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## INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/13831

DOI URL: <http://dx.doi.org/10.21474/IJAR01/13831>



### RESEARCH ARTICLE

#### THE ROLE OF STATE MUFTI DEPARTMENT IN GENERATING NATIONAL ECONOMY THROUGH ISLAMIC ASTROTURISM

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#### Manuscript Info

##### Manuscript History

Received: 29 September 2021

Final Accepted: 31 October 2021

Published: November 2021

##### Key words:-

Islamic Astronomy, Astrofiqh, Astrotourism, Observatory, Planetarium, Dark Sky Area

#### Abstract

Tourism based on astrofiqh or Islamic astrotourism is generally a recently developing sector in the whole world. Malaysia is no exception in advancing this sector to help generate national revenue. However, astrotourism is considered difficult to develop as Malaysia is said to be not quite ready to go toward that direction due to limited ability and resources. Thus, this research aims to identify the role of the State Mufti Department in developing the astrotourism sector in Malaysia. This research discusses astrotourism attraction available in Malaysia. The research approach is qualitative with case study design using document analysis and observation. Research results find that the State Mufti Department plays its role in developing the astrotourism sector through its own tourist attraction, involving a number of places in the respective States with historical, archaeological and astronomical elements, such as observatory, planetarium and dark sky area, besides organised programs on astronomy all year round. All these can be further developed and advanced to increase public awareness of astrofiqh, at once helping to increase national revenue through the programs and services provided.

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#### Introduction:-

Astrotourism is currently attracting increasing social attention. The rapid development of astronomy makes it easier for society to get exposure and enlightenment about astronomy. This at once causes scientists to begin thinking of the best method to disseminate this knowledge. Due to increased social needs, scientists begin to pioneer ideas to promote knowledge of astronomy through the tourism sector. This effort is done periodically through night sky observation, especially when astronomical phenomena, such as solar and lunar eclipses and meteor shower when imminent.

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Malaysia is one of the countries that recently began increasing efforts to develop the astrotourism sector. There are already some past studies which discussed activities in this sector in Malaysia such as 'Prospek pulangan ekonomi balai cerap astrofiqh di Malaysia' (The prospect of economic return of astrofiqh observatory in Malaysia) by Mohamed et al. (2018), 'Observatories in Malaysia descendants of Islamic civilization superiority' by Ibrahim et al. (2017), 'Functions of astrofiqh observatories in Malaysia in solving astrofiqh issues' by Ibrahim et al. (2015), 'Malaysian observatories and those of the Islamic civilization era' by Safiai (2014), and 'Islamic astronomy and the establishment of al-Khwarizmi Complex in Malaysia' by Ibrahim et al. (2012).

In addition, the astrotourism industry has found a place in the outside world, as discussed in studies such as 'Possibility of astronomical phenomena to be used to support tourism industry' by Kunjaya et al. (2019), 'Map of sky brightness over greater Bandung and the prospect of astro tourism' by Priyatikanto et al. (2019), 'To wish upon a star: Exploring astro tourism as vehicle for sustainable rural development' by Jacobs et al. (2019), 'Astro tourism conceptualisation as Special-Interest Tourism (SIT) field: A phenomenological approach' by Soleimani et al. (2018), and 'Dark Sky Parks - New impulse for nature tourism development in protected areas (National Park Muranska Planina, Slovakia) by Labuda et al. (2016).

In Malaysia, astrotourism activity is usually run by the Space Agency of Malaysia (Agensi Angkasa Malaysia or ANGKASA), the State Mufti Departments and local institutions of higher learning. However this role is also shared with astronomy societies, falak club and schools with the aim of giving exposure to society, at once helping to enhance the progress of understanding astrofiqh in Malaysia. Among the activities organized are conferences, seminars, workshops, courses, carnivals, visit programs, observation activity of night sky and astronomical phenomena focusing on research and development. Looking at the current development and performance, astrofiqh now has penetrated tourism other than education and research. Therefore, this research discusses the role of the State Mufti Department in generating economy through astrofiqh or astrotourism activity.

### **State Mufti Departments in Malaysia**

The Malaysian Constitution itself distributes legislative power between the Federal and State governments. Islamic affairs falls under the authority of State legislatures, while general administration of justice not involving Islamic affairs are exclusively within the Federal legislative powers.

Each State in Malaysia has its own State Mufti Department which plays the role of managing affairs of the Muslim society in the State. In addition, each State Mufti Department has many sections to ensure smooth daily administration, including the falak unit/section. Generally, this section is involved with management of Islamic affairs relating to astrofiqh, such as determining qiblah direction, calculation of prayer times, preparing of schedule for breaking fast in Ramadan, observation and sighting of crescent moon and setting the hijrah calendar.

In line with current technology development, the function of the falak unit/section has started to extend into the field of research. Currently, the State Mufti Department has begun to conduct research relating to astrofiqh in order to enhance the progress of astrofiqh itself, such as relating to sighting the crescent moon, atmospheric refraction, sky brightness and prayer times. All these research will go toward updating and upgrading information available for public benefit.

### **Role of State Mufti Department in Astrotourism Sector**

As is known, the State Mufti Department through its falak unit/section, was set up to manage astrofiqh affairs. Its responsibilities are identified as follows:

#### **1. Organizing Astrofiqh-based Activities to Introduce the Astrotourism Sector**

Leading in development of modern knowledge of this era, astronomy is seen as beginning to penetrate the tourism industry to attract tourists through organizing of astronomy-based activities such as:

##### **(a) Conferences and Seminars**

The State Mufti Department actively organizes conferences and seminars to expose the public astrofiqh knowledge. Such programs are held to highlight the glory of astrofiqh in the past Islamic civilization. Tourists will participate in these programs will at once gain knowledge about the history and development of astrofiqh as well as about the famous Islamic scholars of the Islamic golden age. Astronomy is indeed important in daily social life as it is related to ibadah practices such as determining the qiblah direction, calculation of prayer times, and setting the dates for

Ramadan and Eid. Without astrofiqh knowledge, ibadah for the Muslim society in Malaysia might not be properly and effectively managed.

Among the said programs held was the South-East Asia Regional Astronomy Seminar (SARAS) from 17-18 October 2018 at Institut Tanah dan Ukur Negara (INSTUN), Behrang, Perak. This seminar was the result of co-operation between the Perak State Mufti Department (JMNPk), Universiti Malaya and INSTUN Club. This seminar was the best platform to gather local and international researchers for discussion of issues in the astrofiqh world. Through the theme 'Astronomy and Society', the seminar attracted the interest of various parties, especially public agencies and organizations, as well as academicians from local institutions of higher education. Working papers were collected and selected by an accredited panel. At the same time, there were various other activities for participants throughout the duration of the seminar, such as exhibition, planetarium show, observation activity using a telescope, book sale, health screening and blood donation. This seminar was hosted again from 21-22 September 2021 but had to be conducted virtually due to the Covid-19 pandemic, this time with another theme, 'Astronomy, Society and Industrial Revolution'.

#### **(b) Course on How a Telescope Operates**

The purpose of this course is to expose participants to the telescope so that they may understand its function, design, advantages, shortcomings and suitable usage in current conditions. In addition, participants are also taught the technical guidelines of using it for observation as well as for its proper and thorough maintenance. The course is usually run at the observatory or crescent moon observatory station as a way to introduce and publicize the site and its facilities to the public.

A telescope is a tool to observe faraway objects and functions by gathering electromagnetic spectrum to form an image of the object seen, usually celestial or astrofiqh objects in outer space. The word telescope originates from Greek language, *tele*, meaning distant or far away and *skopein*, meaning to see (Muirden 1988).

In the year 1608, the first refractor telescope in the world was invented by Hans Lippershey in Zeeland, Netherlands. Later, in the year 1610, Galileo Galilei used it to see the Moon, and the planets, Venus and Jupiter, at once making history as the first observation in the world using a telescope. The refractor telescope uses an objective lens for light to enter its front space through the lens and refract the image on the back of the lens, concentrated on a focal point before reaching the eyepiece (Schilling & Christensen 2009). Improving on the technology then, Isaac Newton succeeded in inventing the first reflector telescope in the year 1671. The reflector telescope uses a primary mirror instead of a lens. Light goes in the front of the telescope and falls on the primary mirror and is then reflected on a secondary mirror before reaching the eyepiece (Furniss, Lee & Stokes 2006). The eyepiece magnifies the image of the distant object and sends it to the eye.

#### **(c) Observation of Night Sky Program**

The purpose of this program is to expose participants to knowledge of the universe and objects in it. Observation of celestial or astrofiqh objects is conducted using a stationary or portable telescope during night time based on imminent astronomical phenomena every month. In addition, participants can see directly and close up the images to know the structure of celestial objects and their movements, such as the Moon. The Moon is the only natural satellite of the Earth. It is the closest celestial body to Earth with an average distance of 384,400 km. As the Moon has no atmosphere and water, no life can survive on its surface, which consists of craters, lava areas, mountains and valleys (North 2007).

Another object for observation is a planet. In the solar system, eight planets orbit around the Sun. At certain times, planets are positioned in a straight line with the Earth and Sun. This phenomenon is called in opposition or in transit. Each year, the Earth will pass between the Sun and planets outside Earth's orbit. This means that the planets such as Mars, Jupiter, Saturn, Uranus or Neptune, are in opposition to the Sun. A transit occurs when a celestial object passes in front of another, such as when a planet crosses in front of a star. This occurs when Venus or Mercury passes in front of the Sun. A conjunction occurs when two objects in the Solar System, or one in the solar system and a distant object, such as a star, appear close in the sky as viewed from the Earth, such as for example, conjunction of planets Venus and Jupiter (Whiting 1828; Lunsted 1980). In addition, stars are also celestial objects observed in this program. Stars are massive luminous gas balls, comprised mostly of hydrogen and helium, held by their own gravity. Stars are observed in clusters or constellations which form a particular shape or pattern. There are 88 constellations identified by the International Astronomical Union (IAU) and 12 of them are categorized as zodiac

constellations because the Sun seems to pass through them once a year as the earth orbits around it (Tierney 2001; Altschuler 2002).

#### **(d) Observation of Solar and Lunar Eclipses Program**

The aim of this program is to give the public exposure on the phenomena of solar and lunar eclipses. In this program, the structure of the Sun and Moon is studied and their orbital movement understood by using the telescope provided at the observatory. In addition, the types of eclipses are explained to the public. Besides observation activity, special prayers during eclipses are also performed for the Muslims. The purpose of the prayers is to show gratitude for the blessings and favours bestowed by Allah SWT. After the prayers, a sermon is delivered to remind the Muslim society to be loyal to Allah SWT and practice Islamic teachings. Islam also encourages Muslims to increase zikr in remembrance of Allah SWT during the happening of an eclipse.

A solar eclipse occurs when the Sun, Earth and Moon are in a straight line, with the Moon in the middle and causing the sunlight to be blocked on Earth. Although much smaller in size, it is able to cover the whole Sun disk because it is closer to the Earth than to the Sun which is very distant (Steel 2001). This phenomenon occurs in three types of conditions, such as total eclipse, partial eclipse and annular (ring) eclipse. A total eclipse occurs when the Sun is blocked by the Moon fully as the Moon is nearer to the Earth in its elliptical orbit. A partial eclipse occurs when the Moon partially blocks the Sun's disk because the Sun, Moon and Earth are not perfectly aligned. An annular solar eclipse occurs when the Moon covers only the centre of the Sun and the Sun's light forms an outer ring around the shadow of the Moon (Littmann, Espenak & Willcox 2008). This happens when the Sun is nearest to Earth, but the Moon is furthest from Earth, thus appearing smaller than the Sun in the sky.

A lunar eclipse occurs at full Moon phase when the Sun, Earth and Moon are in a straight line. The Earth in between the Sun and Moon causes the Sun's light to be blocked, casting the Earth's shadow seen on the Moon (Lineman 1984). There are two types of lunar eclipse, partial and full. Partial eclipse occurs when the Moon is partly in the umbra (Earth's shadow) and partly in the penumbra (outside the Earth's shadow). A full lunar eclipse occurs when the whole Moon is in the umbra of the Earth's shadow when orbiting around Earth. This causes the Moon to appear reddish as there is light refraction by the Earth's atmosphere into the Earth's shadow (Rusin 2011).

Interestingly, in the year 2019, an annular solar eclipse occurred and Malaysia was one of the fortunate countries included in the phenomenon when the Moon came between the Sun and Earth in a straight line. Before that, an annular solar eclipse in Malaysia had occurred on 22 August 1998 and this happened again on 26 December 2019. According to astronomical calculations, some places were most suitable to view the phenomenon, namely, Tanjung Piai and Kukup in Johor, and Serian and Kota Samarahan in Sarawak. Other places in Malaysia could only view the partial solar eclipse. The annular solar eclipse was a great and rare experience for visitors and astronomy enthusiasts. In addition, partial solar eclipse had also occurred on 21 June 2020.

#### **(e) Falak Day Carnival and Celebration**

Falak Day Carnival is an annual celebration for the public in Malaysia. This event is organized by the State Mufti Department in co-operation with some agencies and institutions of higher education. The purpose of the carnival is to give society the exposure and raise their awareness of the role and importance of astronomy. In addition, the society can access information relating to the process of astrofiqh affairs, especially in the aspect of ibadah, managed by the State Mufti Department. Hosting the event indirectly brings the department closer to the local society through various programs organised such as talks, workshops, contests and exhibition.

In addition, Falak Day, celebrated in Malaysia as an annual event, is at the international level, better known as Astronomy Day. The purpose of the event is to create an interactive medium between experts and active enthusiasts with the general public. Every year, Falak Day is scheduled on a Saturday between mid-April and mid-May before the full Moon phase. Thus the date varies from year to year based on the said criteria. It is open to the public to give them exposure and promote their participation in astrofiqh activities held at the observatory. Among the activities are quizzes, photography and air rocket contests, video screenings, exhibitions, and more.

## **2. Building Astrofiqh Observatory as Astrotourism Attraction/Destination**

In line with increased progress in astronomy, the role of astrofiqh observatory also grows. Astrofiqh observatory is a category of observatory under the control of the State Mufti Departments. There are currently six astrofiqh observatories built for the purpose of education and research, namely, Pusat Falak Sheikh Tahir in Pulau Pinang,

Balai Cerap Selangor, Kompleks Baitulhilar Teluk Kemang in Negeri Sembilan, Kompleks Falak al-Khawarizmi in Melaka, Balai Cerap Al-Biruni in Sabah and Pusat Falak Miri in Sarawak. In line with technology development and passage of time, an observatory is also a destination centre for astrotourism, besides its roles as official observatory for crescent moon sighting, and education and research centre. It is a space for disseminating information, at once attracting public interest in astronomy or astrofiqh through the tourism sector. The astrotourism sector in Malaysia is still in its infant stage and further efforts are needed to enhance its progress.

The role of astrofiqh observatory is also significant in the tourism sector as a source of generating economy. This aspect is interesting for further in-depth research. Tourism activities are based on astronomical science and use of observation equipment facilities at the observatory. In fact, astrotourism is already popular in developed countries such as United States, Japan and European countries. The Falak Day event would receive better response if there were more interesting astronomical phenomena to observe such as transit planet, comet trajectory, solar and lunar eclipses in the local sky of the areas mentioned.

An astrofiqh observatory in Malaysia is usually located in a coastal or beach area, which at the same time is an interesting tourist destination for many people. Night sky observation activity requires a long time so observers need to stay overnight at the observatory. Due to this, developing hospitality industry at the observatory, namely hotels and facilities would help to increase the role of an observatory in the tourism sector. As an example, there is a popular hotel known as Observer's Inn, which is equipped with an astronomical observatory located on a 4500 feet hill in San Diego, United States. The hotel also provides educational programs on astronomy. It is one of the hotels in developed countries that make astrotourism a source of economy (Observer's Inn, n.d.)

The astrofiqh observatories that are seen as having penetrated the tourism sector in Malaysia are Kompleks Falak al-Khawarizmi, Melaka and Kompleks Baitulhilar Teluk Kemang, Negeri Sembilan. Administered by the respective State Mufti Departments, both observatories offer facilities for accommodation and packaged use of equipment to visitors and tourists for observation activity. Various activities and facilities are provided by the observatories to meet the needs and satisfy the requirements of visitors to the place.

### Conclusion:-

The State Mufti Departments indeed play a significant role to develop astronomy in Malaysia, seen through the function and responsibility of the falak unit/section in each department. From the chronological history of astrofiqh development in Malaysia, which started out only with observation and sighting of the crescent moon, it is now able to compete in education and research. And it does not stop there, but has begun to penetrate the tourism sector by offering astrofiqh or astrotourism activities. Such efforts should be enhanced to give exposure to the public and raise their awareness relating to astrofiqh and its current development in research, education and industry. The success of recent discoveries should be publicized so that society becomes well-informed on astrofiqh, at once enhancing the progress of astrofiqh or astronomy in Malaysia

### Acknowledgement:-

This study is financed by the Astrofiqh and Cosmofiqh Research Group (ANCOR) (GUP-2020-068; PP-2021-019) Universiti Kebangsaan Malaysia.

### References:-

1. Altschuler, D.R. (2002). *Children of the Stars: Our Origin, Evolution and Destiny*. Cambridge: Cambridge University Press.
2. Furniss, T., Lee, G. & Stokes, J. (2006). *Space and Astronomy: An Illustrated Guide to Science*. New York: The Diagram Group.
3. Ibrahim, I.A., Ahmad, M.R., Safiai, M.H. & Mujani, W.K. (2012). Islamic astronomy & the establishment of al-Khawarizmi Complex in Malaysia. *Advances in Natural and Applied Sciences* 6(3): 316-320.
4. Ibrahim, I.A., Safiai, M.H. & Jamsari, E.A. (2015). Functions of astrofiqh observatories in Malaysia in solving astrofiqh issues. *Mediterranean Journal of Social Sciences* 6(1): 112-119.
5. Ibrahim, I.A., Safiai, M.H., Jamsari, E.A., Ahmad, M.Y., Nor, A.H.M., Nasir, B.M. & Hehsan, A. (2017). Observatories in Malaysia descendants of Islamic civilization superiority. *International Journal of Civil Engineering and Technology* 8(12): 782-795.

6. Jacobs, L., Du Preez, E.A. & Fairer-Wessels, F. (2019). To wish upon a star: Exploring astro tourism as vehicle for sustainable rural development. *Development Southern Africa* 37(1): 87-104.
7. Kunjaya, C., Melany, Sukmaraga, A.A. & Arsono, T. (2019). Possibility of astronomical phenomena to be used to support tourism industry. *Journal of Physics: Conference Series* 1231(1): 12-25.
8. Labuda, M., Pavlickova, K. & Stevova, J. (2016). Dark sky parks - new impulse for nature tourism development in protected areas (National Park Muranska Planina, Slovakia). *E-review of Tourism Research* 13(5): 536-549.
9. Lineman, R. (1984). *Eclipses: Astrological Guideposts*. Arizona: American Federation of Astrologers Inc.
10. Littmann, M., Espenak, F. & Willcox, K. (2008) *Totality: Eclipses of the Sun*. New York: Oxford University Press.
11. Lunsted, Betty. (1980). *Transits: The Time of Your Life*. Maine: Samuel Weiser Inc.
12. Mohamed, S.S.S., Safiai, M.H. & Ibrahim, I.A. (2018). Prospek pulangan ekonomi balai cerap astrofiqh di Malaysia. In Ibrahim, I.A. & Safiai, M.H. *Kebitaraan Balai Cerap Astronomi ASEAN: Memacu Keunggulan Astrofiqh Malaysia*, pp. 51-62. Bangi: Faculty of Islamic Studies, UKM.
13. Muirden, J. (1988). *How to Use an Astronomical Telescope*. New York: Simon & Schuster.
14. North, G. (2007). *Observing the Moon: The Modern Astronomer's Guide*. 2<sup>nd</sup> Ed. Cambridge: Cambridge University Press.
15. Observer's Inn. (n.d.). Information. <http://www.observersinn.com/index.html> [21 June 2021].
16. Priyatikanto, R., Admiranto, A.G., Putri, G.P., Elyyani, Maryam, S. & Suryana, N. (2019). Map of sky brightness over greater Bandung and the prospect of astro tourism. *Indonesian Journal of Geography* 51(2): 190-198.
17. Rusin, J.M. (2011). *Moon Eclipse, Days of Darkness*. Indiana: Author House.
18. Safiai, M.H., Jamsari, E.A. & Ibrahim, I.A. (2014). Malaysian observatories and those of the Islamic civilization era. *Mediterranean Journal of Social Sciences* 5(29): 40-48.
19. Schilling, G. & Christensen, L.L. (2009). *Eyes on the Skies: 400 Years of Teleopic Discovery*. Weinheim: Wiley-VCH.
20. Soleimani, S., Bruwer, J., Gross, M.J. & Lee, R. (2018). Astro-tourism conceptualisation as special-interest tourism (SIT) field: A phenomenological approach. *Current Issues in Tourism* 1-16.
21. Steel, D. (2001). *Eclipse: The Celestial Phenomenon that Changed the Course of History*. Washington: Joseph Henry Press.
22. Tierney, B. (2001). *All Aroud the Zodiac: Exploring Astrolgy's Twelve Signs*. Minnesota: Llewellyn Publications.
23. Whiting, T. (1828). *A Comprehensive System of Astronomy, both Theoretic and Practical, with Extensive Table of the Sun, Moon and Planets*. London: Thomas Chaque Printers.