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Analysis of the Early Determination of the Kamariah Month Perspectives of Fiqh and Astronomy

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ABSTRACT

The Ministry of Religion of the Republic of Indonesia as the government's representative determines the beginning of the lunar month with the minimum criteria of 2o hilal height, 3o elongation and 8 hours of hilal age. According to astronomers, it requires visualization of the results of sightings, especially when the new moon's altitude is too low, whereas according to fiqh experts, it is enough just to use the testimony of sightings without any visuals from the new moon. One of the supporting factors for visibility is the weather. Therefore the author formulates the problem, namely the analysis of the initial determination of lunar months according to the Indonesian Ministry of Religion according to jurisprudence and astronomy in 1435 H – 1440 H/ 2014 AD - 2019 AD. This research includes a qualitative research library. The primary data source for this research is the Decree of the Minister of Religion of the Republic of Indonesia (1 Ramadan, Shawwal and Dzulhijjah) in 1381 H -1440 H / 1962 AD - 2019 AD, while secondary data sources were obtained from documents, reports, manuscripts and technical instructions that support primary data. The determination of the beginning of the lunar month by the Ministry of Religion of the Republic of Indonesia is one of the government's efforts to unite Muslims in Indonesia, the determination through isbat sessions based on the results of reckoning and verification of the rukyatul hilal which is carried out throughout Indonesia. In fiqh terms, the determination made by the government is in accordance with fiqh principles, including hukm al-hakim ilzan wa yarfa'u al khilaf, tasharruf al-imam 'ala raiyatih manuthun bi al

mashlahah, and yattabi' al mashlahah ar raajihah. Astronomically, weather factors such as air temperature, air humidity, rainfall, wind speed and direction support the sighting of the new moon during the sighting.

ABSTRACT

Keywords:
Awal Bulan Kamariah, Cuaca, Kementerian Agama.

Kementerian Agama Republik Indonesia sebagai perwakilan pemerintah menetapkan awalan bulan kamariah dengan kriteria minimal 2o tinggi hilal, 3o elongasi dan 8 jam umur hilal. Menurut ahli astronomi membutukan visualisasi dari hasil rukyat, terlebih ketika hilal terlalu rendah ketinggiannya, sedangkan menurut ahli fikih cukup hanya menggunakan kesaksian perukya tanpa adanya visual dari hilal. Faktor pendukung dari ketampakan salah satunya adalah cuaca. Maka dari itu penulis merumuskan masalah yaitu analisis penetapan awal bulan kamariah menurut kementerian agama RI menurut fikih serta astronomi pada tahun 1435 H - 1440 H/ 2014 M – 2019 M. Penelitian ini termasuk library research bersifat kualitatif. Sumber data primer penelitian ini adalah buku Keputusan Menteri Agama RI (1 Ramadan, Syawal dan Dzulhijjah) tahun 1381 H -1440 H / 1962 M – 2019 M, sedangkan sumber data sekunder diperoleh dari dokumen, laporan, naskah dan petunjuk teknis yang mendukung data primer. Penentuan awal bulan kamariah yang dilakukan kementerian agama RI merupakan salah satu usaha pemerintah yang dilakukan untuk menyatukan umat islam yang ada di Indonesia, penetapan melalui sidang isbat berdasarkan hasil hisab dan verifikasi rukyatul hilal yang dilakukan di seluruh Indonesia. Secara fikih penetapan yang dilakukan pemerintah sudah sesuai dengan kaidah fikih diantaranya hukm al hakim ilzan wa yarfa'u al khilaf, tasharruf al imam 'ala raiyatih manuthun bi al mashlahah, dan yattabi' al mashlahah ar raajihah. Secara astronomi, faktor cuaca seperti suhu udara, kelembapan udara, curah hujan, kecepatan dan arah angin mendukung akan terlihatnya hilal saat rukyat.

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INTRODUCTION

Allah SWT says in the Qur'an surah an-Nisaa verse 59 that ulil amri is someone who becomes a role model for humans after the Prophet's death in taking care of the interests of the people as long as they do not conflict with zahir texts. Ulil Amri, in terms of determining the beginning of the lunar month, is assigned the task of the Government, namely the Hisab Rukyat Agency (BHR) of the Republic of Indonesia under the Ministry of Religion. When the government has produced a decree that is in accordance with Allah's provisions, it must be obeyed, however.[1]

The government in determining the beginning of the lunar month uses the Imkan al-rukyat method with the provisions of wilayat al hukmi[2] from Sabang to Merauke. In addition, MABIMS member countries, namely Brunei Darussalam, Malaysia and Singapore, apply provisions for the start of the lunar month when the sun sets earlier than the moon with the position of the hilal (new moon) a height of 2^0, and 3^0 angular difference between the moon and the sun, or the time from ijtima to sunset 8 hours.

The holding of an isbat meeting to determine the beginning of the month of Ramadan, Shawal and Zulhijah on the 29th day of the Hijriah is carried out by the government in private, and is chaired by the Minister of Religion of the Republic of Indonesia or an official representing the Minister of Religion when unable to attend. In addition, the isbat meeting was attended by astronomers from various Islamic community organizations as well as individuals and astronomers. The session began with presentation of reckoning data and discussion, besides that there were officers who received sighting reports from fieldworkers in each area from Sabang to Merauke regarding the position and conditions of the new moon. Then agreed

[1]HAMDANI and Fahmi Fatwa Rosyadi Satria, "Ilmu Falak: Menyelami Makna Hilal Dalam Al-Qur'an," 2017, http://repository.unisba.ac.id:8080/xmlui/handle/123456789/12967.

[2]*Wilayat al-Hukmi* is the limit of the enactment of the law in this case the beginning of the lunar month. Indonesia adheres to the Hanafi & Maliki school of thought which argues that the *mathla* ' (limit) applies to one jurisdiction, namely one territorial jurisdiction of a country. Although technically scientifically only a few areas of Indonesia can meet the criteria for *imkan al-rukyat limits*. This has the goal of unifying the beginning of the lunar month

with the final result of consensus which will later be made in the form of a Decree of the Minister of Religion (KMA) by the legal division. The results of the consensus were read out briefly by the Minister of Religion of the Republic of Indonesia or the official on duty at an open press conference which was broadcast live by electronic media.[3]

Since 1435 H - 1440 H or 2014 M - 2019 M, 18 times the beginning of the lunar month has been determined, namely at the beginning of the month of Ramadan, Shawwal and Zulhijah each year. With the details 9 times it is stated that the new moon is visible with a height of 3^0 4' to 8^0, so that after sunset it is determined as the beginning of the month. The rest of the determination of the new moon cannot be seen because the position of the new moon does not meet the criteria so that it is determined as istikmal.[4]

The hilal which is stated to be visible without the help of optical devices and is used as a basis by the government in determining the beginning of the lunar month which has not been scientifically proven while the position of the hilal is still considered difficult to see. Among them:

Beginning of Shawwal 1435 H/ 2014 M	Crescent height 2^o to 3^o 40'
Early Syawal 1436 H/ 2015 AD	Crescent height 1^o 18' to 3^o 4 '
Beginning of Ramadan 1437 H/ 2016 AD	Crescent height 2 ^{o} 13' to 4^o 6'
Early Syawal 1437 H/ 2017 AD	Crescent Height 2^o to 4 ^{o}
Beginning of Ramadan 1440 H/ 2019 AD	Crescent Height 4^o 30' to 5^o 42'
The beginning of Zulhijjah 1440 H/ 2019 AD	Crescent Height 2^o 4' hingga 3^o 37'

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

[4]Weimin Zhang et al., "Morphological Variation of Star Dune and Implications for Dune Management: A Case Study at the Crescent Moon Spring Scenic Spot of Dunhuang, China," *Journal of Arid Land* 11, no. 3 (2019), https://doi.org/10.1007/s40333-019-0099-1.

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In jurisprudence, the sight of the crescent moon becomes the early sign of the new moon, if the crescent moon cannot be seen due to cloud cover or other conditions, then the day's age is rounded up to 30. Before performing the rukyat,[5] the position of the crescent moon is first calculated by a accountant based on a certain method, until it is determined Hilal can be seen or not. Then, when the crescent moon can be seen, rukyat al-hilal[6] will be performed in a place that has a horizon west of that place, instruments used in rukyat al-hilal from classic to modern such as telescopes.[7]

Rukyat participants who managed to see the new moon were sworn in by officers, namely the judge of the Religious Court on duty. According to Imam Syafi'i, the government practices rukyat testimony, namely that it is enough for one person who is just, male or female, slave or independent, to accept the witness when the new moon is in the position of imkan al-rukyat (may be seen). Some of the requirements for a witness include: being Muslim, aqil baligh or adult, male or female, honest, fair, trustworthy, sound mind, able to perform rituals and at least one witness, take an oath of testimony of the people in front of the judge with two persons as witnesses at the oath-taking trial. Previously, they will be asked for information from the witnesses of the new moon regarding the process, conditions and position of the sighting of the new moon, which of course is in accordance with the results of reckoning.[8]

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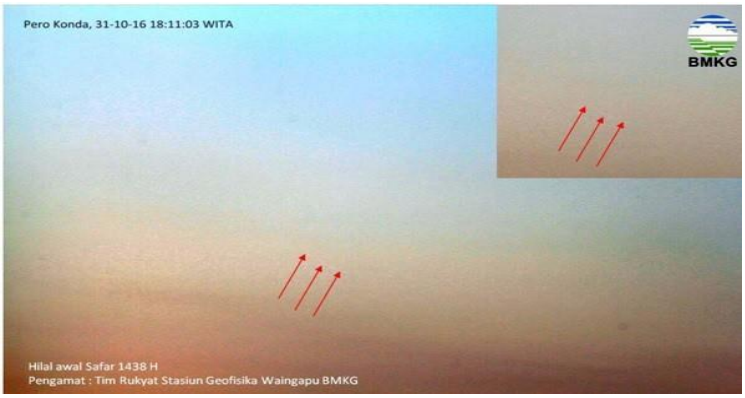
[5]Muhyidin; Khazi, "Ilmu Falak Dalam Teori Dan Praktek/ Muhyidin Khazin," 2005.

[6]Muhyiddin Khazin, "99 Tanya Jawab Masalah Hisab Dan Rukyah PDF DOWNLOAD | OPENMAKTABA," accessed December 27, 2022, https://openmaktaba.com/99-tanya-jawab-masalah-hisab-dan-rukyah-pdf-download/.

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

[8]H Arfan Muhammad and Para Hakim Dan Panmud Hukum Pengadilan Agama Kalimantan Barat, "PEDOMAN DAN TATA CARA PELAKSANAAN ITSBAT RUKYATUL HILAL DISAMPAIKAN DALAM ACARA PELATIHAN HISAB RUKYAT," n.d.



The image above was obtained by the BMKG rukyat team at Pero Konda, Bondo Kodi, Southwest Sumba Regency, East Nusa Tenggara which is the appearance of the new moon at the end of Muharram 1438 H/ 2016 M. The new moon conditions when observed had a height of 6.21°, elongation of 7.89 ° and the new moon age is 16.39 hours. The new moon was observed for 5 minutes and 25 seconds.[9] With a 30minute difference between the setting time of the Moon and the setting time of the Sun and the visibility of the Moon is 0.48 %.[10]

Based on the example above when the crescent moon has a height of 6° it is still very thin, so modern rukyat experts doubt when there is testimony that there is no visual evidence or image of the crescent moon. Temperature, humidity and weather factors are some of the factors that affect the visibility of the crescent moon. This research uses supporting weather data from BMKG which is scientific evidence of rukyat al-hilal data. so this research needs to be studied in more detail so that an explanation can be obtained for the setting that has been set, with the focus of the analytical study on the results of the initial setting of the kamariah month in the year 1435 H-1440 H / 2014 M-2019 M in the perspective of jurisprudence and astronomy.

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[9]"Tim Rukyat Hilal Stasiun Geofisika Waingapu BMKG Pecahkan Rekor Dunia | BMKG," accessed December 27, 2022, https://www.bmkg.go.id/berita/?p=tim-rukyat-hilal-stasiun-geofisika-waingapu-bmkg-pecahkan-rekor-dunia&lang=ID&tag=hilal.

[10]Nazhatulshima Ahmad et al., "A New Crescent Moon Visibility Criteria Using Circular Regression Model: A Case Study of Teluk Kemang, Malaysia," *Sains Malaysiana* 49, no. 4 (2020), https://doi.org/10.17576/jsm-2020-4904-15.

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METHOD

The type of this research is library research with qualitative data, which is a human word and deed that is determined in this case, namely the Decree of the Minister of Religion at the beginning of the lunar month of 1435 H – 1440 H / 2014 M – 2019 M which is contained in a book Decree of the Minister of Religion of the Republic of Indonesia (1 Ramadan, Shawwal and Dzulhijjah) 1381 H–1440 H / 1962 AD–2019 AD. In this research, it is supported by weather data from BMKG in the form of numeric data to analyze the main data source.[11]

The analytical method used in this research is descriptive analysis by making a description of a situation or an event. The analysis carried out by the author is regarding the government, in this case the Ministry of Religion of the Republic of Indonesia, carrying out the initial determination of the lunar month in accordance with fiqh rules supported by weather data that affects the appearance of the new moon, such as rainfall, temperature, wind speed, cardinal directions, relative humidity and temperature.[12]

RESULTS AND DISCUSSIONS

Early Determination of the Lunar Month in Indonesia

The decisions of the Minister of Religion from 1381 H/ 1962 AD to 1440 H/ 2019 AD have been collected into one book. Determination of the beginning of the lunar month contained in the decision of the minister of religion is not coercive and criminal sanctions because this decision is only a decree that applies once at a time, this is also called eenmalig. This decision is in the form of a stipulation that does not apply in the following year, only when it is stipulated.

In 1435 H-1440 H / 2014 M-2019 M the government has made 18 stipulations, which were signed 13 times by Lukman Hakim Saifuddin as Minister of Religion at that time, Nasaruddin Umar as Deputy Minister of Religion once stipulated at the beginning of the month of Zulhijah in 1435 H/ 2014 M, Machasi as the Director General of Islamic Community Guidance set the beginning of the month of Zulhijah 1436

[11]Sumadi Suryabrata, "Metodologi Penelitian," *Jakarta : Raja Grafindo Persada* 180, no. 979-421-104–4 (2010).

[12]Afrizal, *Metode Penelitian Kualitatif : Sebuah Upaya Mendukung Penggunaan Penelitian Kualitatif Dalam Berbagai Disiplin Ilmu* (Rajawali Pers, 2017), https://opac.perpusnas.go.id/DetailOpac.aspx?id=1139943.

H/ 2015 M. Then, the beginning of the month of Zulhijjah 1438 H/ 2017 M was determined by Nur Syam as Secretary General at that time, and Muhammad Amin twice set his time as Director General of Islamic Community Guidance at the beginning of the month of Zulhijjah in 1439 H/ 2018 M and 1440 H/ 2019 M.[13]

1. Determination of Syawal in 1435 H/ 2014 M[14]

On Sunday, 27 July 2014 M/ 29 Ramadan 1435 H, ijtima' occurred at 05:42 WIB, so that when the hilal sighting was 2° - 3° 40 ' when the sun set that day. From all over Indonesia, there are 2 (two) locations of rukyat that claim to have seen the new moon. Then Monday, July 28 2014 AD was determined as 1 Shawwal 1435 H. Several locations and witnesses of the sighting of the new moon were written in the determination, including:

a). Location of Condrodipo Hill, Gresik, East Java, there were 3 witnesses namely H. Azhari, M.Pd.I., H. Ikhwanuddin Umar, and H. Syamsul Ma'arif. The witnesses were sworn in during the observation session by H. Ahmad Shofwan, MS, SH, as the Judge of the Gresik Religious Court, East Java, who was on duty at the time.

b). At the location of Pelabuhan Ratu, Sukabumi, there were 4 witnesses, namely Drs. Ece Jamaluddin, KHYahya, KHAde Mas'ud, and Drs. Zainu Ridwan. Deni Hermansyah as the Judge of the Cibadak Religious Court, West Java, who was on duty at the time, was sworn in during the observation session.

2. Determination of Syawal in 1436 H/ 2015 M[15]

On Thursday, 16 July 2015 M/ 29 Ramadan 1436 H, ijtima' occurred at 08:25 WIB, so that when the hilal sighting was 1 o 18' - 3 o 4' when the sun set that day. From all over Indonesia, there are 2 (two) locations of rukyat that claim to have seen the new moon. So it was determined that Friday, July 17 2015 AD as 1 Shawwal 1436 H. Several

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[13]Kementerian Agama, "Keputusan Menteri Agama RI Tentang 1 Ramadan, Syawal & Zulhijjah 1381 H-1440 H / 1962 M-2019 M," accessed December 27, 2022, https://simbi.kemenag.go.id/eliterasi/katalog-buku/keputusan-menteri-agama-ri-tentang-1-ramadan-syawal-zulhijjah-1381-h-1440-h-1962-m-2019-m.

[14]Hasna Tuddar Putri Ruslandi Ruslandi, "Analisis Tingkat Keberhasilan Rukyat Hilal Di Observatorium Teungku Chiek Kuta Karang Lhoknga Aceh Besar," *Astroislamica: Journal of Islamic Astronomy* 1, no. 1 (June 30, 2022): 97–122, https://doi.org/10.47766/ASTROISLAMICA.V1I1.690.

[15]Kementerian Agama, "Keputusan Menteri Agama RI Tentang 1 Ramadan, Syawal & Zulhijjah 1381 H-1440 H / 1962 M-2019 M."

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locations and witnesses of the sighting of the new moon were written in the stipulation, including:

a). Location of Condrodipo Hill, Gresik, East Java, there were 5 witnesses namely Mujib Adnan, H. Syamsul Ma'arif, Inwanuddin Umar, Azhar, M.Pd.I., and Shalahudin. The witnesses were sworn in at the trial where Drs. H. Arifin, MH., as a Judge at the Gresik Religious Court, East Java, who was on duty at that time.

b). Location of Tanjung Frog, Lamongan, East Java, there were 2 witnesses namely Drs. H. Setyo Hartono and Drs. Muh. Tarom. The witnesses were sworn in during the observation session by Karmin, SH., as the Judge of the Lamongan Religious Court, East Java, who was on duty at the time.

3. Determination of Ramadan in 1437 H/ 2016 M[16]

On Sunday, 5 June 2016/29 Sha'ban 1437 H, ijtima' occurs at 10:00 WIB, so that when the hilal sighting is 2^{o} 13' - 4^{o} 6' when the sun sets that day. From all over Indonesia, there are 5 (five) locations of rukyat that claim to have seen the new moon. Then Monday, June 6 2016 AD was determined as 1 Ramadan 1437 H. Several locations and witnesses of the sighting of the new moon were written in the determination, including:

a). In Belu Regency, East Nusa Tenggara, there was a witness, namely Akrim Moka, AMA. The witness was sworn in at the trial where he was observed by Drs. H. Mukmin as Deputy Head of the Atambua District Religious Court who was on duty at that time.

b). Location Jombang, East Java, there are 3 witnesses namely Lutfi Fuadi, KHMakmuri and Drs. H. Agus Salim. The witness was sworn in at the trial where Drs. H. Faiq Zarkasi as the Judge of the Jombang District Religious Court who was on duty at that time.

c). In the Kebumen district, Central Java, there was a witness namely Abdul Haris, S.Ag. The witness was sworn in during the observation session by H. Eldi Hartoni, SH., as the Judge of the Kebumen District Religious Court who was on duty at the time.

d). Location of Condrodipo Hill, Gresik, East Java, there were 2 witnesses namely Sholahuddin and H. Inwanuddin. The witness was

[16]Riza Afrian Mustaqim, "TRANSFORMATION OF RUKYATUL HILAL METHOD (Postmodernism Analysis of Hilal Image Processing)," *Al-Hilal: Journal of Islamic Astronomy* 1, no. 1 (2020), https://doi.org/10.21580/al-hilal.2019.1.1.5238.

sworn in at the trial where Drs. H. Masngaril Kirom as the Judge of the Gresik Regency Religious Court who was on duty at that time.

e). Location Bojonegoro Regency, East Java, there is a witness namely Muhammad Maulan. The witness was sworn in at the trial where Drs. H. Bahrul Ulum as the Judge of the Bojonegoro Regency Religious Court who was on duty at that time.

4. Determination of Syawal in 1438 H/ 2017 M[17]

On Saturday, 24 June 2017 M/ 29 Ramadan 1438 H, ijtima' occurred at 09:31 WIB, so that when the hilal sighting was 2^{o} - 4^{o} when the sun set that day. From all over Indonesia, there are 2 (two) locations of rukyat that claim to have seen the new moon. Therefore, Sunday, June 25 2017 AD was determined as 1 Shawwal 1438 H. Several locations and witnesses for the sighting of the new moon were written in the determination, including:

a). Location Kupang, East Nusa Tenggara, there were 4 witnesses namely Tri Umaryadi Wibowo, M.Sc., Rahmat Setyo Yuliatmoko, M.Sc., H. Muhammad Moa, S.Ag., and H. Abdullah Said Sarjan. The witness was sworn in during the observation session by H. Muhammad Sauqi, S.HI., MH, as the Judge of the Kupang City Religious Court who was on duty at that time.

b). Location of Condrodipo Hill, Gresik, East Java, there were 2 witnesses, namely H. Ahmad Azhar, and H. Inwanuddin. The witness was sworn in at the trial where Drs. H. Ahmad Sofwan, SH, MH., as the Judge of the Gresik Regency Religious Court who was on duty at that time.

5. Determination of Ramadan and Zulhijah in 1440 H/ 2019 M

On Sunday, May 5 2019 M/ 29 Shaban 1440 H, ijtima' occurs at 05:45 WIB, so that when the new moon sighting is 4^{o} 30' - 5^{o} 42' when the sun sets that day. From all over Indonesia, there are 6 (six) sighting locations that claim to have seen the new moon. Then Monday, May 6 2019 AD was determined as the 1st of Ramadan 1440 H. Several locations and witnesses of the sighting of the new moon were written in the determination, including:

a). Location Bangkalan, East Java, there is a witness namely Ustadz Abdullah Hafidzi. The witness was sworn in at the trial where he was observed by Drs. H. Abdus Samad, MH, as the Bangkalan District Religious Court Judge who was on duty at that time.

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[17]Ismail Ismail and Bastiar Bastiar, "Dinamika Kalender Hijriah Dalam Qanun Syariat Islam Provinsi Aceh," *Al-Qalam* 26, no. 2 (November 2, 2020): 255, https://doi.org/10.31969/alq.v26i2.832.

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b). Location of Condrodipo Hill, Gresik, East Java, there were 2 witnesses namely KH. Inwanuddin and KH. Azhar. The witness was sworn in at the trial where Drs. Santoso, MH, a Gresik Regency Religious Court Judge who was on duty at that time.

c). Location Lamongan, East Java, there were 2 witnesses namely KH. Khotib Asmuni and KH.Syu'udil Azka, S.Pd. The witness was sworn in during the observation session by Bisri Mustaqim, as the Judge of the Lamongan District Religious Court who was on duty at that time.

d). Location Makassar, South Sulawesi, there is a Darmawan, S.Si., M.Sc. Witnesses have been sworn in at the hearing where observation by Dr. Slamet, as the Judge of the Makassar City Religious Court who was on duty at that time.

e). Location Brebes, Central Java, there are 2 witnesses namely Nazar Alamudin and Khusni Faqih. The witness was sworn in at the trial where Drs. Nur Sidik, MH, as the Brebes Regency Religious Court Judge who was on duty at that time.

f). At the location of Pelabuhan Ratu, Sukabumi, West Java, there was a witness, namely KH Yahya. Muhammad Nurmadani, S.Ag., as the Judge of the Sukabumi Regency Religious Court who was in charge at that time, was sworn in at the observation session.

Then, on Thursday, 1 August 2019 M/ 29 Zulkaidah 1440 H, ijtima' occurs at 10:12 WIB, so that when the new moon sighting has a height of 2 o 4' - 3 o 57' when the sun sets that day. From all over Indonesia, there are 4 (four) locations of rukyat that claim to have seen the new moon. Therefore, Friday, August 2 2019 AD is set as 1 Zulhijah 1440 H and Sunday, August 11 2019 AD as Eid al-Adha. Several locations and witnesses of the sighting of the new moon which are written in the determination, among others

a). Location of Condrodipo Hill, Gresik, East Java, there were 5 witnesses namely KHAzhar, Ustadz Umar Syarif, KHInwanuddin, Syamsul Fuad, and Syamsul Ma'arif. Witnesses have been sworn in at the hearing where observation by Dr. H. Suhartono, S.Ag. , SH ., MH, as the Judge of the Gresik Regency Religious Court who was on duty at that time.

b). In Pasuruan Regency, East Java, there was a witness namely Ustadz Moh. Nuvel. The witness was sworn in at the trial where Drs. H. Muhibin, MA, as Head of the Pasuruan District Religious Court who was in charge at that time.

c). In Lamongan Regency, East Java, there were 2 witnesses namely Ustadz Abdul Mujib and KH Khotib Asmuni. The witness was sworn in at the trial where Drs. Faisal, MH, as the Judge of the Lamongan District Religious Court who was on duty at that time.

d). In Kudus Regency, Central Java, there were 2 witnesses namely Wiwik Haris Prasetyo and Drs. H. Sulthon. The witness was sworn in at the trial where the observation was made by H. Ah. Sholih, SH, as the Judge of the Kudus Regency Religious Court who was on duty at that time.

Weather during Rukyat al-hilal in Indonesia

Rukyat al-hilal which is carried out in all regions of Indonesia with a span of 1435 H-1440 H/ 2014 M-2019 M led by the Ministry of Religion of the Republic of Indonesia. The description of the weather that will be written is the weather when the new moon can be seen with a height of 1^{o} 18' - 5^{o} 42' and is limited to the location where the new moon is visible. Below is an explanation of the weather at the time of rukyat al-hilal:[18]

1. Early Shawwal weather in 1435 H / 2014 AD

a). On Sunday, July 27 2014 M in Condrodipo Gresik Hill, East Java, the temperature was 27.7° C, the relative humidity was 69%. In addition, the amount of rainfall is 0 mm, with a wind speed of 4 knots which is equivalent to 7,408 km/hour. And the direction of the cardinal points at that time was 90° from the north, which means eastward.

b). On Sunday, July 27 2014, at Ratu Sukabumi Harbor, West Java, the temperature was 20.5° C, the relative humidity was 92%. In addition, the amount of rainfall is 66.4 mm, with a wind speed of 0 knots which is equivalent to 0 km/hour. And the direction of the cardinal points at that time was 20° from the North, which means to the Northeast.

2. Early Shawwal weather in 1436 H / 2015 AD[19]

a). On Thursday, July 16, 2015 M in Condrodipo Gresik Hill, East Java, had a temperature of 27.2° C, relative humidity of 77%. In addition, the amount of rainfall is 0 mm, with a wind speed of 4 knots which is equivalent to 7,408 km/hour. And the direction of the

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[18]BMKG, "BMKG, Data Online Pusat Database," Data Iklim Harian, 2020.

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

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cardinal points at that time was 80° from the north, which means eastward.

b). On Thursday, 16 July 2015 M at Tanjung Frog Lamongan, East Java, had a temperature of 27.2° C, relative humidity of 77%. In addition, the amount of rainfall is 0 mm, with a wind speed of 4 knots which is equivalent to 7,408 km/hour. And the direction of the cardinal points at that time was 80° from the north, which means eastward.

3. Early Ramadan weather in 1437 H / 2016 AD

a). On Sunday, 5 June 2016 AD in Belu Regency, East Nusa Tenggara, the temperature was 28.1° C, the relative humidity was 76%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 150° from the North, which means to the Southeast.

b). On Sunday, June 5, 2016 in Jombang, East Java, the temperature was 29.4° C, the relative humidity was 77%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 30° from the North, which means to the Northeast.

c). On Sunday, June 5, 2016 in Kebumen, Central Java, the temperature was 28.5° C, the relative humidity was 83%. In addition, there is no data on the amount of rainfall, with a wind speed of 2 knots which is equivalent to 3,704 km/hour. And the direction of the cardinal points at that time was 130° from the North, which means to the Southeast.

d). On Sunday, June 5, 2016, in Condrodipo Gresik Hill, East Java, the temperature was 29.4° C, the relative humidity was 77%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 30° from the North, which means to the Northeast.

e). On Sunday, June 5, 2016 in Bojonegoro, East Java, the temperature was 24.5° C, the relative humidity was 89%. In addition, the amount of rainfall is 0.2 mm, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 360° from the north, which means to the north.

4. Early Shawwal weather in 1438 H / 2017 AD

a). On Saturday, June 24 2017 in Kupang, East Nusa Tenggara, the temperature was 28° C, the relative humidity was 63%. In addition, there is no data on the amount of rainfall, with a wind speed of 3 knots which is equivalent to 5.556 km/hour. And the direction of the cardinal points at that time was 100° from the North, which means to the East.

b). On Saturday, June 24, 2017, at Bukit Condrodipo Gresik, East Java, the temperature was 27.4° C, the relative humidity was 81%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 70° from the North, which means to the Northeast.

5. Early Ramadan weather in 1440 H / 2019 AD

a). On Sunday, May 5 2019 in Bangkalan, East Java, the temperature is 29.8° C, the relative humidity is 72%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 80° from the North, which means to the Northeast.

b). On Sunday, May 5 2019, at Condrodipo Gresik Hill, East Java, the temperature was 29.8° C, the relative humidity was 72%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 80° from the North, which means to the Northeast.

c). On Sunday, May 5 2019, in Bukit Lamongan, East Java, the temperature is 29.8° C, the relative humidity is 72%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 80° from the North, which means to the Northeast.

d). On Sunday, May 5 2019 M in Makassar, South Sulawesi, the temperature is 28.7° C, the relative humidity is 78%. In addition, the amount of rainfall is 0 mm, with a wind speed of 2 knots which is equivalent to 3,704 km/hour. And the direction of the cardinal points at that time was 220° from the North, which means to the Southwest.

e). On Sunday, May 5 2019 in Brebes, Central Java, there were no recorded conditions of temperature and relative humidity. In addition, the amount of rainfall is 0 mm, with a wind speed of 1 knot which is

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equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 210° from the North, which means to the Southwest.

f). On Sunday, May 5 2019, at Ratu Sukabumi Harbor, West Java, the temperature was 22° C, the relative humidity was 87%. In addition, the amount of rainfall is 0 mm, with a wind speed of 0 knots which is equivalent to 0 km/hour. And the direction of the cardinal points at that time was 330° from the North, which means to the Northwest.

6. Early weather of Zulhijah 1440 H / 2019 AD

a). On Thursday, 1 August 2019, at Condrodipo Gresik Hill, East Java, the temperature was 27.3° C, the relative humidity was 67%. In addition, the amount of rainfall is 0 mm, with a wind speed of 2 knots which is equivalent to 3,704 km/hour. And the direction of the cardinal points at that time was 130° from the North, which means to the Southeast.

b). On Thursday, 1 August 2019 AD in Pasuruan, East Java, the temperature was 21.6° C, the relative humidity was 68%. In addition, there is no data on the amount of rainfall, with a wind speed of 1 knot which is equivalent to 1.852 km/hour. And the direction of the cardinal points at that time was 90° from the north, which means eastward.

c). On Thursday, 1 August 2019 M in Lamongan, East Java, the temperature is 27.3° C, the relative humidity is 67%. In addition, the amount of rainfall is 0 mm, with a wind speed of 2 knots which is equivalent to 3,704 km/hour. And the direction of the cardinal points at that time was 130° from the North, which means to the Southeast.

d). On Thursday, 1 August 2019 AD in Kudus, Central Java, the temperature was 27.4° C, the relative humidity was 63%. In addition, the amount of rainfall is 0 mm, with a wind speed of 3 knots which is equivalent to 5.556 km/hour. And the direction of the cardinal points at that time was 90° from the north, which means eastward.[20]

Analysis in the Perspective of Jurisprudence

Fiqh rules used in determining the beginning of the lunar month by, among others:

1. Rule of Al-hukmu yattabi' al mashlahah al rajih'ah

[20]Sri Woro B. Harijono Bayong Tjasyono HK, "Meteorologi Indonesia 2 : Awan Dan Hujan Monsun," accessed December 27, 2022, https://opac.perpusnas.go.id/DetailOpac.aspx?id=865089.

الحكم يتّبع المصلحة الرّا جحة

"The law follows the benefit of the most powerful/many."[21]

The decision of the judge (leader) should consider the stronger/dominant interests among other good interests in a problem. During the hearing, the decision made by the minister of religion should consider the wider benefit felt by the people, not just the benefit of a certain group.

The determination of the beginning of the kamariah month is based on two things, namely rukyat al-hilal at sunset on the 29th of the previous month, if the crescent is visible then fasting is done the next day, and if the crescent is not visible, or is blocked by clouds then the previous month is completed to 30 days (istikmal), the opinion according to Hanafiyah and Malikiyah scholars.[22]

According to the Syafi'iyah scholars, there are similarities in the concept with the opinions of Hanafiyah and Malikiyah, that is, when it is cloudy, it completes the month for 30 days, but there is another explanation in the book among the Syafi'iyah scholars , namely the explanation who explained that if there is a rukyat al-hilal successfully carried out while according to hisab there is no possibility of the new moon being seen, then the decision of reckoning takes precedence and the rukyat is rejected. With the reason that reckoning is certain, and rukyat al-hilal is uncertain, and certain things cannot defeat uncertain things. However, the jumhur of Syafi'iyah scholars forbade the use of reckoning in determining the beginning of the lunar month.

From several opinions of al-Qayubi, a Syafi'iyah scholar translated rukyat with imkan al-rukyat (the position of the new moon can be seen). The beginning of the month can be determined on qath'iy reckoning . so that its relation to rukyat, reckoning must be based on 3 circumstances: it is definitely impossible to see (isthilahah al-rukyat), it may be seen (imkan al-rukyat), and it is certain that it can be seen (al-qath'u bi al-rukyat).

Meanwhile, according to the Hambaliyah Ulama there is a slight difference from the others, they argue that the determination of the beginning of the month is based on 3 things, namely the sighting of the hilal , if the sighting is not successful then the next thing to look at is

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[21]Asjmuni A. Rahman, *Qa'idah-Qa'idah Fiqih (Qawa'idul Fiqhiyyah)* (Bulan Bintang, 1976).

[22]Muhammad Faishol Amin, "The Method of Determining Lunar Month of Four Madhhab," *Hayula: Indonesian Journal of Multidisciplinary Islamic Studies* 2, no. 1 (January 31, 2018): 17–32, https://doi.org/10.21009/HAYULA.002.1.02.

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whether the weather is bright or not, if it is bright then the day completes 30 days, but if cloudy then narrowed down to 29 days. Even though they have different opinions regarding the concept of determining the beginning of the month and also the conditions for rukyat al-hilal , in terms of reckoning the Hambaliyah scholars have the same opinion as the majority of scholars, namely rejecting the determination by reckoning.[23]

2. Rules of Law al-hakim ilzam wa yarfa'u al khilaf

حكم الحاكم إلزام ويرفع الخلاف

"The law decided by the judge in the matter of ijtihad can eliminate differences of opinion"[24]

When judges face problems, they differ in the determination of a law. Then the judge agreed to decide on a decision that was considered stronger. Thus, other parties may not deny that the decision is an implementation of the rules above.[25]

Cconnection between the above rules and the determination of the beginning of the lunar month, as explained in the previous chapter, is the difference in methods, which later formed the RI Hisab Rukyat Team to unify these differences. In their efforts, the rukyat reckoning team made a decision that was considered stronger (through the mechanism of the isbat meeting decided by the Minister of Religion) in determining the beginning of the month based on scientific objectives and was a way to unify decisions from various different methods. Decisions set by the government are the result of ijtihad which should be followed, even though according to legal norms these decisions are not binding, but according to shari'a we as Muslims are obliged to follow what is decided by ulil amri (government) as long as the decision is not in a state of disrepute inside it. So Islamic community organization groups in Indonesia should follow the decisions set by the government, in this case the Ministry of Religion. In determining

[23]Kementerian Agama, "Selayang Pandang Hisab Rukyat - Google Books," Bimas Islam, 2004, https://books.google.co.id/books/about/Selayang_pandang_hisab_rukyat.html?id=vo9kXwAACAAJ&redir_esc=y.

[24]Prof. H. A. Dzajuli, "Kaidah-Kaidah Fikih," 2019.

[25]Ahmad Fadholi, "Akseptabilitas Draf Kriteria Baru Penentuan Kalender Hijriah Menurut Ahli Falak Di Indonesia," *Edugama: Jurnal Kependidikan Dan Sosial Keagamaan* 5, no. 1 (2019), https://doi.org/10.32923/edugama.v5i1.961.

the beginning of the lunar month, the leader (Minister of Religion and Rukyat Hisab Agency) may not prioritize the benefit of the group or individual, but must prioritize more benefits universal.[26]

3. Rule of Tasarruf al imam 'ala ra'iyatih manuthun bi al mashlahah

تصرّف الإمام على رعيته منوط بالمصلحة

"The priest's actions towards his people must be related to the benefit"

Whatever decision the government takes cannot be justified according to shari'a as long as it is not intended for the public good. Government decisions in setting the beginning of Ramadan, Shawwal and Zulhijah contain the public benefit and their decisions must be followed for legal certainty, eliminating differences of opinion and maintaining the integrity and unity of the ummah.

The lack of differences in the implementation of worship between Islamic community organizations and uniting all Islamic community organizations by inviting them to attend isbat meetings to determine the beginning of the lunar month is a form of benefit created by the government's ijtihad in determining the beginning of the lunar month. With the decision stipulated by the government, it eliminates the obligation for Muslims in Indonesia to make ijtihad to determine the beginning of the lunar month.

The policy adopted must consider the universal benefit of the people, not considering the benefit of a group of groups or even individuals. In terms of determining the initial lunar month the government/in this case the minister of religion must consider the benefit of Muslims throughout Indonesia, not just consider a group only.

Determination of the beginning of the lunar month of the Ministry of Religion of the Republic of Indonesia from 2014 M/ 1435 H to 2019 M/ 1440 H fiqh fulfills existing fiqh rules for the sake of general problems, and determines based on rukyat whose truth is clear, both through telescopes obtained from new moon images and by perukyat direct vision. The government through the Hisab Rukyat Agency has tried to unify the beginning of the months in Indonesia, although there are still several Islamic community organizations that

[26]Ahmad Wahidi et al., "Implementation of the Mabims Criteria in Determining the Beginning of Islamic Month in Indonesia and Brunei Darussalam," in *Proceedings of the International Conference on Engineering, Technology and Social Science (ICONETOS 2020)*, vol. 529, 2021, https://doi.org/10.2991/assehr.k.210421.016.

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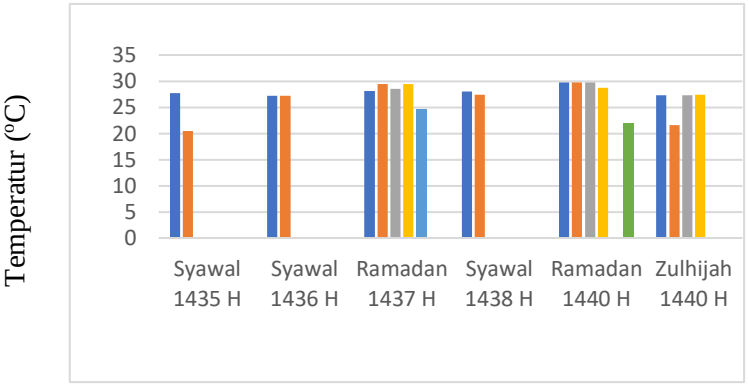
have different starting months because they use the criteria they adhere to.

Analysis in an Astronomical Perspective

Hilal is a new moon (new moon) whose appearance is very thin, things that can affect the visibility (sighting) of the new moon include: traversing factors, rukyat places, supporting tools (telescopes, rubu' mujayyab , location gates, and so on), as well as weather factor. The following data is obtained from the nearest station where the hilal observation is obtained from the BMKG's online data on the website. The results of weather analysis during the sighting of the hilal in Indonesia from 1435 H/ 2014 M to 1440 H/ 2019 M are as follows:

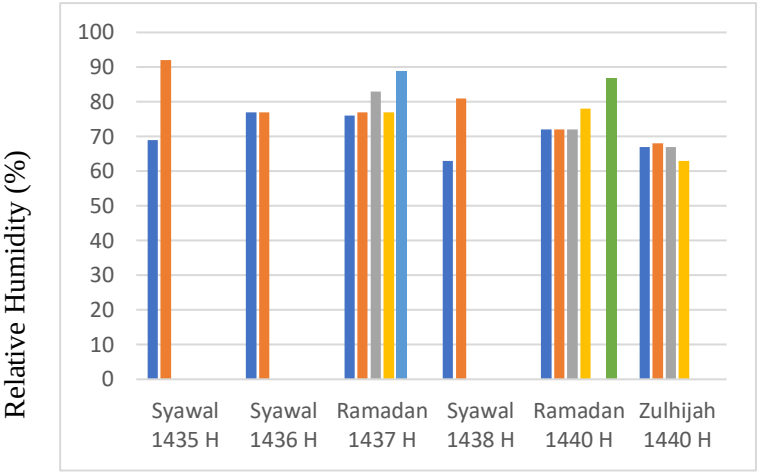
Graph 1: Data on temperature (Sn) at locations where the new moon is visible in 1435 H-1440 H



Source: processed secondary data, 2022

From the graph above, the minimum recorded temperature is 20.5 ° C at Ratu Sukabumi Harbor, West Java during the rukyat al-hilal determination of the beginning of the month of Shawwal 1435 H, and the maximum temperature recorded is 29.8 ° C at three points, namely Bangkalan, Condrodipo Gresik Hill, and Lamongan East Java on rukyat al-hilal determines the start of the month of Ramadan 1440 H. With the average temperature of all available data, namely 26.6° C.

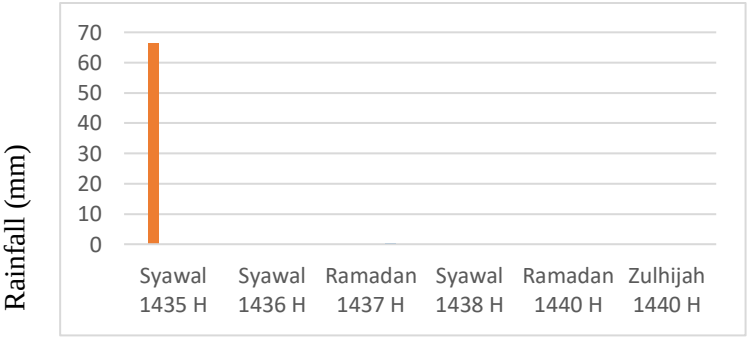
Graph 2: Relative Humidity (RH) data at locations where the new moon is visible from 1435 H-1440 H



Source: processed secondary data, 2022

Relative humidity recorded was 56% in Kupang, East Nusa Tenggara during the rukyat al-hilal determination of the beginning of the month of Zulhijah 1438 H, and the maximum humidity was recorded at 92% in Ratu Sukabumi Harbor, West Java during the rukyat al-hilal determination of the beginning of the month of Shawwal. 1435 H. With an average humidity of all available data, namely 72.3%.

Graph 3: Rainfall (RR) at locations where the new moon is visible in 1435 H-1440 H



Source: processed secondary data, 2022

The majority of the data shows that the intensity of rainfall when the sighting of the new moon shows 0 mm, these data prove that the new moon can be seen because the rainfall value is very low. And there is only one data that shows high rainfall, namely 66.4 mm in Ratu Sukabumi Harbor, West Java during the sighting of the hilal, which

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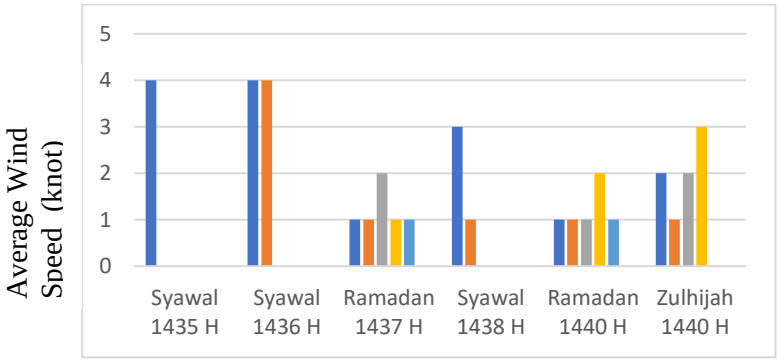
determines the beginning of the month of Shawwal 1435 H. As well as the average rainfall from all available data, which is 2.3 mm .

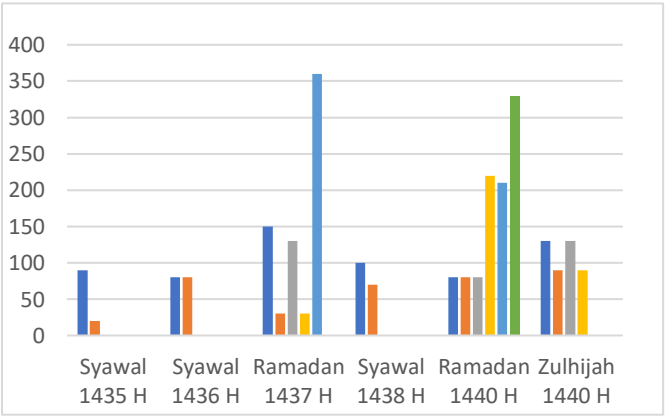
Graph 4 : Average Wind Speed (RRR) at locations where the new moon is visible in 1435 H-1440 H



Source: processed secondary data, 2022

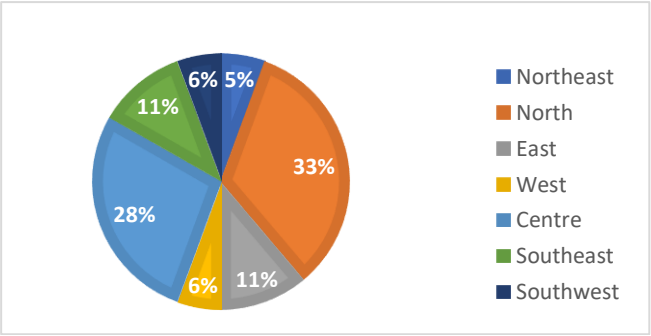
The drink value of the wind speed, namely 0 knots, occurs at two points in Ratu Sukabumi Harbor, West Java when the al-hilal pilgrimage determines the beginning of Shawwal 1435 H and Ramadan 1440 H. While the maximum value is at 6 knots in Kupang, East Nusa Tenggara when rukyat al-hilal determines the start of the month of Ramadan and Shawwal 1438 H. As well as the average wind speed from all available data, namely 2 knots = 3,704 km/hour.

Graph 5: Wind Direction (dd) at locations where the new moon is visible in 1435 H-1440 H



Source: processed secondary data, 2022

Diagram 1: Number of Wind Directions at locations where the new moon is visible in 1435 H-1440 H



Source: processed secondary data, 2022

The cardinal directions have 8 angles, each of which forms 45o. The graphs and diagrams above show that the wind blows in almost all directions. However, the average wind direction from the above data is 0o -90o (North). In the diagram above it can be seen that there are some winds blowing towards the West (6%), but more winds blowing towards the East (33%).

CONCLUSION

Ijtihad carried out to unite Muslims in Indonesia is the initial determination of the lunar month by the government. During 2014 M/1435 H to 2019 M/1440 H the government determined the beginning of the lunar months of Ramadan, Shawwal and Zulhijah through an isbat trial with reckoning results using several systems and verified through direct sightings of al-hilal (observations) conducted throughout Indonesian territory. The results of the determination were carried out in accordance with the criteria adopted by the government of the Republic of Indonesia, namely 2^{o} minimum hilal height, 3^{o} minimum Moon-Sun elongation, and 8 hours minimum hilal age from ijtima' , there is no determination with a new moon height of less than 2^{o} .

The results of fiqh analysis show that the government has implemented several fiqh principles in determining the beginning of the lunar month in Indonesia, including: Rule of Al hukmu yattabi' al maslahah al rajihah, the determination of the beginning of the lunar month follows the strongest/many benefits for Muslims in Indonesia, not only for certain groups ; the rule of Hukm al-hakim ilzam wa yarfa'u al-khilaf, the decision made by the government in matters of ijtihad in determining the beginning of the lunar month can eliminate differences of opinion that exist in Indonesia ; As well as the

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Tasharruf al imam 'ala ra'iyatih manuthun bi al mashlahah rule, the government's action in determining the beginning of the lunar month creates benefits in the form of minimal differences in the implementation of worship .

While astronomically , the factors that affect the visibility of the new moon and the results of the author's analysis include: The air temperature is close to high and can accelerate the evaporation of sea water; The average humidity is moderate so it doesn't stimulate rain; Low rainfall marked by almost the majority of the data in places where the new moon was successfully seen has a rainfall value of 0 mm; The average wind speed is 1 knot, there are two places that have high speeds, namely 6 knots; The most wind direction during the sighting of the hilal is to the north so that the clouds do not block the visibility of the western horizon from the place of sighting (240o - 300o) ; and when the initial determination of Shawwal 1435 H/ 2014 M received a report of the sighting of the new moon at Ratu Sukabumi Harbor, West Java, but with temperature data of 20.5^{o} C (including cold temperatures), the average humidity is 92% (very high can cause clusters of points water/clouds) , rainfall of 66.4 mm (the highest in 2014-2019 M) , wind speed of 0 knots, and wind direction of 20^{o} to the North (not blocking the western horizon). This doubts the author because the height of the new moon is still relatively low, namely 2^{o} to 3^{o} 40'.

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