

Research Article

Formulation of *Faḍīlah*, *Ikhtiyār*, and *Jawāz* Times of Asr Prayer of Fiqh and Science Perspectives

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Li'izza Diana Manzil : <https://orcid.org/0009-0009-7833-4872>**Abstract.**

Asr prayer is one of the obligatory prayers performed at specific times among the five daily prayers. However, in the literature of *fiqh*, there is a division of Salat Asar into *faḍīlah* (preferred time), *ikhtiyār* (permissible time), and *jawāz* (allowable time). This is closely related to the virtue of performing the prayer in its early time, as mentioned in the sayings of the Prophet Muhammad, and the discouragement of delaying Asr prayer until its later time. It is essential to establish a precise time, specifying the exact hour and minute for *faḍīlah*, *ikhtiyār*, and *jawāz* in Asr prayer. There are two methods for determining the timing of *faḍīlah*, *ikhtiyār*, and *jawāz*: firstly, through a fiqh approach, which involves observing the phenomena of the Sun's movement, and secondly, through a scientific approach, using mathematical and astronomical calculations. Both the *fiqh* and scientific methods are integrated and mutually beneficial in the development of a formulation, providing ease in determining the timing of *faḍīlah*, *ikhtiyār*, and *jawāz* in Salat Asar.

Keywords: Asr prayer, *Faḍīlah*, *Ikhtiyār*, *Jawāz*, fiqh, scienceCorresponding Author: Li'izza
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1. Introduction

The division of the Asr prayer time into distinct periods, namely *faḍīlah*, *ikhtiyār*, and *jawāz*, has been extensively elucidated in various fiqh literature by esteemed scholars. The significance of commencing the prayer at its earliest opportunity is emphasized to the Muslim community, as evidenced in the Quranic verse Al-Baqarah 2:238: "Maintain with care the [obligatory] prayers and [in particular] the middle prayer and stand before Allah, devoutly obedient." [1] Additionally, in a hadith, the Prophet mentioned that the best deed is to perform the prayer at the beginning of its time. [2][3] This highlights the importance of not only fulfilling the obligation of prayer but also performing it at the appropriate time (at the beginning of its time).

Logically, the consequence of this hadith can be understood as the recommendation to perform the Asr prayer at the beginning time or *faḍīlah* time, which is more preferable compared to the *ikhtiyār* and *jawāz* times. [4]

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The determination of the Asr prayer times is known by observing natural phenomena through the movement of the Sun, as explained in fiqh literature. However, the exact astronomical formulation of these prayer times in clock form is not specified. The entry of the Asr prayer time begins after the end of the zuhr prayer time[5]², specifically when the shadow length of an object becomes equal to the length of the object itself.[6]

On the other hand, currently, determining prayer times can easily be done by checking the clock or prayer schedules obtained through calculation (*ḥisāb*).[7] In addition to the declination of the Sun, the latitude of a location is also an important factor in determining the timing of *faḍīlah*, *ikhtiyār*, and *jawāz* prayers. In equatorial regions, the length of the day does not vary significantly throughout the year. However, in regions with high latitudes such as subtropical areas or those above 45°, the conditions of daylight and nighttime differ, and the duration of time is not always the same. In fact, there are some places where the phenomena of the Sun's movement may not be observed as they are in equatorial regions, due to the effects of latitude and the declination of the Sun. According to Saaoe'din Djambek, the identification of the Asar prayer becomes challenging for latitudes above 81°57' during the summer season [8] it is through this formulated calculation that the positions of the Sun during the *faḍīlah*, *ikhtiyār*, and *jawāz* times of the Asr prayer can be estimated and determined, as discussed in fiqh literature studies.

2. Methods

This paper draws upon the division of *faḍīlah*, *ikhtiyār*, and *jawāz* periods of the Asr prayer as found in various fiqh literature, including the book “al-Majmu’ Syarah al-Muhaḍab li asy-Syīrāzī” by Imam Abi Zakariya Muhyiddin bin Syarif an-Nawawi,[9]³ which is a recognized work within the Shafi’i school of thought.

The objective of this paper is to examine the formulation of the *faḍīlah*, *ikhtiyār*, and *jawāz* prayer times of Asr from a fiqh perspective, encompassing the viewpoints of scholars regarding the division of the Asr prayer time into these periods. Furthermore, it aims to explore the astronomical formulation of the *faḍīlah*, *ikhtiyār*, and *jawāz* times of the Asr prayer in the context of clock-based intervals.

This research adopts a qualitative methodology, relying on literature review and employing descriptive analysis and mathematical analysis methods. The evidence for the *faḍīlah*, *ikhtiyār*, and *jawāz* prayer times of Asr as described in fiqh books is presented and transformed into astronomical formulations. These formulations are then

applied in the form of easily comprehensible clock-based intervals. Thus, the astronomical principles utilized are subsequently analyzed mathematically, while ensuring that the aspects of Islamic law (sharia) are not disregarded to avoid any contradictions between the two.

3. Results and Discussion

3.1. Definition and Legal Basis of Faḍīlah, Ikhtiyār, and Jawāz Times

The term “waqt” (time) is derived from the Arabic word وق-ت. Etymologically, the plural form of waqt, which is أَوْقَاتٌ, originates from the Arabic verb fi’il madli وَوَقَّتْ and is transformed into the noun form masdar وَقْتًا, meaning time.[10] On the other hand, “salah” (prayer) is derived from the Arabic word ص-ل-ي. Etymologically, the word salah comes from the Arabic verb fi’il madli صَلَّى and is transformed into the noun form masdar صَلَاةٌ, which means “to invoke” or “to pray.” In the Al-Munawwir dictionary, the word صَلَّى can also mean الرَّحْمَةُ (mercy), الدُّعَاءُ (dua), or الصَّلَاةُ وَالصَّلَوَةُ (prayer).[10] Thus, Salah times refers to the specific times that have been determined and established by Allah SWT for the performance of the act of worship, namely salah or prayer. It is within these designated times that Muslims are obligated to fulfil their prayers as prescribed by Allah.[11]

3.2. The Definition of Faḍīlah Time

Etymologically, the term “faḍīlah” originates from the Arabic word فضل-يفضل-فضلا, which is in the form of isim fa’il فاضل/فضيل, and when the tā’ ta’nīts is added, it becomes فضيلة, meaning something that possesses virtue or excellence.[10] Therefore, faḍīlah time refers to a time period that holds virtue or excellence.

In terminology, Abu al-Diya’ Nur al-Din Ali bin Ali al-Qahiri explains that the intended meaning of faḍīlah time is a time period that contains additional rewards or merits within it. In other words, it is a time when performing good deeds is highly rewarded.[12] Furthermore, Sheikh Nawawi al-Bantani explains that faḍīlah time refers to a period wherein if someone performs acts of worship during that time, they are granted a complete reward greater than the rewards obtained after that period ends, specifically at the beginning of the time itself.[13]

3.3. The Definition of *ikhtiyār* time

Etymologically, the term “*ikhtiyār*” originates from the trilateral root verb خـاـر- يـخـيـر- خـيـر, which means “to become good.”[10] It then takes the form of the quadrilateral root verb اـخـتـاـر- يـخـتـاـر- اـخـتـاـر, which means “to choose.”[10] Thus, *ikhtiyār* time refers to a deliberately chosen time.

Terminologically, according to Abu al-Diya’ Nur al-Din ‘Ali bin ‘Ali al-Qahiri, *ikhtiyār* time is a time in which there is a reward below the level of *faḍīlah* time, due to the intention itself (intending not to commit mistakes at the beginning of the time, thereby reducing the reward).[12] Ibrahim al-Bajuri defines *ikhtiyār* time as the time chosen to perform the prayer at that specific time rather than later. Ibnu Daqiq al-‘Id in his book *al-Iqlid* states that it is called *ikhtiyār* time because the angel Gabriel chose to perform the prayer at that time.

3.4. The Definition of *Jawāz* time

Etymologically, the term *Jawāz* originates from Arabic and takes the form of *masdar* جـاـز- يـجـوز- جـواـز, which means permissibility.[10] Thus, *Jawāz* time refers to the permitted time. On the other hand, the term *makruh*, etymologically derived from Arabic as an *isim maf’ul* كـرـه -- يـكـرـه -- كـرـاهة, means what is disliked.[10] In the context of Islamic jurisprudence, *makruh* signifies something that the sharia encourages to be abandoned. If abandoned, one will receive rewards, but if performed, it is not sinful.[14] *Makruh* represents a command from the sharia to the accountable individual to abandon an action with an uncertain prohibition, as indicated by the linguistic form it embodies, which implies the demand to refrain from such an act.[15]

Terminologically, *Jawāz* time in the division of prayer times is divided into two categories:

1. *Jawāz bila karahah* (*Jawāz* not *makruh*): This refers to the time when it is permissible to perform the prayer, and doing so is not considered sinful.
2. *Jawāz bi karahah* (*Jawāz* *makruh*): This refers to the time when it is permissible to perform the prayer, and doing so is not sinful, but there is a state of *makruh* associated with it. The legal basis for the concept of *faḍīlah*, *Ikhtiyār*, and *Jawāz* in prayer is as follows:

3. The legal basis in the Qur'an is found in Surah An-Nisa', verse 103: Translation: "Indeed, prayer has been decreed upon the believers a decree of specified times." (Quran 4:103)[16]

The phrase *كِتَابًا مَّوْقُوتًا* indicates that prayer is an obligation that is fixed and must be performed at designated times. This means that prayer is a mandatory act of worship that remains unchanged, must be consistently performed, and is never waived under any circumstances.[17] The phrase *كِتَابًا مَّوْقُوتًا* indicates that prayer is an obligation that is fixed and must be performed at designated times. This means that prayer is a mandatory act of worship that remains unchanged, must be consistently performed, and is never waived under any circumstances. This is further emphasized in *Tafsir Manar*, which states that prayer has been appointed with specific timings by Allah. The term *كِتَابًا* denotes a confirmed obligation with a predetermined time, recorded in the Preserved Tablet (Lauhul Mahfuz). *مَوْقُوتًا* (of specified times) signifies that the boundaries and limits have been set for the prayer.[18]

Based on the mentioned verse, Ibn Rushd divided the prescribed prayer times into two categories: *muwassa'ah wa al-mukhtar* (preferred and flexible times) and *ahli al-dlarurati* (times of necessity). Within the *muwassa'ah wa al-mukhtar* time, there are two subcategories: *faḍīlah time* and *tawassa'ah time*. However, there is a difference among scholars regarding the boundaries of *tawassa'ah time*. [19] Syihab al-Din explains that prayer should ideally be performed at the beginning of its designated time (*faḍīlah time*), and its obligation extends over a wide span of time (*muwassa'ah time*). However, it is not sinful to delay the prayer until the end of its time (before the forbidden time) as long as one has the intention (azam) to perform it within the heart. [20] Based on the mentioned verse, the *tawassa'ah time* (wide span of time) encompasses the concept of *ikhtiyār* and *jawāz* which allow for the performance of prayer outside the *faḍīlah time*.

1. The legal basis in the hadith of the prophet narrated by Ibn Abbas:

Narrated by Musaddad, who informed us, Yahya reported to us from Sufyan, who narrated to me Abd al-Rahman bin Fulan bin Abi Rabi'ah, Abu Dawud said it is Abd al-Rahman bin al-Haris bin Ayyasy bin Abi Rabi'ah, from Hakim bin Hakim, from Nafi' bin Jubair bin Mut'im, from Ibn Abbas. He said: The Messenger of Allah (peace be upon him) said, "Jibril (Gabriel) led me in prayer at the side of the Kaaba twice. Jibril led me in the Dhuh prayer when the sun had passed its zenith, and the shadow was of the length of a sandal strap. He led me in the Asr prayer when the shadow was of equal length to the object. He led me in the Maghrib prayer when the fasting person breaks his fast. He led me in the Isha prayer when the twilight disappeared. And he led me in

the Fajr prayer when the fasting person must abstain from eating and drinking. Then, the next day, Jibril led me in the Dhuhr prayer when the shadow was of equal length to the object. He led me in the Asr prayer when the shadow was twice the length of the object. He led me in the Maghrib prayer when the fasting person breaks his fast. He led me in the Isha prayer until one-third of the night had passed. And he led me in the Fajr prayer until the sky became bright. Then, Jibril turned to me and said, 'O Muhammad, this is the time observed by the Prophets before you. The time is between these two times (i.e., the initial time and the delayed time)."[21][22]

The statement “هذا وقت الأنبياء من قبلك، والوقت ما بين هذين الوقتين” indicates that the prayer times of the previous Prophets had a wide span, with both a beginning and an end. However, these specific prayer times (the five daily prayers) are exclusive to the Ummah (nation) of Prophet Muhammad (peace be upon him).[23] Based on the apparent meaning of this hadith, it is permissible to perform the prayer at the beginning, middle, or end of its designated time.[24] Therefore, the Asr prayer can be performed at the beginning (*fadilah*), middle (*ikhtiyār*), or end (*jawāz*) of its time.

3.5. The Concept of *faḍīlah*, *ikhtiyār*, and *jawāz* times for Asr Prayer

The advancements in astronomical sciences have greatly aided the Muslim community in determining the beginning of prayer timings. This has made it possible to determine the concepts of *faḍīlah* (recommended time), *ikhtiyār* (flexible time), and *jawāz* (permissible time) for Asr prayer simply by referring to a clock, without the need to observe natural phenomena or the movement of the Sun. However, prior to performing these calculations, certain data is required, namely:

1. Latitude

Latitude, or “*ard al-balad*” in Arabic, refers to the distance from a location to the equator measured along the Earth’s meridian. Latitude is represented by the symbol ϕ and is negative (-) if the location is south of the equator or in the Southern Hemisphere (SH). Conversely, latitude is positive (+) if the location is north of the equator or in the Northern Hemisphere (NH). The value of latitude decreases as it moves towards the north and south or closer to the poles.[25]

2. Longitude

Longitude, or “*thul al-balad*” in Arabic, represents the distance of a location along the equatorial arc measured from the Greenwich[26] meridian to the respective location.[27] Longitude is denoted by the symbol λ . The values of longitude range

from 0° to 180° , both positive and negative. Locations to the east of the Greenwich meridian are referred to as East Longitude (EL) and have positive values, while locations to the west of the Greenwich meridian are referred to as West Longitude (WL) and have negative values.[27]

3. Solar

Declination Solar declination refers to the angular distance between the path of the Sun and the equator, and it is represented by the symbol δ . [6] Solar declination has a positive value (+) for the celestial hemisphere north of the equator, which occurs approximately between March 21st and September 23rd. On the other hand, solar declination has a negative value (-) for the celestial hemisphere south of the equator, which occurs approximately between September 23rd and March 21st. The solar declination is 0° when the Sun crosses the equator, specifically on March 21st and September 23rd. The maximum value of solar declination reached by the Sun is approximately $23^\circ 30'$. [28]

4. Equation of Time

The equation of time, or "*Ta'dil al-Waqt*" in Arabic, refers to the difference between the true solar time (the time when the Sun reaches its culmination) and the mean solar time (the position of the Sun at 12:00 noon). The equation of time is represented by the symbol e and has a positive value (+) when the Sun has already passed its upper culmination at 12:00 noon. Conversely, it has a negative value (-) when the Sun has not yet reached its upper culmination at 12:00 noon. [6]

5. High of Sun

The High of Sun, or "*Irtifa' al-Syams*" in Arabic, refers to the vertical distance measured from the horizon to the sun along an arc. The high of Sun is usually represented by the symbol h_o (high of Sun). It has a positive value when the sun is above the horizon and a negative value when it is below the horizon. [27]

Formula for the sun's altitude during the Asar prayer timings:

6. *Faḍīla* h time

$$\text{Cotan } h_{fa} = \tan z_m + 1$$

7. *Ikhtiyār* time

$$\text{Cotan } h_{ia} = \tan z_m + 1.5$$

8. *Jawāz* not makruh time

$$\text{Cotan } h_{jma} = \tan z_m + 2$$

9. *Jawāz* makruh time

$$\text{Cotan } h_{jma} = 6^\circ$$

10. *Meridian Pass*

The term “Meridian Pass” (MP) refers to the moment when the Sun reaches its highest point in the sky. The data required for determining the Meridian Pass includes the True Solar Time and the Equation of Time. The True Solar Time always indicates 12:00 noon when the Sun reaches its highest point. Therefore, the Meridian Pass (MP) can be formulated as:

$$MP = 12 - e$$

11. Angle of Time

The Angle of Time of the Sun represents the arc along the Sun’s daily path measured from the zenith to the position of the Sun. The Angle of Time of the Sun is usually denoted by the symbol “ t_o ”. It ranges from 0° to 180° , with a value of 0° when the Sun is at the upper culmination point and 180° when the Sun is at the lower culmination point.[27]

The formula for calculating the Angle of Time for the *faḍīlah*, *ikhtiyār*, and *jawāz* times of Asar prayer is as follows:

$$\text{Cos } t_o = \sin h_o : \cos \phi : \cos \delta - \tan \phi \times \tan \delta$$

Where:

t = Angle of Time

ϕ = Latitude

δ = Sun’s Declination

h = High of Sun

12. Local Time Correction (LTC)

To convert the calculated zenith-based times of *faḍīlah*, *ikhtiyār*, and *jawāz* for Asr prayer from UTC/GMT data to local time, a Local Time Correction (LTC) is applied. The formula for LTC for *faḍīlah*, *ikhtiyār*, and *jawāz* times of Asar prayer is as follows:

$$\text{LTC} = (\lambda^d - \lambda^x) : 15$$

Where:

λ^d = Longitude of the Region

λ^x = Longitude of the Place

In Indonesia, since January 1st, 1984, the country is divided into three time zones:[29]

3.5.8.1 Western Indonesian Time (WIB) : 105° (+7 GMT)

3.5.8.2 Central Indonesian Time (WITA) : 120° (+8 GMT)

3.5.8.3 Eastern Indonesian Time (WIT) : 135° (+9 GMT)

13. Ihtiyat (Prudence)

Ihtiyat refers to the practice of adding or subtracting time as a precautionary measure to ensure that the prayer timings do not precede the beginning time or exceed the end time as prescribed after the calculations. It serves as a cautious approach to ensure adherence to the prescribed prayer timings.

These steps are taken due to several reasons, including: a) The presence of rounding in data collection, even in very small increments. Similarly, calculation results are usually obtained up to the second unit, so for simplification and safety, rounding up to the minute unit is necessary. b) Prayer schedules are implemented for decades or an extended period, while the data used is taken from a specific year or on average. The position of the Sun varies slightly from year to year, which can result in slight changes in prayer schedules. c) Determining the latitude and longitude data of a city is usually measured at a central point (markaz) in the city. As the city develops, its area expands, and it is possible for the central area of the city to change and become the outskirts. As a result of this development, the eastern or western edges of a city will have a considerable distance from the originally determined latitude and longitude point. If the initial prayer time calculation is not adjusted for this precaution, it will only be applicable to the markaz point and its eastern area, not to the western area. Different scholars of hisab use various precautionary values, such as 2 minutes, 3 minutes, 4 minutes, and some even up to 7/8 minutes. For further guidance on determining the initial prayer times throughout the years. [30]

3.6. Formulation of *faḍīlah*, *ikhtiyār*, and *jawāz* Asr prayer time from fiqh and scientific perspective

Fundamentally, numerous fiqh books have extensively addressed the division of *faḍīlah*, *ikhtiyār*, dan *jawāz* time for the Asr prayer. However, referring to the teachings found in the book “al-Majmu” by Imam an-Nawawi, which elucidates the division of the Asr prayer’s time as follows:

Imam an-Nawawi stated, “Al-Qadhi Husain[31], al-Shaidalani, Imam Haramain, and al-Ruyani have stated that the time for Asr prayer can be divided into five categories: *faḍīla h*, *ikhtiyār*, The permissible time (*jawāz*) without dislike, *jawāz makruh* (permissible time with dislike), and *’uzur* (excused time). The *faḍīla h* time extends from the beginning of the designated time until the shadow of an object is equivalent to 3/2 of its length. The *ikhtiyār* time extends until the shadow of an object is twice its length. The permissible time (*jawāz*) not makruh extends until the Sun turns yellow. The *jawāz makruh* time is from when the Sun turns yellow until sunset. The *’uzur* time applies to individuals who are combining their prayers due to travel or rain, and it starts at the time of zuhr.”[32]

On the other hand, according to Sheikh asy-Syarbani, the *faḍīla h* time for the Asr prayer is at the beginning of its designated time, the *ikhtiyār* time extends until the shadow of an object is twice its length, and the *jawāz* time for Asr prayer continues until the sunset.[33]

Another opinion from Imam Taqiyuddin explains that the beginning of the Asr prayer time is when the length of the shadow is equivalent to the length of the object, and the end of the *ikhtiyār* time for Asr is when the length of the shadow is twice the length of the object. However, Asr prayer has four distinct time periods: *faḍīla h* time, which extends until the length of the shadow is equivalent to the length of the object; The permissible time (*jawāz* not makruh), which extends from when the shadow is twice the length of the object until the Sun turns yellow; *jawāz makruh* time, which follows thereafter until approaching sunset; and tahrīm time, which refers to delaying the prayer until there is insufficient time remaining to perform it.[34]

Imam an-Nawawi stated that Abu Isa at-Tirmidhi, based on the teachings of Imam Ash-Shafi’i and other scholars, explained that delaying the Asar prayer is considered makruh (disliked). The evidence for its dislike is based on the hadith narrated by Anas, who said:

سمعت رسول الله صلى الله عليه وسلم يقول: تِلْكَ الصَّلَاةُ الْمُنَافِقِينَ يَجْلِسُ يَرْقُبُ الشَّمْسَ حَتَّى إِذَا كَانَتْ بَيْنَ قَرْنَيْ الشَّيْطَانِ قَامَ فَتَقَرَّهَا أَرْبَعًا لَا يَذْكُرُ اللَّهَ فِيهَا إِلَّا قَلِيلًا

Translation: “This is the prayer of the hypocrites, sitting and waiting for the Sun to be between the horns of Satan, then they stand up and perform four units of prayer. They do not remember Allah much therein except for a little.”[32]

وصلى بي العصر حين كان ظله مثله

Translation: “And he prayed Asr with me when the length of the shadow of an object was equal to its length.”

وصلى بي العصر حين كان ظله مثليه

Translation: “He prayed Asr with me when the length of the shadow of an object became twice its length.”

The two excerpts from the narration of Jabir bin Abdullah (may Allah be pleased with him) mentioned above broadly explain the entrance of the Asr prayer time. However, they have given rise to various interpretations because Prophet Muhammad (peace be upon him) was led in praying Asr by the angel Jibril (Gabriel) twice, at different times. On the other hand, during the second instance, when Prophet Muhammad (peace be upon him) was led by the angel Jibril, they prayed Zuhr when the shadow of an object was equal to its length. Hence, this interpretation suggests that the time had already entered the Asr prayer period.

فلما كان الغد صلى بي الظهر حين كان ظله مثله

Translation: “Then, on the following day, Jibril prayed Zuhr with me when the shadow of an object was equal to its length.”

According to Imam Malik, the end of the Zuhr prayer time is the *musytarok* time (time for two prayers). Imam Shafi’i, Abu Tsaur, and Daud are of the opinion that the end of the Zuhr prayer time is when the Asr prayer time begins, which occurs when the length of an object’s shadow exceeds the actual length of the object. On the other hand, Abu Hanifah’s view is that the start of the Asr prayer time is when the shadow of an object is equal to twice its length.[35]

Imam an-Nawawi stated that according to the Shafi’i school of thought and the majority opinion of scholars, the flexible time for performing the Asr prayer extends until the shadow of an object is twice its length. However, according to Abu Hanifah, it extends until the sun turns yellow.[32] Based on the hadith of Jabir mentioned earlier, when the Prophet Muhammad invited him to perform the Asr prayer on the second day, it serves as the limit for the flexible time (*ikhtiyār*) of the Asr prayer. Therefore, a Muslim is still allowed to choose to perform the Asr prayer during that time, but they will not attain the same virtue or excellence as performing it in the early time.

From Imam an-Nawawi’s statement above, the following principles regarding the *ikhtiyār*, *faḍīla h*, and *jawāz* time of the Asr prayer can be derived:

1. The *faḍīla h* time begins when the length of the shadow is equal to the length of the object.
2. The *ikhtiyār* time begins when the length of the shadow is $\frac{3}{2}$ times the length of the object.
3. The *jawāz* not Makruh time begins when the length of the shadow is 2 times the length of the object.

4. The *jawāz* makruh time begins when the sun turns yellow with an angle (h_o) of 6° .
5. The end of the *jawāz* makruh time or the entire time for Asr prayer is when sunset (entering Maghrib).

The data required to calculate the preferred time (*faḍīlah*), flexible time (*ikhtiyār*), and permissible time (*Jawāz*) for the Asr prayer, using contemporary methods as described in the book "*al-Majmū'*," include location data and solar data. The location data includes latitude, longitude, and elevation of the place where the prayer is being performed. This information is necessary to determine the position of the observer on Earth. The solar data includes the declination of the Sun, the equation of time, the solar altitude, the solar angle, and the precautionary measures (*ihtiyat*).^[27] These values are crucial for calculating the position of the Sun and its movements in the sky. To obtain the required astronomical data, references such as "The Nautical Almanac" and "The American Ephemeris" can be consulted. These publications provide detailed and accurate information about the positions and movements of celestial bodies, including the Sun.

1. The Metode of *faḍīlah*, *ikhtiyār* dan *Jawāz* times of the Asr prayer calculation, yaitu: The method for calculating the preferred time (*faḍīlah*), flexible time (*ikhtiyār*), and permissible time (*Jawāz*) for the Asr prayer is as follows:
2. Determine the latitude (ϕ), longitude (λ), and elevation (TT) of the location from sea level.⁴
3. Prepare the necessary solar data, including the declination of the Sun (δ), equation of time (e), and solar altitude (h_o).⁶
4. Calculate the solar angle (t_o)⁷ using the formula:

$$\cos t_o = \sin h_o : \cos \phi : \cos \delta - \tan \phi \times \tan \delta$$

1. Convert the local true⁸ solar time to the local standard time⁹ (WIB, WITA, WIT) using the formula:

$$WD = WH - e + (\lambda_d - \lambda_x) : 15$$

Here, λ_d represents the longitude of the respective time zone (WIB 105° , WITA 120° , WIT 135°).

1. Add the precautionary measures (*ihtiyat*) according to the following guidelines:
2. Round the number of seconds to the nearest minute.

3. Add 2 minutes to the initial calculation of the prayer time/preferred time (*faḍīlah*).
4. Note that the initial calculations for the flexible time (*ikhtiyār*) and permissible time (*Jawāz*) of the Asr prayer do not require the addition of precautionary measures.[?]]
5. The method for calculating the preferred time (*faḍīlah*), flexible time (*ikhtiyār*), and permissible time (*Jawāz*) for the Asr prayer is as follows:

The start of the Asr prayer time occurs when the length of the shadow is equal to the length of the object (happening when the Sun is at its zenith, and objects do not cast visible shadows), and when the length of the shadow is twice the length of the object (happening when the Sun is at its zenith, and the length of the shadow of each object is equal to its length), and it ends at sunset.[36]

When the Sun is at its zenith, an object will have a shadow if the latitude value (ϕ) differs from the declination value of the Sun (δ). The length of the shadow that occurs during zenith is equal to $\tan(z_m)$, where z_m represents the angular distance between the zenith and the Sun when it is at its zenith along the meridian.[27]

In the book *al-Majmū'*, the preferred time (*faḍīlah*) for the Asr prayer starts from the beginning of the time until the length of the shadow of an object reaches 3/2 of its length. The calculation of the *faḍīlah* time for the Asr prayer (F_a) is as follows:

1. Zenith distance (Z_m):

$$Z_m = \phi - \delta$$

2. Initial high of the Sun at the beginning of the *faḍīlah* time for Asr prayer (h_{fa}):

$$\text{Cotan } h_{fa} = \tan Z_m + 1$$

3. Angle of time (t) at the beginning of the *faḍīlah* time for Asr prayer:

$$\text{Cos } t_o = \sin h_{fa} : \cos \phi : \cos \delta - \tan \phi \times \tan \delta$$

4. *faḍīlah* time for Asr prayer:

$$\text{Time } F_a = \text{mer pass} + (t_o : 15)$$

5. Beginning of the *faḍīlah* time for Asr prayer: =

$$\text{Time } F_a + (\lambda_d - \lambda_x) : 15$$

The *ikhtiyār* time for the Asr prayer begins after the end of the preferred time (*faḍīlah*) for Asr prayer, which is when the length of the shadow of an object reaches 3/2 of its length, and it continues until the length of the shadow of an

object becomes twice its length. The calculation of the *ikhṭiyār* time for the Asr prayer (Ia) is as follows:

6. Zenith distance (Zm):

$$Z_m = \phi - \delta$$

7. Initial high of the Sun at the beginning of the *ikhṭiyār* time for Asr prayer (h_{ia}):

$$\text{Cotan } h_{ia} = \tan Z_m + 1.5$$

8. Angle of time (t) at the beginning of the *ikhṭiyār* time for Asr prayer:

$$\text{Cos } t_o = \sin h_{ia} : \cos \phi : \cos \delta - \tan \phi \times \tan \delta$$

9. *ikhṭiyār* time for Asr prayer:

$$\text{Time Ia} = \text{noon passage} + (t_o : 15)$$

10. Beginning of the *ikhṭiyār* time for Asr prayer:

$$= \text{Time Ia} + (\lambda_d - \lambda_x) : 15$$

The permissible time (*jawāz*) for the Asr prayer without dislike (*makruh*) begins after the end of the flexible time (*ikhṭiyār*) for Asr prayer, which is when the length of the shadow of an object becomes twice its length, and it continues until the Sun turns yellow (sunset). The calculation of the *jawāz* not *makruh* time for Asr prayer (*Jtma*) is as follows:

11. Zenith distance (Zm):

$$Z_m = \phi - \delta$$

12. Initial high of the Sun at the beginning of the *jawāz* not *makruh* time for Asr prayer (h_{jima}):

$$\text{Cotan } h_{jima} = \tan Z_m + 2$$

13. Angle of time (t) at the beginning of the *jawāz* not *makruh* time for Asr prayer:

$$\text{Cos } t_o = \sin h_{jima} : \cos \phi : \cos \delta - \tan \phi \times \tan \delta$$

14. *jawāz* not *makruh* time for Asr prayer:

$$\text{Time Jtma} = \text{noon passage} + (t_o : 15)$$

15. Beginning of the *jawāz* not *makruh* time for Asr prayer:

$$= \text{Time Jtma} + (\lambda_d - \lambda_x) : 15$$

The *jawāz* *makruh* time for the Asr prayer begins when the Sun turns yellow and continues until sunset. The high of the Sun when it starts turning yellow is

approximately $\pm 6^\circ$. [37] The calculation of the *jawāz* makruh time for Asr prayer (*Jma*) is as follows:

16. High of the Sun (h_{jma}):

$$h_{jma} = 6^\circ$$

17. Angle of time (t) at the beginning of the *jawāz* makruh time for Asr prayer:

$$\cos t = \sin 6^\circ : \cos \phi : \cos \delta - \tan \phi \times \tan \delta$$

18. *jawāz* makruh time for Asr prayer:

$$\text{Time } Jma = \text{noon passage} + (t : 15)$$

19. Beginning of the *jawāz* makruh time for Asr prayer: =

$$\text{Time } Jma + (\lambda d - \lambda x) : 15$$

The apparent motion of the Sun remains relatively constant, allowing us to calculate its sunrise, transit, and sunset times. Similarly, the casting of shadows by the Sun can be calculated for each day throughout the year. The time of *faḍīlah*, *ikhtiyār*, and *jawāz* for the Asr prayer are determined based on the position of the Sun, making it possible to calculate them using mathematical calculations without the need to observe the Sun at all times to determine the prayer timings. [38]

The length of the shadow of an object at the beginning and end of *faḍīlah*, *ikhtiyār*, and *jawāz* time for the Asr prayer is always changing, depending on the length of the shadow at its culmination. This condition is influenced by the latitude of the location and the declination of the Sun. In the hadith of the Prophet, it is mentioned that he prayed Zuhr when the Sun declined, and it is also mentioned when the shadow is of equal length to the object. This is not contradictory to Saudi Arabia, which is located around 20-30 degrees north, as at the time of sunset, the length of the shadow can reach the length of the object or even more, especially when the Sun is positioned far south around the months of June and December. [36] The length of the shadow during the *faḍīlah*, *ikhtiyār*, and *jawāz* time for the Asr prayer will also be influenced when the position of the Sun is far from the latitude of the location. Therefore, when calculating the *faḍīlah*, *ikhtiyār*, and *jawāz* times for the Asr prayer, the data that needs to be considered are the latitude of the location and the declination of the Sun.

4. Conclusion

The determination of the times of *faḍīlah* (preferred time), *ikhtiyār* (recommended time), and *jawāz* (permissible time) for the Asar prayer can be known through two approaches:

the jurisprudential (fiqh) approach and the scientific approach. From a fiqh perspective, the determination of the *faḍīlah* time begins when the length of the shadow is equal to the object's length. The *ikhtiyār* time begins when the length of the shadow is 3/2 times the length of the object. As for the *jawāz* time, it is divided into two categories: a) The *jawāz* not makruh time starts when the length of the shadow is twice the length of the object. b) The *jawāz* makruh time starts when the Sun turns yellow.

From a scientific perspective, the times of *faḍīlah*, *ikhtiyār*, and *jawāz* for the Asar prayer can be formulated using mathematical and astronomical calculations, with important factors to consider being the latitude and declination. The formulation of the *faḍīlah* time for the Asar prayer is determined by the Sun's altitude being equal to the zenith distance plus one. The *ikhtiyār* time is determined by the Sun's altitude being equal to the zenith distance plus one and a half. The *jawāz* not makruh time for the Asar prayer is formulated when the Sun's altitude is equal to the zenith distance plus two. The *jawāz* makruh time for the Asar prayer is determined when the Sun's altitude is 6° above the western horizon or when the Sun's zenith distance is 84° (90° - 6°). Thus, from this perspective, there is an evident correlation between fiqh and science, which integrated and mutually benefited each other in the development of these formulations, providing convenience in determining the *faḍīlah*, *ikhtiyār*, and *jawāz* times for the Asar prayer.

5. Notes

¹As narrated by Abu Dawood, حَدَّثَنَا مُحَمَّدُ بْنُ عَبْدِ اللَّهِ الْخَزَاعِيُّ وَعَبْدُ اللَّهِ بْنُ مَسْلَمَةَ قَالَا: حَدَّثَنَا عَبْدُ اللَّهِ بْنُ عُمَرَ، عَنِ الْقَاسِمِ بْنِ غَتَّامٍ، عَنْ بَعْدِ أُمَّهَاتِهِ، عَنْ أُمِّ فَرُوَةَ قَالَتْ: سُئِلَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ أَيُّ الْأَعْمَالِ أَفْضَلُ؟ قَالَ "الصَّلَاةُ فِي أَوَّلِ وَقْتِهَا" Translation: from Umm Farwah who said: "The Messenger of Allah (peace be upon him) was asked about the best deed. He replied, 'Prayer at its appointed time.'" (Narrated by Abu Dawood). Other term is "الصَّلَاةُ عَلَيَّ وَوَقْتِهَا".

²When the Sun reaches its zenith at the beginning of the Dhuhr prayer time, an upright object on the Earth's surface may not necessarily cast a shadow. Shadows occur when there is a difference between the value of the local latitude (λ) and the declination of the Sun (δ).

³His full name is Yahya bin Syarif bin Muri bin Hasan bin Husein bin Muhammad bin Jum'ah bin Hizam, known by the title Abu Zakariya Muhyiddin an-Nawawi. He was a prominent jurist (faqih) of the Shafi'i school, a scholar of hadith, and a devout worshipper (zahid). He was born in the year 631 AH/1233 CE in Nawa, a village in the Hauran district

of Syria. He passed away in the month of Rajab in the year 676 AH/1277 CE and was buried in his hometown.

⁴Latitude and longitude can be obtained from tables, maps, or GPS devices. The altitude of a location can be obtained using an altimeter or GPS.

⁶The data can be obtained from Nautical Almanacs and Ephemerides tables.

⁷Indeed, the angles of the Sun's position in relation to Fajr (pre-dawn), sunrise, and Dhuha (mid-morning) are negative (-) values. On the other hand, the angles of the Sun's position in relation to Asr (afternoon), Maghrib (sunset), and Isha (evening) are positive (+) values.

⁸True Time is based on the actual movement of the Sun.

⁹Local Time (LT) can also be referred to as Local Mean Time (LMT), which represents the mean solar time at a specific location. In the case of Indonesia, it is divided into three time zones: Western Indonesia Time (WIB), Central Indonesia Time (WITA), and Eastern Indonesia Time (WIT).

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