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Relevance of Hijri Clock as a System of Determining the Time of Worship

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ABSTRACT

The time of worship for Muslims has been determined in the Quran and the hadiths. It is still explained explicitly without a definite method. Science exists to bridge this explicit explanation to make it easier to understand. Muslims try to make clocks to complement the hijri calendar as an identity like the masehi calendar which has a conventional clock. But in reality the concept of the hijri clock is not as well established as conventional clocks that have been tested for years. Judging from the aspect of fiqh, the system for determining the time of worship can use any method as long as the time conditions specified in the Al Quran and hadith are fulfilled. Scientifically speaking, the concept of hijri hours must be resetting the geographic position of the area which consequently changes the entire time which has an impact on the schedule of worship times significantly, and this takes a long time. This change can confuse society. Using of hijriah hours as a determinant of worship time must also pay attention to the characteristics of an area so that it can be applied properly.

Katakunci:

Relevansi, Jam Hijriah, Waktu Ibadah

ABSTRAK

Waktu ibadah umat Islam telah ditentukan dalam al Quran dan hadis. Penentuan waktu ibadah masih dijelaskan secara ekplisit tanpa sebuah metode yang pasti. Salah satu pencapain sains adalah lahirnya jam konvensional sebagai sistem penanda waktu termasuk dalam penanda waktu ibadah umat Islam. Umat Islam berupaya untuk membuat jam untuk melengkapi kalender hijriah sebagai identitasnya layaknya kalender masehi yang memiliki jam konvensional. Namun kenyataannya konsep jam hijriah belum mapan seperti jam konvensional yang telah dilakukan pengujian selama bertahun-tahun. Ditinjau dari aspek fiqh, sistem penentu waktu ibadah bisa menggunakan metode apa saja asal terpenuhi ketentuan waktu yang telah ditetapkan dalam al Quran dan hadis. Secara sains, konsep jam hijriah harus resetting posisi geografis wilayah yang akibatnya merubah seluruh waktu yang berdampak pada jadwal waktu ibadah secara signifikan, dan ini butuh waktu yang lama. Perubahan ini dapat membingungkan masyarakat. Penggunaan jam hijriah sebagai penentu waktu ibadah juga harus memperhatikan karakteristik suatu wilayah agar bisa diterapkan dengan baik.

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INTRODUCTION

Islam once made history about the achievements of science and technologynology that is so proud. The heyday was marked by the birth and development of intellectual traditions and the spirit of the quest for the development of science and technology. Islam was a giant of science until the middle ages, especially in astronomy. In medieval times, Muslim scientists made astronomy one of the discussions of mathematics. They made efforts by conducting research on the real movements of celestial bodies and recordingyes in mathematical terms. From this, many tools are found that use numbers in determining the time system, including in the matter of date or conception of time.

Man began to realize the conception of time when he saw the existence of day and night. So that automatically the change from light to dark divides the activities of human life into two types of time division, namely working time and rest time. From this, they finally began to observe the movement of the Sun every day from the place of sunrise that is the skyline to the head of the puncak until it descends back at sunset. With these observations, the idea arises to create a precise and specific time reference as a standar determination of human activities. While the clock has not yet been discovered, various ancient tribes and nations have known the time system by different measurements and methods. Timepieces utilizing the movement of the Sun were discovered in Babylonia around 2000 BC.

Clocks and calendars are conceptions of time that have been created since time immemorial. The two are closely related to time measurements that are side by side. Clocks and calendars are two things that have the same function but differ on the units used. A clock isa unit system formed from a shorter time travel in the form of seconds, minutes, hours, or days compared to a calendar whose time travel is relatively long. One of the calendars that has been created from various civilizations is the Ad and Hijri calendars. These two calendars are used in today's world.

The Calendar has been equipped with clocks as the smallest system unit of the calendar while the Hijri calendar has not been equipped with the conception of clocks like the A.D. calendar. Whereas the activities of life in this day and age can not be separated from the rules of the game of hours. If the Hijri calendar wants to be aligned with the A.D. calendar, then the Hijri calendar must be equipped with a clock. A calendar can't be said to be perfect ifit doesn't already have a clock unit. Hijri clock was born as an attempt to find intombali Islamic time system that has been lost. The entire dimension

of space and time influenced by the two objects that are in the universe is used by Muslims only to worship their creator.

Nevertheless, the implementation of hijri clocks for the timing of worship will cause significant changes scientifically and sociologically. Selama this, the time of worship of Muslims is determined based on conventional clocks whose main reference point is located in the Greenwich area which is used as a reference time of the first world, because it is agreed as a zero degree longitude point. History records that 0^o begins in the city of Greenwich and at longitude 180^o is called the International Boundary Line. In the concept of the Greenwich Mean Time time system, the beginning of the date and the beginning of the day start from the longitude of 180^o and this is used by the International world to date.

If the concept of hijri clock does not change the zero degree point that remains in the city of Greenwich then it has no effect on the time, only the concept of the clock is different. Conventional clocks change the day at 00.00 by using the Sun as a reference, while hijri clock turn of the day at 18.00 with the Moon as the basis. So it doesn't interfere with the concept of clocks and calendars. During this time also hijri date, for the turn of the day masih use the concept after sunset. But it will be different again if the zero degree longitude point or the time coordinate that became the benchmark of the change of time is moved from the city of Greenwich k e meccacity, then there will be a big implication there isa concept of date or hour, especially scientifically.

The birth of hijri clock that is in accordance with the hijri calendar with the city of Mecca as a zero-degree duck tik is an effort to make the hijri calendar the same as the Date of Ad which has a conventional clock in establishing the time system of worship of Muslims. Muslims are very concerned at the time to perform their worship. But the problem is whether this hijri clock is relevant if it is used to determine the time of worship of Muslims considering many aspects that must be reviewed or will only cause new problems that take a lot of time for the process of completion. While the time of worship should not be delayed because it relates to the creator.

The concept of Islamic calendar that must be equipped with the clock is a new problem that needs to be seen with various points of view. Because this dive a clock used by Muslims in performing their worship is a conventional clock based on the sun's journey with the City of Greenwich as a reference. But these efforts need to be reviewed whether this hijri hour is relevant or not, both fiqh and science to be applied to all Muslims in the world in conducting activities related to religion and social society.

METHOD

This research is included in the type of re*search library*with the main reference source is book E. Darmawan Abdullah, *Hijri Clock: Uncovering the Conception of Time in Islam,*and equipped with other references that have theories related to hijri clocks as secondary data to analyze this study. In analyzing this paper, the method used is analytical *descriptive*. The author decrypts the hijri clock as a whole from both theoretical and practical segi. Then the author will analyze by exploring and evaluating hijri clocks with fiqh and science reviews to see the relativeity of hijri clocks as the world's time standard and determinants of Muslim worship.

RESULTS AND DISCUCCION

Hijri Clock Concept

The clock is a timer. The main function of the hour to mark the occurrence of a turn of days and dates. The clock has a concept of idealism and realityism. Ideally the change of date should indeed be at the beginning of the night, coinciding with the setting of the Sun, not in the middle of the night at the nadir of the Sun. That way time will run professionally. Muslims can measure the amount of time spent between siang and night in their activities.

Hijri clock has a concept like a conventional clock, namely:

1. Time Count

   The time count in the islamic clock conception since ancient times in the caliphate is 24 hours. 12 hours of night count and 12 hours of daytime count. The night area from sunset to sunrise the Sun and the day area from sunrise to sunset. Between Hijri and A.D. clocks both use the same calculation formula of 24 hours.

2. The concept of changing days in Hijri Hours

   The change of day at conventional hours occurs at midnight at 00.00 or 24.00. While the concept of changing the day at hijri time using the Sun and Moon. The turn of the day follows the hijri calendar whose calculation tool is when Matahari sunset. In this case, the 00.00 hour at hijri hour is set at 18.00 as the beginning of the night and the beginning of the day is set at 06.00.

   It's just because the sunset time is not always the same time, then the sunset is formulated right at the point of 180 degrees West Longitude, coinciding with the 18.00 clock in the conventional hour. When the nvensioanal co-clock shows at 18.00, hijri clock appointsn at 00.00 early in the day.

3. Mention of Hijri Clock Time

   The symbol of time on a conventional clock is called a clock or a beat, while the mention of time in hijri hours is called the word"*ashr*"which means time. The word is taken from the name of the letter *al-asshr* which specifically talks about the importance of the function of time. So the symbol of time in hijri hours is called ashr 1, ashr 2, ashr 3, and so on. This symbol is used for the whole world.

4. Time Division in Hijri Hours

   Conventional clocks divide the time according to the Earth's turn on its 24-hour dive axis with a division of 12 HOURS AM from midnight to noon or from nadir to the sun's zenit point (forming the south north axis) and 12 hours PM, from noon to midnight. While this hijri clock also divides the time in 24 hours which is 12 hours which is the rest time/ RT or rest time that starts from the beginning of the night until the beginning of the day or from sunset at 18.00 until sunrise at 06.00. then the next 12 hours is the area of Work Time/ WT that is the working time from sunrise to sunset. So hijri clock divides time into working area and rest area.

5. Initial laying of the day and Hijri Clock Time Coordinates

   The initial laying of the day in hijri hours is located in Makkah, so the first second fall of the entire name of the day, from Sunday onwards is in the city of Makkah. In contrast to theconventional clock time koordinat located in the city of Greenwich in the United Kingdom which is abbreviated to GMT. While the coordinates of hijri clock time are in the city of Makkah al-Mukaramah. Coordinates hijri clock idisingkat MMT (Mecca Mean Time). Mecca becomes a barometer of the position of a point of territory at a certain time and place lewat the determination of the longitude of Mecca.

Fiqh and Science Review of Hijirah Clock Concept

In the past the Babylonians, who came up with the concept of dividing the day into 24 hours, were used to calculate the beginning of the time from sunrise. Instead, the Italics of the Middle Ages began a new day at sunset. Both measurement methods have been used for a very long time. Italic clocks are not arranged in the traditional order like babylonic clocks but in the opposite direction, so the line indicating sunset is line 0, the previous hour is 1, and so on until 13, 14, and 15 hours are reached on the left side of the clock.

Basically the Earth is divided into 24 time regions bounded by meridians with a longitude difference of 15 degrees (1 hour). In each of these regions there is a variety of regions with their middle meridians as a reference. The area of 0 meridians is the Greenwich meridian. To the East of Greenwich each region in

the number -1, -2, -3 onwards, and to the West of Greenwich each region is numbered consecutively +1, +2, +3 and so on, then between the time in region zero with the time in the other regions apply the relationship. A universal day is an average Sun day, starting at midnight in Greenwich and calculated at 24 hours. The day of nautika and astronomy anywhere starts from midnight at 00 local time. All technical studies to set up and implement a decimal system of time and space division will be conducted.

In the concept of time, it has long been human to use time based on the rotation of the Earth that is the rotation of the earth on its axis. In a second scale, Earth's rotation can indeed cause irregularities or disturbances,so the current time system isconsidered unstable. Therefore, scientifically it takes another definition to make the clock used today stable. The atomic clock was born which is the earliest definition closest to the earth's rotation. This became a very important foundation for the time system that is built now.

This hijri clock wants to return the concept of the past clock into the Hijri clock. In general, the effort to make a great contribution to Islam, specificallyby launching the idea of Jam Hijriyah is a creative andconstructive idea. However, there are some problems that arise when the clock is functioned like a conventional clock used for the whole world. The problem also stems from the concept of hijri clock itself. Some understanding that needs to be analyzed again about the concept of hijri clock as follows:

Time And Date Line Coordinates

So far the coordinates used are Greenwich Mean Time. Greenwich time is the position of the Sun when viewed from Greenwich. The Merythrocyte through Greenwich is considered the base meridian (longitude = 0). Other meridians, either east or west, are measured by distance to greenwich longitude. One of the concepts of hijri clock is the time coordinate used is Mecca Mean Time. In this concept, the position of the Kaaba located at meridian 40^0 east longitude is a longitude of 0 degrees called KUT (*Ka'bah Universial Time Coordination)*. The Earth is not divided into two parts like the concept of GMT. KUT there is only one longitude of the Kaaba that makes the pseudo-movement of the Sun when viewed from Earth is from East to West. Longitude 0 of the Kaaba as the baseline in determining the direction of East and West.

If this is the concept, then it cannot make Mecca Mean Time as a time coordinate without taking into account the effect. Because with Mecca Mean Time, its zero meridian changes to Mecca, it will change all time systems from universal time to regional time. Not only that, it will also affect the geographical location of a place. During this time the location of a place can be determined

by the longitude coordinates of geography and latitude of geography. The coordinates rest on two fixed fields, the equator and the Greenwich meridian.

If gmt coordinates are replaced with MMT it will also have an impact on international date line changes. According to geographers the definition of international date lines are meridian (longitude) lines as virtual lines through the north and south poles around the earth. The term for garis-line corresponds to its trajectory point (east or south) with reference to the Meridian Line Greenwich Observatorium in London as meridian line 0.

If the longitude transformation based onthetime of the Ka'bah Universal Time is applied in the world then implikasi that will occur is the country located between longitude 180^{o} BT (International Date Line) to the city of Mecca 40^{o} BT including Indonesia maka will be located between 259^{o} Longitude Kaaba (Merauke) to 305^{o} Longitude Kaaba (Sabang) which must reduce the time by 19 hours. That means there will be a total *reset of* the geographical position. This takes a long time to reset the long-composed geographical position.

It is necessary to look at various aspects for the determination of a city as the starting point for the calculation of time, among them the aspects of scientific objectives and social aspects of society or better known as benefit in society. Scientifically there is an opportunity to create hijri clocks with MMT as the world time center used to show the time of worship. But if you look at the social aspects of society, there will be some problems that are considered. People are confused in using time because all this time they use conventional clocks as a time benchmark. So it is not only related to the time of worship alone, including social activities.

Early Days

Islam makes day and night as a reference in determining the day known as *al-ayyam* (day/date) which is the shortest period of time that starts from the coming of the day until the end. If you want to see the time of worship can be by calculating the pseudo movement of the Sun. In Islam, to know the beginning of the day one only refers to the phenomenon of sunset. In the concept of hijri clock, the initial change of day begins at ashr 00 after sunset. While the sunset is always time-changing. The initial determination of the day after sunset or after sunset is also a problem if it is convened into the hour.

At the time of the Prophet's life, there were already companions sent to a country far east of Mecca, such as Muaz ibn Jabal to Yemen, and the day used in Yemen remained the same day as Mecca. There is no news that Friday

prayers in Mecca should be earlier than Yemen. The initial determination of the day in fiqh literature still varies. This can be seen from the interpretation of the time of paying zakat fitrah. According to jumhur fukaha, the maturity of zakat fitrah since the start of Eid al-Fitr is when the sun sets. While in the hanafisect, the day begins from dawn so that the obligatory time of zakat fitrah is since dawn when the eid prayer is performed.

During this time also the initial determination of the day in the Hijri calendar still follows the international date line dynamically which every month is fickle. Thus, because there is no narrowing of the international date line with the date line of the Islamic calendar, there will be differences between one place and another (depending on its geographical position) in the use of the Islamic calendar. Currently the ilmuwan is also formulating an established hijri kalender concept so as not to make a difference.

Process of Determining the Timing of Worship

Theimplementation of The Worship of Muslims is almost entirely related to the time called *muwaqqat* worship. The entire time of worship has been based on conventional clocks, both in the calculation system and the practicenyes. Fiqh literature mentions the implementation of worship should be done in time. Punctuality must be taken into account precisely and carefully. For example, the maghrib prayer that must be performed after sunset. Fasting is performed at the time when the hilal is already visible. Zakat fitrah is performed before Eid al-Fitr prayers. Wkuf is directed to be held on the 9th of Dhu'l-Hijjah. Then it needs special methods and formulations to make the time of worship of Muslims in accordance with the time.

In formulating the formula for the time set in the Quran, then Islam needs science to menertranslatethat time into easy. One of the steps muslims take is to create calendars and clocks. Jam is one of the methods that Muslims do in utilizing science for religious purposes. But the clock used is not a menginterpretation of an ideological. Because the clock was born of a scientific method not from the dogma of a group's beliefs.

The clock is indeed one of the manifestations of science for the sake of worship. Science doesn't look at the dogma of diversity. Science data is born from observations of divinga decades. The birth of the clock is not a dilihat of religious perspectives. But the existence of hours to menentukan time of worship is the result of the integration of religious sciences and science. In the dictionary of Muslim scientists there used to be no dichotomy between science and religion because each was oriented to understand the Quran and

hadith as the source of Islamic law. Conventional clocks are the result of scientific methods not from the results of a group trust that should also be used as a time benchmark in determining the time of worship.

Relevance of Hijri Clock As a Time-Determining System of Worship

Basically Muslims have indirectly used the concept of Hijri clock in daily life. Tanpa gives a concept, form,as well as changes to a time system, Muslims have applied the concepts of hijri clocks for local time in performing worship. Muslims begin to break the fast at the time of Maghrib, and startthe new day and date after Maghribby relying on the hijri calendar. When Muslims perform religious rituals, such as reciting the early and end of the year prayers, celebrating the prophet's birthday, they also use the prescribed times. But it is not as detailed and specific as using certain hours and coordinates. Only based on local time of each region. Even far earlier Muslims relied only on natural phenomena in determining the time of worship.

Similarly, for the division of time between working hours and rest hours, conventional hours have also been clearly described. Activities carried out by humans automatically divide between night and day as work time and rest according to their needs. It is also an interpretation of the Quran that divides time into two parts, namely day and night. Islam makes natural events about the movement of the sun, earth and moon as a reference in the calculationof time on earth which is then translated into the form of clocks.

The clock should have a purpose to add benefits for Muslims. Thefirst function of the clock is to match the time to be the same. Second, to be unifying especially in the determination of five-time prayers. If hijri clock will be used as a reference world, it needs massive socialization. The concept of hijri clock must be established. The reference of hijri clock should be clear apakah will remain a sundial with an unchanged concept, which refers to when the sun is at the point of culmination or just simply shifting the coordinate points. If it's just about shifting the coordinates, the clock doesn't have a new concept except to move the ordinate and the concept is the same as before.

If hijri clock is only used for worship purposes and is internal and also as a visualization of time, it will not be a problem because there is no change in the existing time system. Even this hijri hour will add a landladyat religious in the activity. Therefore it is not wrong to create an hijri clock that interprets the identity of Muslims. But hijri clocks must be made by paying attention to scientific foundations, not only based on religious dogma alone. If hijri clock is a religious symbol, of course the previous Muslim scientists would initiate the concept of the clock with its knowledge.

Basically the conventional clock is currently a sun clock that can be used to determine the time of worship. So hijri clock is only seen as a time control clock of worship only. Because the majority of countries in the world still implement two time systems. If at any time hijri clock wants to be used as a muslim world clock, then it must havea clear conceptand landasan scientific. Hijri clocks should have clear implications, because timing will be used on all aspects of life, especially technology. Because all this time the world has a system that has been established for hundreds of years.

If hijri clock is just a habituation on the visualization of time, dan not at the time itself, it does not change anything in the way of looking at time. The change in time from conventional clocks to hijri hours does not change the formulation in the determination of time ibadah but gives significant changes to the results of calculations that form the schedule of worshiptime, because it must adjust to the hijri clock model, and it requires more than just consideration falakiyah but also requires social and cultural considerations when it will be applied in an area.

Islam is a religion as well as a civilization and social order that is placed on the basis of the principles of religious revelation. Islamic tradition cannot be limited only to the message received by the Prophet Muhammad in the form of the Quran. Islamic traditions include art, philosophy, science, social institutions, and Islamic politics. By not making hijri clock as a reflection of religious symbols, does not mean eliminating the basic principles of Islam, but many other symbols that can be done to realize the basic principles of religious revelation in the religious social order for the common good.

Therefore, it is necessary to consider the great benefit and kemudharatan that will arise from the use of hijri hours in determining the time of worship and social community. In the time system, the time of worship of Muslims will make a significant change. It takes a very long time to reorganize the system and formulation in making the schedule of worship time of Muslims (time shalat and hijri calendar). The relevance rate of hijri clocks in the determination of the time of worship is still very low for now. Judging from the hijri hour,it needs a lot of changes perdaban that must be done in order to realize the relevant hijri clock fiqh, science and social, especially in indonesia which is rich in cultural culture.

CONCLUSION

Hijri clock is a clock designed to complete hijri calendar. During this time hijri dating is based on conventional clocks. Therefore, hijri clock with the concept of sunset as the benchmark of the beginning of day and time,

coordinates Greenwich Mean Time replaced Mecca Mean Time as merdian zero, and divide the clock by two parts namely 12 parts night and 12 parts day.

Efforts to create hijri clocks is an effort of Muslims to make the hijri calendar equivalent to the Calendar AD. But the scientific basis in the concept of hijri clock is still very less representative of the concept of a clock, such as the coordinates of time, the laying of the beginning of the day, the end of which will affect the process of existing systems both theoretically and practically. Judging from the science and sociological aspects, the concept is still less effective to apply in an hour and replaces conventional clocks thathave been used for centuries, especially in countries rich in cultural culture. From the religious aspect, hijri clock significantly changed the system of worship time of Muslims which has been the time benchmark used in memmake the time of worship using conventional hours.

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