Position in Religious Authority Contestation in Indonesia," p. 341.

⁷¹ Khadijah Ismail, Mohd Hafiz Safiai, and Ezad Azraai Jamsari, "Human Resource Development And It Issues In The Field Of Science And Technology In Malaysia," *International Journal of Scientific & Technology Research*, no. 9 (2020).

⁷² Zaki 'Abd al-Rahman al-Mustafa, *Mashrū' dirāsāt al-shafaq* (Saudi Arabia: King Abdulaziz City for Science and Technology – Institute of Astronomy and Geophysics Research, 2005), p. 39, http://archive.org/details/alarabi_201507.

*“Regarding the Fajr prayer, it's known that the timing people follow is not accurate, being at least five minutes early. Some people went to the desert and found that the difference between the usual timing and the actual dawn is about twenty minutes. This issue is serious, so one should not rush to perform the Fajr prayer but should delay it for about twenty-five minutes to ensure the Fajr has arrived.”*⁷³

His statement suggests that the prayer times in the Umm al-Qura calendar are astronomically inaccurate, and this was a well-known fact among the people. This error in timing is a serious issue related to the validity of worship. The Prophet said, "Performing Salah (the prayer) should be at its earliest fixed time."⁷⁴ According to this hadith, al-Maqdisi said that prayer must be performed on its time, and if he prays before the time, then his prayer is like praying after its time, which is not valid, and he has then committed a sin by doing so.⁷⁵ Hence, this error in the calendar is not acceptable according to Islamic law because it leads to the invalidity of the Muslims' prayer.

On the other hand, Saudi Sheikh Abdul Aziz bin Abdullah Al Sheikh, head of the Council of Senior Scholars, defended the Umm Al Qura calendar against astronomers who question its accuracy, especially in determining prayer times. He said, "Two scientific committees were sent to the desert of the Kingdom to monitor sunrise, and both teams found that the Umm Al Qura calendar is accurate. The Ministry of Finance also confirmed its accuracy, so these claims are false."⁷⁶ Meanwhile, Abdullah Al-Khudari, an astronomer, stated, "The calendar is actually three minutes ahead of the actual time of dawn and sunset, and therefore the call to prayer is three minutes early. As for those who claim that the calendar is twenty minutes ahead, their claim is incorrect."⁷⁷

Moreover, in order to maintain the community's credibility with the calendar, the Ministry of Islamic Affairs, Dawah and Guidance requires all mosque imams in Saudi Arabia to follow the prayer times decided in the Umm al-Qura calendar.⁷⁸ This reflects the government's desire to regulate and standardize religious practices within the country and the official recognition of its own astronomical calculations, making the calendar a binding legal reference.

⁷³ Muhammad ibn Salih al-Uthaymin, *Sharḥ Riyāḍ al-Ṣāliḥīn*, 3 (Cairo: Dar al-Salam, 2002), http://archive.org/details/20190911_20190911_0843, p. 216.

⁷⁴ Hadith number: 1294, the book of jihad. See: Yahya ibn Sharaf al-Nawawi, *Riyāḍ Al-Ṣāliḥīn [The Gardens of the Righteous]* (Dar Ibn al-Jawzi, 2000), p. 443.

⁷⁵ Abd al-Karim al-Khudayr, *Sharḥ 'Umdat al-Aḥkām*, 5 (Mecca: Dar Taybah al-Khadra', 2023), p.6, http://archive.org/details/20231227_20231227_2136.

⁷⁶ Unknown, "Umm Al-Qura Timings Accurate: Grand Mufti," *Arab News*, July 8, 2015, <https://www.arabnews.com/saudi-arabia/news/773436>.

⁷⁷ Unknown, "The Saudi Mufti: The Umm al-Qura calendar is accurate and unquestionable.," من الصحف السعودية, *alarabiya* (Riyadh), July 7, 2015, <https://bit.ly/3TKIG4B>.

⁷⁸ Unknown, "Ministry of Islamic Affairs Spokesperson: Prayer calls must follow the timings set by the Umm al-Qura calendar.," *Ajel News*, March 3, 2025, <https://ajel.sa/local/s7xmw0pekn>.

Outside Saudi Arabia border

While local scholars focus on the prayer times of the Umm al-Qura calendar, scholars around the world pay attention to the dates of religious events. Although the calendar is used for civil purposes in the Kingdom, it plays a significant role in influencing the determination of religious occasions globally. According to data from (www.moonsighting.com), 47 countries follow Saudi Arabia's announcement regarding the sighting of the crescent moon in 1446.⁷⁹ However, there are four countries where the Islamic community is divided between those who rely on Saudi Arabia's announcement and those who rely on other sightings and criteria: Norway, Australia, the United Kingdom, and Iraq. Hence, there is a broad influence of the calendar and illustrates the disparity between societies within countries and those that rely on actual sighting.

Muslim scholars in the United Kingdom have been at the forefront of debates about the accuracy of the Umm al-Qura calendar. They have close ties to the Islamic Crescent's Observation Project (ICOP) and independent astronomical experts, who can verify the accuracy of the crescent sighting according to astronomical criteria. The connection allowed them to be independent of other countries, particularly regarding the sighting of the *hilal* for religious rituals. However, this small Muslim community, with a Muslim population of no more than 4 million,⁸⁰ have institutional division between those who follow the Saudi declaration (the majority), those who conduct local sightings, and those who follow the sightings of another country (Morocco: the closest Muslim country).

Mufti Danka says, "The Saudi government does not follow the correct sighting of the crescent with the naked eye, as stated in the Quran and Sunnah."⁸¹ Some UK scholars argued that Saudi Arabia has been accepting sighting even before the birth of the moon. Thereby, some organizations like Wifaqul Ulama agree that the determination of lunar months must be based on actual sighting, especially in the UK. Mufti Taqi Usmani says, "In the present circumstances, Muslims in Britain should not follow the Saudi declaration. Saudi Arabia has accepted the sighting of *hilal* even before its birth on many occasions, which, in my opinion, is impossible. I have discussed the matter with a number of Saudi scholars, and they are also disturbed by these events, but because the decision rests with the Supreme Judicial Council, they are unable to refute it."⁸² Such discussions are still ongoing. Scholars agree on challenging the validity and universality of the Umm al-Qura calendar, openly express doubts about the Saudi practice of sighting the

⁷⁹ Khalid Shaukat, "Moonsighting for Dhul-Hijjah 1446," June 7, 2025, <https://www.moonsighting.com/1446zhj.html>.

⁸⁰ Gina A. Zurlo and Todd M. Johnson, "Muslim Population of the United Kingdom in 2020," Boston University: World Religion Database - Brill, 2020, <https://worldreligiondatabase.org/data/>.

⁸¹ Muhammed Yusuf Danka, "The History of the UK Following Saudi Arabia" (Moonsighting UK, 2013), <https://www.moonsighting.org.uk/uk-moon-sighting-history.html>, p. 3.

⁸² Danka.

hilal, and even urge British Muslims to do local *ru'yah* regarding the sighting of the crescent moon. In contrast, the UK Hizbul Ulama says

*"We must accept the Hilal decision in Saudi Arabia, which aligns entirely with Shariah law, and is accepted by scholars across the globe for practices such as fasting and Hajj. Saudi scholars and jurists rely on witness testimony over calculations and visibility predictions, following the Prophet's guidance in Hadith Ummi. They scrutinize testimony according to Shariah and know when to accept it."*⁸³

They defend Saudi Arabia's moon-sighting decisions, asserting that Saudi scholars and the *fuqaha* possess the legal wisdom necessary to distinguish the sighting's authenticity and calling for a global agreement on the legitimacy of Saudi Arabia's announcements.

Before 1972, this civil calendar was not as global as it is now, but was used locally within the borders of the Saudi state. However, after holding seven international conferences until 1985, the Saudi calendar began to expand its base and be adopted in countries and religious institutions outside of Saudi Arabia. This approach to unifying Muslims through a single calendar may reflect a broader attempt to exercise influence through cultural and symbolic leadership rather than direct authority, as it effectively extended its influence and garnered support from numerous countries to adhere to its official declarations, thereby augmenting the proponents of the crescent-sighting policy within the Umm al-Qura system calendar. Saudi Arabia sought to influence the Islamic world by spreading its (Sunni Wahhabi) ideology, and for this reason, it spent huge sums to finance Wahhabi thought worldwide.⁸⁴ It built mosques and institutions such as schools around the world, and sent preachers to countries with Muslim minorities, such as Korea, to teach Islam.⁸⁵ Although this process of providing financial resources stopped in 2020,⁸⁶ and consequently, the dissemination of the ideology stopped, with the aim of proving its new, moderate approach following the announcement of Crown Prince Muhammad bin Salman in 2016. However, it still seeks to be the hub of the Islamic world.

The reason many countries follow is due to two facts. First, some scholars claim that religious institutions and mosques affiliated with Saudi Arabia in Europe

⁸³ Hizbul Ulama UK, "Saudis Don't Accept Hilal Sighting Claims Blindly," n.d., http://www.hizbululama.org.uk/articles/english/Blindly_HSC.pdf.

⁸⁴ Noorhaidi Hasan, "Salafism, Education, and Youth: Saudi Arabia's Campaign for Wahhabism in Indonesia," in *Wahhabism and the World: Understanding Saudi Arabia's Global Influence on Islam*, ed. Peter Mandaville (Oxford University Press, 2022), p. 137, <https://doi.org/10.1093/oso/9780197532560.003.0007>.

⁸⁵ Fauziah Fathil and Fathiah Fathil, "Islam in Minority Muslim Countries: A Case Study on Japan and Korea," *World Journal of Islamic History and Civilization* 1, no. 2 (2011), p. 135.

⁸⁶ The Saudi government has withdrawn funding from mosques in Europe and institutions worldwide after several countries and politicians accused its Wahhabi ideology of contributing to incitement to jihad. See "Saudi Arabia to Stop Funding Mosques in Foreign Countries," *Middle East Monitor*, January 25, 2020, <https://www.middleeastmonitor.com/20200125-saudi-arabia-to-stop-funding-mosques-in-foreign-countries/>.

and around the world are mostly directly funded by the Saudi government or run by Saudi society.⁸⁷ Second, it is due to the fact that it is the center of Islamic worship, including Hajj (wukuf at Arafat).⁸⁸ The religious status of Mecca (the *marja'* for sighting the Saudi crescent moon) also makes it an influential center in decisions related to Islamic rituals, including sighting the *hilal*. Thus, by recognizing Mecca's religious status, Saudi Arabia has tried to maintain its diplomatic relations with countries around the world and improve its image as advanced in all fields, including scientific ones (calendar formulation). Thus, the unification of the Hijri calendar, which Saudi Arabia aims for, is not purely religious but rather has a significant political interest.

Although the Saudi Arabian Research Institute of Astronomy and Geophysics performs astronomical calculations and publishes the calendar annually, recent studies indicate some shortcomings in its astronomical accuracy. Several scientists have previously monitored Saudi Arabia's sightings by comparing announcements with definitive astronomical data over the past half-century, from 1380 H to 1425 H, but many of the reports are inconsistent. They also often coincide with the pre-fixed dates in the calendar, meaning that reported sightings are based on inaccurate sightings that are heavily influenced by the Umm al-Qura calendar. According to Table 2, the data shows that this discrepancy still exists.

Year H	Umm al-Qura Calendar	Astronomically Possible Sighting	Was Saudi Sighting possible?	Actual Sighting Date	Official Announcement
Ramadan					
1443	2 April 2022	2 April 2022	No	1 April 2022	2 April 2022
1444	23 March 2023	22 March 2023	Yes	22 March 2023	23 March 2023
1445	11 March 2024	11 March 2024	No	10 March 2024	11 March 2024
1446	1 March 2025	28 February 2025	Yes	28 February 2025	1 March 2025
Shawwal					

⁸⁷ Rulamsyahrin, "The Establishment of the Ummul Qura Calendar as An Effort To Unify the Global Islamic Calendar, p. 141"

⁸⁸ Nihayatur Rohmah, "Optimizing the Wukuf-~Arafah Time Determination Model According to the Governments of Saudi Arabia and Indonesia," *Justicia Islamica* 19, no. 2 (2022), p. 291, <https://doi.org/10.21154/justicia.v19i2.4839>.

1443	2 May 2022	1 May 2022	Yes	1 May 2022	2 May 2022
1444	21 April 2023	21 April 2023	No	20 April 2023	21 April 2023
1445	10 April 2024	9 April 2024	No	8 April 2024	10 April 2024
1446	30 March 2025	30 March 2025	No	29 March 2025	30 March 2025
Dhu al-Hijjah					
1443	30 June 2022	29 June 2022	Yes	29 June 2022	30 June 2022
1444	19 June 2023	19 June 2023	No	18 June 2023	19 June 2023
1445	7 June 2024	6 June 2024	Yes	6 June 2024	7 June 2024
1446	28 May 2025	27 May 2025	Yes	27 May 2025	28 May 2025

Table 2 . A Comparison of Umm al-Qura dates with Astronomically Possible Moonsighting for the start of the months *Ramadan*, *Shawwal*, and *Dhu al-Hijjah* from 1443 H to 1446 H
Source: (www.moonsighting.com) and (www.astronomycenter.net), 1443 H, 1444 H, 1445 H, 1446 H

Table 2 shows that when comparing Saudi Arabia's announcements for Ramadan, Shawwal (which marks Eid al-Fitr), and Dhu al-Hijjah (which marks Eid al-Adha and the Day of Arafah) with astronomical data from 1443 H to 1446 H, we find that all sightings matched the Umm al-Qura calendar. Even when astronomical reports indicated that the crescent moon would not be visible (marked in blue), Saudi Arabia ignored the astronomical reports and announced that the crescent was visible. Such announcements are scientifically impossible, and sightings may have been attributed to other phenomena, such as a bright star or airplane lights. Whether astronomically visible or not, official announcements align with the Umm al-Qura calendar, meaning that announcements, sighting reports, or both are heavily influenced by the calendar. These inaccurate sightings suggest that Saudi Arabia seeks to present its calendar as accurate and reliable, despite the reality appearing otherwise. It also reflects a lack of sufficient transparency on this issue. Regardless, modern astronomical instruments are advancing rapidly, allowing the positions and motion of the moon and sun to be calculated with high accuracy. However, the data indicates that the calendar still falls short of this level of accuracy. Furthermore, the fact that Saudi Arabia's announcements are inconsistent with accurate astronomical

data means that the Saudi calendar is astronomically inaccurate and that the actual sighting in Saudi Arabia is questionable, if not impossible.

CONCLUSION

Crescent sighting practices vary significantly, as Muslims do not follow a uniform approach. Each country adopts different methods; some still rely on the traditional approach, while others use a hybrid method that combines calculations with actual sightings of the crescent. Some countries have fully transitioned to astronomical calculations. In minority contexts, Muslim communities may adopt one of these methods or follow the official rulings of their countries of origin. These varying methods for determining the beginning of lunar months have resulted in multiple calendars, prompting some countries to attempt to formulate a unified Islamic calendar based on the principle of ummah unity. By unifying the calendar, religious scholars, assisted by astronomers and supported by governmental or religious authorities, aim to create a system that aligns Muslims globally on a single day and date. This helps to reduce differences, particularly in performing rituals that require determining the beginning and end of the lunar month.

Saudi Arabia is an example of a country that seeks to unite the world on its calendar. However, the reality of this calendar is that there is a discrepancy between the years of adopting this calendar and those who reject it. The results of this study revealed that many countries now prefer to sight the crescent moon directly rather than relying on Saudi Arabia's standards. The calendar is shaped by religious, social, scientific, and political factors, sparking debate among scholars over the use of astronomical calculations. Discussions among religious scholars are heated, with some supporting astronomical calculations and others opposing them. While, scientifically, some scholars argue that the justifications for relying entirely on astronomical calculations are insufficient, while others emphasize the need for a unified calendar in light of climate change affecting crescent sighting. Additionally, the Islamic community resists abandoning this deeply rooted practice, even if evidence suggests actual sighting is not necessary. Political factors also influence the acceptance of the Umm al-Qura calendar, including a country's presence in material and moral support, and internal and external stability.

Regardless of the religious debates surrounding the Umm al-Qura calendar, from a scientific perspective, it still exhibits shortcomings that prevent its adoption as an accurate global calendar. Data from the last four years, 1443 H to 1446 H, show that Saudi Arabia sometimes overlooks precise astronomical calculations, determining crescent sightings on dates that align with pre-existing dates in the Umm al-Qura calendar. This indicates the need to reconsider the calendar and its criteria to achieve a more accurate global calendar. The Umm al-Qura calendar is one of several calendars issued in the current era, and various factors hinder the acceptance of unified calendars, leading to tensions. Nevertheless, these ongoing dialogues about unified calendars reveal the goal of fostering harmonious

coexistence between religious scholars and scientists, striving to reconcile faith, reason, and society in determining significant Islamic calendar events.

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