

## ISLAMIC CIVILIZATION: CONTRIBUTIONS AND ACHIEVEMENTS

**Nor Atiqah Humairah Hasan**

Fakulti Keilmuan Islam, Kolej Universiti Islam Melaka

**Mohd Afendi Daud**

Pusat Asasi dan Pengajian Umum  
Kolej Universiti Islam Melaka

*Corresponding Author's Email: afendi.daud@kuim.edu.my*

### **Article history:**

*Received : 18 June 2021*

*Accepted : 13 August 2021*

*Published : 10 September 2021*

### **ABSTRACT**

Para sarjana menggunakan pelbagai istilah untuk menggambarkan tamadun. Penulis Arab menggunakan perkataan hadharah, umran, thaqafah, dan madaniyah untuk menggambarkan peradaban. Para sarjana Barat juga menggunakan istilah peradaban yang berasal dari bahasa Latin, civitas, yang bermaksud sesuatu yang berkaitan dengan sipil dan pemerintahan. Tamadun dapat didefinisikan sebagai budaya yang telah mencapai tahap kemajuan yang tinggi. Bagi sarjana Islam, peradaban adalah cara hidup yang sempurna dan menyeluruh dan merujuk kepada pencapaian umat Islam dalam pelbagai bidang berdasarkan al-Quran dan sunnah. Istilah tamadun Islam berdasarkan dua konsep penting, iaitu tamadun dan Islam. Tamadun Islam merujuk kepada tamadun yang dibina berdasarkan prinsip-prinsip Islam. Terdapat pusat peradaban Islam terkemuka di Baghdad, Damsyik, Andalusia, dan Kaherah yang telah memainkan peranan penting dalam proses transformasi Eropah dari Era Gelap ke Era Moden telah memberikan sumbangan besar kepada dunia selain hanya menggambarkan Islam sebagai sumber keganasan. Sumbangan tamadun Islam dilupakan begitu sahaja. Pada masa ini, pelajar Barat membanjiri institusi Islam, khususnya di Sepanyol, untuk melibatkan diri dalam pelbagai bidang pengetahuan. Sejak abad ke-11, pelbagai khazanah pengetahuan dalam bahasa Arab telah diterjemahkan oleh para sarjana Barat ke bahasa Latin. Makalah ini tidak membahas secara mendalam mengenai sumbangan Islam dalam beberapa disiplin ilmu. Sebaliknya, ia tertumpu pada pencapaian tertentu, terutama dalam bidang ekonomi, sains dan teknologi, dan kejuruteraan. Ia juga menganalisis pencapaian dan kesan tamadun Islam terhadap kebencian orang.

**Kata Kunci:** Tamadun, Zakat, Baitul Mal, Kejuruteraan Dan Mata Wang

## **ISLAMIC CIVILIZATION: CONTRIBUTIONS AND ACHIEVEMENTS**

### **ABSTRACT**

*Scholars use a variety of terms to describe civilization. Arabic writers use the words hadharah, umran, thaqafah, and madaniyah to describe civilization. Western scholars also use the term civilization derived from Latin, civitas, meaning something related to civil and government. Civilization can be defined as a culture that has reached a high level of progress. For Islamic scholars, civilization is a perfect and comprehensive way of life and refers to the achievements of Muslims in various fields based on the Quran and sunnah. The term Islamic civilization is based on two important concepts, namely civilization and Islam. Islamic civilization refers to a civilization built on Islamic principles. There are leading centers of Islamic civilization in Baghdad, Damascus, Andalusia, and Cairo that have played an important role in the process of European transformation from the Dark Era to the Modern Era have made a huge contribution to the world other than just portraying Islam as a source of violence. The contribution of Islamic civilization is simply forgotten. At this time, Western students flooded Islamic institutions, particularly in Spain, to immerse themselves in various areas of knowledge. Since the 11th century, various treasures of knowledge in Arabic have been translated by Western Scholars into Latin. This paper does not address in depth the contributions of Islam in some disciplines. Rather, it concentrates on specific achievements, particularly in the areas of economics, science and technology, and engineering. It also analyses the achievements and effects of Islamic civilization on people's hatred.*

**Keywords:** *Civilization, Zakat, Baitul Mal, Engineering And Currency*

### **INTRODUCTION**

There are several definitions of economics given by Western economists, among them are Adam Smith and Marshall. According to him, economics is a discipline that studies the means of the wealth of nations by focusing specifically on the material causes of prosperity, such as the results of industry or agriculture or the like. So the economy is regarded as a science of wealth. According to him, man has a will, the results will only be obtained by man and for the man himself. According to Marshall, economics is the science of human life concerning how humans make an income and how they use it.<sup>25</sup> Economics according to the Islamic view is a science that studies human activities in accordance with Islamic *Shariah* requirements whether at the level of acquisition, use or resource management for the good of oneself, society and the country in terms of spiritual and physical to gain the pleasure of Allah SWT. Islamic economics in this sense

---

<sup>25</sup> Abdul Rahman Abdullah. (1998). Sejarah dan Tamadun Islam. Kuala Lumpur: Teks Publishing Sdn Bhd.

is part of a comprehensive Islamic way of life encompassing spiritual and physical aspects, or spiritual and material.

In the development of Islamic economic thought, the separation between economics and religious knowledge or revealed knowledge such as monotheism and jurisprudence does not occur at all because the basis of Islamic economic thought is rooted in the triangular concept of Allah (SWT) as Creator and Ruler over all HIS creatures, man as a servant who receives, obeys orders and enjoys the blessings of the Almighty Creator, and the riches of nature that must be utilized by man according to the laws and rules of the Creator i.e. Allah (SWT). In this sense, Islamic economics does not separate man from his nature or his creed. This definition has provided a clear distinction from the Western definition which only sees economics in the form of human behavior or actions to obtain physical satisfaction simply by forgetting the spiritual and moral aspects.

In this sense, the Islamic economy does not separate mankind from its nature or creed. This definition has provided a clear distinction from the Western definition which only sees economics in the form of human behavior or actions to obtain physical satisfaction simply by forgetting the spiritual and moral aspects.

## FUNDAMENTALS OF ISLAMIC ECONOMICS

The basis of Marxist/socialist economics is reflected in the concept of, “class struggle” and the basis of capitalist economics is reflected in the concept of *lasser fair*, so the basis of Islamic economics is revealed in the concept of “*tauhid*” which is associated with the concept of divinity (*rububiyah*), purity of soul (*tazkiyah*), human beings as slaves and caliphs, brotherhood, sacrifice towards the goals of Islamic economics. The concept of monotheism according to the Qur'an includes the relationship between man and God (Allah (SWT)), the relationship between human beings and the relationship between man and the environment. The concept of *rububiyah* is related to the nature of Allah (SWT) as the Creator and Ruler who makes laws and regulations to preserve the life of creatures in this world and the hereafter. In the economic context, it is a Divine rule for improving the quality of life in the world to give way to the hereafter.<sup>26</sup> *Tazkiyah* is closely related to the process of character and moral formation. One of the purposes of the apostle's message is to purify and sanctify nature. Purification of property is through *zakat*. From *tazkiyah* was born the word *zakat*. Mankind as a servant of Allah SWT is commanded to accept and obey all of HIS commands which are included in the term ‘*ubudiyah* and at the same time as the caliph of Allah (SWT) on earth. In other words, human beings play a role as trustees and have a responsibility to prosper the earth of Allah (SWT). Brotherhood is love, respect and responsibility and willingness to sacrifice to religion, society and country. Therefore, acts of oppression, extortion, exploitation, stinginess need not exist in the framework of Islamic economic thought.

---

<sup>26</sup> Ibid.

## PHILOSOPHY OF ISLAMIC ECONOMICS

Islamic economic philosophy focuses or emphasizes on the main tree in man's relationship with God, HIS celestial realm and HIS mankind. The relationship between man and God is defined as monotheism, which is complete submission to Allah SWT which also involves submission and the task of shaping life human beings according to the will of Allah SWT are sourced from values and become the goal of human efforts.

### Economic Companies

In Islam there is no prohibition to engage in productive enterprises provided by the grace of Allah SWT and there is no limit. Islam encourages its people to cultivate and farm. Practices in the fields of agriculture, trade, business and industry and various other forms of productive enterprise have been known and found in the Qur'an and have been the practice of *Rasulullah saw* since time immemorial. Although no maximum limit is set in quantitative terms but simplicity is emphasized. The attitude of greed as well as the limitless desire for extravagant comfort and luxury are condemned.<sup>27</sup>

### Property Rights

Islam considers that the actual ownership of the property is Allah SWT. Humans may use the property solely as trustees or representatives. Baqir al-Sadr argues that individual property, state property and community property as three existing forms exist in parallel with one another in Islamic law. While al Mawdudi gave importance to personal property. In this context, *zakat* can also help those who are really in need and should not be turned down when a loan application in the form of cash or things comes from those who are really in need. Owners are required to donate a portion of their surplus that can meet these requirements. Islam recognizes the property rights of the individual and at the same time, recognizes the property rights of the people and in the event of opposition then Islam will put the interests of the people first. Economic activity is the actual oversight and gets a leading position. There is no separation between the economic and religious systems of Islam. In addition to the supervision of the *Shari'ah*, a stricter and more active supervision is the supervision from the heart that is built on the beliefs of Allah SWT and the *sunnah* of the Prophet.

*The word of Allah SWT which means: 'He it is Who created the heavens and the earth in six periods, then He established Himself on the Throne; He knows what goes into the earth and what comes out of it. and that which is sent down from the sky and that which*

---

<sup>27</sup> Mohamad Khadafi Hj Rofie. (2009). *Tamadun Islam: Prinsip dan Sumbangan Terhadap Peradaban Dunia*. Kedah: Pure Honey Interprise.

*ascends to it. And He is with you wherever you are, and Allah is Seer of what you do.*" (Surah al-Hadiid 57: 4)

Meaning: *"Allah knows the treachery (distortion and dishonesty) of one's eyes, and knows what is hidden in the heart."* (Surah Ghafir 40:19)

This real oversight will create the safety of community behavior and prevent malpractice.

## **Zakat**

Zakat is one of the fifth pillars of Islam and has been made obligatory by Allah SWT on properties according to a certain time and rate.

The words of Allah SWT in the Qur'an which means: *"And establish prayer and pay zakat and whatever you put first of good for yourselves, you will surely get its reward with Allah. Indeed, Allah is Seeing of what you do."* (Surah al-Baqarah 2:110)

*Zakat* funds provide a source that can be used to recover debts. It also serves to improve work quality and productivity. *Zakat* strengthens the country's economic position as well as expands economic and financial activities and also plays a role in strengthening friendship and unity among Muslims. This is because *zakat* will also be able to reduce the demand of the rich for imported luxury goods and discourage hoarding and accumulation of idle wealth. It attempts to reinvest unused resources in economic activity as capacity increases or consumer demand increases.<sup>28</sup>

## **Baitul Mal**

*Baitul Mal* (property house) or in modern terms the National Treasury is a financial institution that functions to maintain the public property or a place to store valuable items such as money, gold and silver, gemstones and valuable jewelry. The history of the establishment of *Baitul Mal* has started since the time of Prophet Muhammad *saw* but because the national income at that time was too little, the institution of *Baitul Mal* was not needed and all the proceeds either through *zakat*, alms or through the war were distributed by the Prophet to those entitled at that time as well. Furthermore, *Rasulullah saw* does not like to keep trust items for fear of causing difficulties in the future. Nevertheless, there are opinions stating that *Baitul Mal* existed during the time of Caliph Abu Bakr al-Siddiq. As proof, during the reign of Abu Bakr, Umar when he was not yet the caliph suggested to Abu Bakr to meet with Abu Ubaydah, the key holder of *Baitul Mal* to get money for his family's needs. At first Abu Bakr wanted to bring

---

<sup>28</sup> Mahayuddin Yahaya. (2005). *Tamadun Islam*. Kuala Lumpur: Penerbit Fajar Bakti Sdn Bhd.

trade clothing materials for sale in the market. This event took place on the second day after Abu Bakr was appointed caliph. There is another event that took place during the reign of Caliph Abu Bakr which proves that *Baitul Mal* existed at that time. When Caliph Abu Bakr was about to die, he instructed 'Umar to take his property of 8000 dirhams to be returned to *Baitul Mal*. These events prove that the institution of *Baitul Mal* had existed during the reign of Caliph Abu Bakr, but its implementation was still in its early stages and not very comprehensive. In other words, its implementation at that time was not as systematic as during the reign of Caliph Umar bin al-Khattab. It is generally said that the date of the official establishment of *Baitul Mal* was during the time of Caliph Umar bin al-Khattab. During the time of 'Umar, there was a very large conquest of territories which resulted in a lot of property being acquired through the conquest of those territories. The decision to establish *Baitul Mal* is based on several verses of the Al-Quran, *hadith* and *ijtihad* of the companions. Among the decisions made from the *ijtihad* was that the head of state or caliph should determine the country's financial policy and resources obtained from *Baitul Mal* and its use in accordance with Islamic law.<sup>29</sup>

Community property is property obtained from the wealthy community or the rich to be distributed to those who are entitled to receive it, including the poor. State property is property acquired through military expeditions in non-Muslim territories. The result of the expedition and conquest was the seizure of property, including land subject to *kharaj* tax and the community that refused to convert to Islam, *Zimmi*, subject to *jizyah* tax. In addition the government imposes a so-called business tax, usury on Muslims and non-Muslims. Finally the treasures found in the belly of the earth or on the bottom of the sea are considered no longer masters. All these properties become the property of the state. While the public property is the result of community efforts either at the individual or group level through various economic activities that also develop the economy and national development. Of the three types of property or Islamic economic resources, only the first and second are the source of *Baitul Mal*, while the third belongs to individuals or groups, and it will only belong to *Baitul Mal* if the property is used as *zakat* or alms/gift. The establishment of *Baitul Mal* aims to enhance the country's economic development, eradicate poverty and provide basic necessities. The expenditure of *Baitul Mal* property is determined according to need fairly and equitably manner following the policies and principles of Islamic economics, as stated above.

## ISLAMIC CURRENCY

The establishment of the Islamic state officially after the *Hijrah* of the Prophet Muhammad (peace be upon him) to the city of Medina in 622M, marked the beginning of Islamic civilization. In line with the development of Islamic civilization, the existence of Islamic currency. The history and use of the currency have also fluctuated due to its development.

---

<sup>29</sup> Ibid.

### a) Its History and Use Until the 18th Century

Before the Islamic era, Roman and Persian currency with *Himyar* coins with pictures of "Attic" owls were used. The Roman currency was a gold dinar, while the Persian currency was a silver dirham. This foreign currency continued to be used until the reign of Abdul Malik bin Marwan. Before that it was believed that the writing of the verses of the Quran had been printed on foreign currency. Gold and silver coins were minted in 28 Muslim countries before the time of Abdul Malik. The printed currency was an imitation of Roman and Persian currency.<sup>30</sup> Abdul Malik bin Marwan began printing gold dinars and silver dirhams with Arabic-Islamic elements for the first time in Damascus in 695 AD. Its governor in the province of Iraq, al-Hajjaj bin Yusuf al-Thaqafi, had minted silver coins in the city of Kufa the following year. Its slow development in replacing the old currency was due to the habit of using currency as a source of exchange. In addition, the instinct of breach of trust in financial reform also hampered these reforms. Changes that occur after modifications in the economy allow such currency exchanges to be made. The delay in founding the Islamic currency reflects the evolution of the economy. The currencies used on a large scale in trade until the 7th century were the Roman (Byzantine) gold currency and the Persian (Sasanian) silver currency. This is because trade relations between Arab-Islamic countries with the Roman and Persian empires have long existed. But starting from the 7th century AD, a new awareness has existed to give birth to the identity of the Islamic currency that has been mobilized since the time of the Khulafa al-Rasyidin before it became the official currency during the time of the Umayyahs.

The history of the formation of Islamic currency is said to have begun during the reign of Caliph Umar bin al-Khattab (634- 644M). At that time they had standardized the silver currency. While their gold currency uses a system called *nonism*. In the Islamic world there are three types of currency, namely the *Bajli* dirham from Persia, the *Rumi* dirham from the Roman state and the *Tabari* dirham from Central Asia. The desire to form a large union in the dirham currency resulted in the weight of the dirham being set according to an average of fourteen *qirats* (approximately 3.96 grams). This *qirat* standard is according to the syllabus practiced in the Greek state and not the Persian standard which uses *dareq*. The purpose was to adjust the Greek gold currency. This effort was later renewed by Caliph Ali. He was the first to reform the Islamic currency which was done in the city of Basrah in 660M by introducing the Islamic dirham currency written in *Kufi* calligraphy. At that time the new currency could not be officially distributed in the market due to its low quality and unchanged standards. Only after 40 years later, was born the official currency that is truly quality and standard after a search test. The emergence of this new currency became a rival to the existing currency.<sup>31</sup> The person responsible for introducing this new Islamic currency was Abdul Malik bin Marwan which was done

---

<sup>30</sup> Mohamad Khadafi Hj Rofie. (2009). *Tamadun Islam: Prinsip dan Sumbangan Terhadap Peradaban Dunia*. Kedah: Pure Honey Interprise

<sup>31</sup> Ibid.

between the years 694-695M in Damascus. He has invented the gold dinar. This has given impetus to its officials to develop the Islamic currency system. In the year 696M, the silver dirham currency was created by al-Hajjaj in Basrah, Iraq. In 697 AD the governor of Egypt, Abd al-Aziz bin Marwan, also produced a gold dinar in Fustat (Cairo). This new type of dinar has an issue date surrounding the top of the currency written as follows: *In the name of Allah, this dinar was issued in the year...* and also bears the name of the ruling caliph and where the currency was printed. On the next page there is an inscription in the form of a circle praising the Prophet Muhammad (peace be upon him). The shape of this dirham is larger and thicker than a regular dirham.

## **b) Science And Technology**

Human knowledge is very limited, as likened by the Prophet *saw* which means: The knowledge of God is Extensive, like a sea of water where only a drop of water that is at the tip of the human finger is the only knowledge available to humans. Human knowledge depends heavily on the source of Divine revelation. The truth of revelation can be observed in the natural and historical nature experienced by man. This natural world is a sign of the power of Allah SWT. The call of the Qur'an is an impetus for Muslims to study natural phenomena. Azizan Baharuddin (1986) stated that the field of natural science is a field or challenge of knowledge that is natural to human beings and not subject to any particular religion.<sup>32</sup> The field of natural science includes physics, mathematics, astronomy, botany, zoology, chemistry, biology, geology and medicine. However, we can see that the Qur'anic verse that touches on physics is the word of Allah SWT

*Meaning: Allah who illuminates the heavens and the earth. The comparison of the light of Allah's guidance (the Holy Qur'an) is as a "miskaat" which contains a lamp; the lamp is in a glass circle (qandil), the glass circle is (clear and bright) like a bright shining star; the lamp is lit with oil from a tree of many benefits, (i.e.) the olive tree which is not only illuminated by the sun during its ascent and not only during its descent (but it is always exposed to the sun); almost its oil-by itself -emits a shining light (because of its clarity) even when it is not touched by fire; (the ray of nur hidayah whose comparison is that of a multiple ray): light layered with light. Allah guides whom He wills to the light of His guidance. and Allah sets forth various parables for mankind; and Allah is Aware of all things. (Surah an-Nur: 35)*

The words of Allah SWT that encourage Muslims to explore the field of astronomy are among the words of Allah SWT:

---

<sup>32</sup> Ghazali Darussalam. (2006). Sumbangan Sarjana dalam Tamadun Islam. Kuala Lumpur: Utusan Publications & Distributors



This means: *He is the One who made the sun to shine (brightly) and the moon to shine, and He is the One who determines the journey of each one (wandering) in places- the place of its circulation respectively) so that you may know the number of years and the count of time. God did not create all that except with the real benefits and uses. Allah makes clear His revelations one by one for a people who want to know (the wisdom of something He has created).* (Surah Yunus: 5)

Similarly, many verses of the Qur'an and the hadith of the Prophet Muhammad SAW that touch on medicine, including anatomy, physiology and human events.

This means: *And your Lord inspired the bees: "Make your nest in the mountains and in the trees, and also in the buildings erected by men. Then eat of all kinds of flowers and fruits (which and follow the ways of thy Lord which He hath inspired and made easy for thee. " (Then) there will come out of his body a drink (honey) of different colors, containing cures for people (from various diseases). Lo! Herein verily is a portent for a people who give thought.* (Surat an-Nahl: 68-69)

Islamic science needs to be studied as a whole and interrelated with other things. This is because the creation of Allah SWT is an organic union. While doing research and study, Islamic researchers and scholars need to repent of the power of Allah SWT who determines what happens. They need to be closer to Allah SWT with the findings obtained from the study. The development of science in the Islamic world which have been modified and added. The contributions of Islamic scientists can be divided into two main categories namely translations from Greek works and original discoveries.

The rise of the Abbasid kingdom in 750 AD marked the birth of great power in the history of Islamic rule. The rulers of the Abbasid kingdom have paid great attention to the development of scientific science. During the reign of the second caliph of the Abbasid kingdom, al-Mansur, the efforts of translators of Greek works were extensive. During the reign of Caliph al-Ma'mun (813-833 AD), the activity of learning new sciences has reached its peak. He established a translation school in Baghdad with its own library. One of the translators who served in this school was Hunayn ibn Ishaq (807-877 AD). He was a famous philosopher and doctor. He has translated the entire work of Galen. Islamic scientists were not only involved in translating Greek works, they also produced original works in the field of science. This is because there are differences in perceptions between Islamic and Greek scholars especially about nature. For Muslims, this world is alive and changing as a manifestation of the power of Allah SWT. Instead the Greeks regarded this realm as static. Plato and Zeno regard time as non-existent Heraclius regard it as bound in one round.

Al-Khawarizme (780-850 AD) was the first Islamic scholar to take steps to change the Greek perception of the world as static to the Islamic view of the

world as a dynamic one. Europe owes much to Muslims in the field of science. This is because they have given birth to a new attitude towards scientific thinking. In classical times, society was pre-scientific. For example, mathematics and astronomy among the Greeks were something that was brought in from outside. It is not the result of Greek culture itself. They only make it more thorough, gather positive knowledge, record the methods of science, make complete observations<sup>33</sup> and old as well as making experiments, all of which were something foreign to the Greeks. The scientific approach to the classical world was only practiced in Hellenistic Alexandria. The rise of science in Europe was the result of a spirit of curiosity, methods of experimentation, research, measurement, and the development of mathematics in a form unknown to the Greeks. All of these things were actually introduced to the European world by Muslims.

## Engineering

Engineering means the scientific understanding of the physical phenomena used in technology and the process of designing technology with efficient methods as well as the discipline of knowledge related to the ability to use technology efficiently. Islamic engineering, on the other hand, is the use of certain techniques to assist human beings to perform their functions as caliphs more efficiently.<sup>34</sup> First, it should be noted that Islamic science and technology is only one branch of knowledge that can complete Islamic civilization, but it is not basic or determinative knowledge but only merely a twig knowledge of the teachings of Islam as a whole. This matter needs to be clarified so that Muslims are not so influenced by science that it is possible for them to be so amazed that they worship science. However, science and technology are very important to be mastered by Muslims in line with the modern world today. Physics is the basic science of technology and engineering.

Physics is a science that discusses the natural principles of nature and the universe. Physics is closely related to other sciences such as mathematics, chemistry, medicine, astronomy, science and technology. As Muslims it is important to realize that modernization and development alone are not the key to solving the problem of the downfall of Muslim society in this world. Muslims need to return to the right path by truly practicing all the teachings in the Qur'an and *Sunnah*.<sup>35</sup> Both are clear that modern technology is largely in line with Islam and does not contradict the teachings and practices of Islamic scholarship even in certain parts it is obligatory to be demanded, studied and mastered for creation, design and use. The ideology (concept) embodied in Western modern science is a threat to the Muslim generation if it takes it directly without filtering ism and its use in a negative form. Islamic civilization has made enormous contributions in

---

<sup>33</sup> Ghazali Darussalam. (2006). *Sumbangan Sarjana dalam Tamadun Islam*. Kuala Lumpur: Utusan Publications & Distributors.

<sup>34</sup> Abdul Rahman Haji Abdullah. (1998). *Islamic History and Civilization*. Kuala Lumpur: Teks Publishing Sdn Bhd.

<sup>35</sup> Abdul Rahman Haji Abdullah. (1998). *Sejarah dan Tamadun Islam*. Kuala Lumpur: Teks Publishing Sdn Bhd.

the field of hydrological engineering. During the reign of Caliph Umar Abdul Aziz (624M) Islamic engineering experts had successfully built a 10km long canal that drained water from the Euphrates river to Basrah. Then Umar Abdul Aziz built a 100km long canal that connected the Nile River with the Red Sea to overcome the drought in Arabia. Meanwhile, in the field of mechanical engineering, Islamic civilization has also achieved such rapid success. Various water transport devices for irrigation, residential and industrial use have been created. Water transport machines known as *saqiya* and *na'ura* are very famous in Egypt and Syria. Al-Jazari and Taqi al-Din in the 12th century have successfully explained the method of use of water carriers and water pumping devices. Next, Islamic engineers have managed to find various devices such as self-filled vessels, liquid jets that can change their jet jets automatically, water wheels, wind wheels, elephant water clocks, bridges and high-tech roads. In the Islamic tradition, the field of technology such as engineering is based on the concept of equality or *mizan* and balance or *tawazun*, which is to be in the right and balanced position.

### **Islamic Technology And Engineering Figures**

History has recorded a time of the heyday of Islamic civilization, the Muslim community itself has built one of the main factors driving the birth and growth of modern science and technology in Europe.<sup>36</sup> Names such as al-Khindi, al-Farabi, Ibn Sina, al-Biruni and others who are examples of Islamic scientists are figures of optical technology who could not be forgotten. Ibn Khazani has succeeded in creating a variety of scales that are so perfect. The compass he invented has been used in Europe to this day. The compass said to have been invented by the Italians was actually the invention of Ibn Khazani and this has been acknowledged by European scientists. Ibn Yunus (10th century AD) has succeeded in creating a design in the form of a measuring device to measure the height of the sun. Abdul Abbas al-Farghani (11th century AD), on the other hand, has produced books on astronomy and its position as well as the travels of the stars in the sky.

Ibn al-Zarkali, has invented several devices that can determine the position of the stars in the sky. The device has been brought to Europe. In the 15th century, Ibn Zarkali's invention tools were updated by European scientists and handed over to European astronomers. Abu Abdullah Muhammad al-Banani (829 AD), made an investigation into solar and lunar eclipses. In addition, he has also produced several works on the change of seasons as well as the circulation of the moon and stars that have a special relationship with the change of seasons throughout the year. Ibn Firmas has invented a device that allows it to fly. He died in an accident and left no successor to continue and repair the work. His ideas were carried on by the Wilbur and Orville Wright families until the invention of

---

<sup>36</sup> Abdul Rahman Haji Abdullah. (1998). Islamic History and Civilization. Kuala Lumpur: Teks Publishing Sdn Bhd.

the airplane. Others invented mechanical equipment to raise sunken ships or uproot large trees without difficulty using machinery.

The Islamic engineer al-Khazini had written a thesis entitled *Mizan alHikmah* on the best mechanics of the time (112 S.M). He wrote about the theory of weighing using the Moment Theorem and discussed the carrying capacity of liquids and air. This will lead us to understand the concepts of density and volume. He also wrote about the weight of a material caused by gravity. Furthermore, al-Khizni explains clearly about the related experiments and there is also referred to as the effect of surface tension in liquids. Also referred to is the weighting and use of hydrometers to determine the density of liquids, including changes in temperature, geodesy and time measurements. The Arabs also created a better and more accurate time measuring device called the Clepsydris or water clock. Early references to the clock can be found in al-Jahizi's book entitled *Kitab al-Hayawan* in the 38th century AD. Between 1105-1169, Muhammad ibn Ali Rustam al-Sab al-Jayrri in Damascus. This clock was later taken by a son named al-Fakhr who in 1203 wrote a book describing the clockwork pattern.<sup>37</sup> An important aspect in the field of mechanical engineering is as stated in the *Kitab al-Ma "rifat al-Hiyal al-Hundasah* which describes hydraulic equipment. There is now a translation in German and edited by Bilhard Widemann, was re-compiled by Abu al-Izz Ismail for the King of Urtaqid, Nasir al-Din Muhammad in 1205/1206.

The field of modern technology and engineering today is sourced and based on mechanical works in ancient Islamic times. The figures and inventors or inventors of the technology mentioned earlier have become a point of reference for scholars of the physical sciences today. What is always in question is the continuity of the contributions of Islamic physics scholars in modern times seems to be interrupted due to the intent of Western physics scholars to indirectly refer to the contributions and even delete them directly from the original reference source for not want to highlight Islamic scholarship and expertise in the field. Other fields of technology pioneered by Muslims are such as building or construction, measurement, navigation and flotation, optics, fabric weaving and so on. Among the contributions of Islamic technology are the dome and tower of the mosque were introduced by Islamic civilization; construction of *qanat* which is the groundwater drainage system mentioned by alKharaji; Muslims have made automatic clocks and water clocks. Caliph Harun al-Rashid had sent an automatic water clock to King Charlemange in Europe in the 7th century, the silk weaving industry introduced by the Persian Muslims was a place or center of silk weaving that was famous all over the world at that time; and the construction of canals, for example building a canal to connect the Nile with the Red Sea which is 110 kilometers long; takes only six months to build; and Angina slides were pioneered by Muslims in the 7th century. Windmills are used to get energy from the air.

---

<sup>37</sup> Ibid.

## **ACHIEVEMENTS AND EFFECTS OF ISLAMIC CIVILIZATION ON HUMAN BEINGS**

### **The Influence Of Islamic Civilization On Science**

It is emphasized that the evidence of the achievements of Islamic Civilization in various fields of knowledge that mark the heyday of Islam are born from the teachings of Islam itself which have been processed by Islamic thinkers. It is a favorite of knowledge lovers, especially from the European and Western blocs. It can be observed some of the effects of the influence of Islamic civilization on the European and Western world and the world as a whole.

### **The West Is Indebted**

Western civilization acknowledges its indebtedness to Islamic civilization because Islam attaches importance to knowledge that is responsible for leading to the mental, moral, scientific, technological and material awakening of modern western civilization. They acquired this knowledge from Andalusia in the heyday of Islamic civilization by sending a delegation of students studying at universities in Andalusia, diplomatic relations and the Crusades.<sup>38</sup> They not only acknowledged their indebtedness and gratitude to Islamic civilization for contributing knowledge that enabled them created modern western civilization and they were even amazed by the ability of Muslims to build the greatest civilization in human history. This is explained by Philip K. Hitti, whose translation is as follows: History has never found a single change as brought about by the rise of Islam. Much has been said and written about this stage of history, either past or present, but there is a tree reason that remains a question mark that has not been answered by Christians in the west. We are not too fascinated by political history, but what fascinates us in the west is the social, intellectual, mental and moral upheaval of the Renaissance in Europe today. Shows the power of the people.<sup>39</sup> Islam against the Mediterranean for centuries was a blessing for Europe. Everything stems from the encouragement and demands of mastery of knowledge. In a sense it is the key to the achievement of Islamic civilization for the success of life in this world and the hereafter.

### **Excellent Knowledge Encouragement**

There is no religion, civilization, philosophy and so on that can match Islam from the emphasis and importance of knowledge. Knowledge according to Islam is the differentiator between humans and animals. Knowledge is also what makes human beings more noble, surpassing all creatures created by Allah SWT on this earth, including angels. This is explained by Allah SWT in verses 31-32 of Surah al-Baqarah: ◉

---

<sup>38</sup> Mustafa Haj Daud. (2000). Tamadun Islam . Kuala Lumpur: Utusan Publication & Distributors.

<sup>39</sup> Ibid.

Which means: “*And He taught Adam, all the names of things and their uses, then he showed them to the angels and He said: “Explain to Me the names of all these things if you are truthful.” The angel said: “Glory be to You (O Allah)! We have no knowledge except what You have taught us; surely You are the All - Knowing, the All -Wise.”* (Surah al-Baqarah 31-32)

The height of the man who surpasses the position of all other creatures is the starting point of his function as the caliph of Allah SWT on this earth is provided with the main element of revelation that contains the teachings of faith, Islamic law and morality which is knowledge from Allah SWT and a capable mind working on the science that is in the space of matter.<sup>40</sup> That is why Islam is a religion of revelation, a religion of knowledge and a religion of light. This can be proven when the first verse revealed by Allah SWT to *Rasulullah saw*, namely surah *al-falaq* from verses one to five, obliges Muslims to read and seek knowledge that comes from revelation and the creation of Allah SWT.

### **Quranic Encouragement**

The obedience of Muslims to the command of Allah SWT and His Messenger in seeking knowledge resulted in their success in creating the best and strongest civilization on earth which is based on the Quran and *Sunnah* and based on faith, Islamic law and morality. The knowledge that builds spiritual strength, morals, ethics, mental, physical, material, mathematical, vocational, technical, scientific skills and so on. Islamic scholars in the heyday of Islamic civilization had a strong spiritual strength and mastered all fields of knowledge not only in the form of *fardhu Ain* namely faith, *sharia* and morality but also in fields such as science, medicine, mathematics, astronomy, economics, trade, politics and architecture. With this spiritual and technological strength, Muslims were able to control the Islamic world in a very short time, namely eighty years and were able to maintain its power for more than thirteen centuries. It is also Islamic civilization that defends the values of humanity, upholds freedom, justice and democracy that cannot be overcome by any civilization either before or after. Everything stems from the importance of knowledge in Islam and it is that knowledge that succeeds in shaping and producing leadership that values both factors in the construction of civilization simultaneously.<sup>41</sup>

### **Encouragement Of As-Sunnah**

How seriously Islam prioritizes knowledge can be seen in the instructions of the *Rasulullah saw* on Muslims so that they seek knowledge regardless of whether they are men or women. How can a person implement all the teachings of Islam without true knowledge?. This obligation is explained by the hadith translated:

---

<sup>40</sup> Surah al-Baqarah verses 31-32

<sup>41</sup> Mustafa Haj Daud. (2000). *Islamic civilization* . Kuala Lumpur: Utusan Publication & Distributors

“Learning and seeking knowledge is obligatory on Muslim men and women.” (*al-Hadith*).<sup>42</sup> The obligation to seek knowledge does not end with the mastery of knowledge alone but must be lived, believed and practiced. After that, it must be used in the field of jihad and the spread of Islamic da'wah. That is why the degree of the *Ulama* who *jihad* to spread knowledge is considered holier than the blood of the martyrs who were martyred on the battlefield. *Rasulullah saw* further has given absolute conditions to Muslims who want success, happiness and perfection of life whether living in this world or the hereafter must seek knowledge. In other words, the construction of this civilization would not have taken place without the mastery of knowledge. *Rasulullah saw* did not just issue words or instructions in the form of behavior. During the battle of *Badr*, many Quraysh infidels were captured. Some of them are good at reading and writing. Therefore, *Rasulullah saw* gave the prisoners their release on the condition that they teach the children of Muslims to read and write. He also sent some Muslims to study medicine in Jundisyapur, Persia which was then the largest and most advanced center for the development of medical knowledge in the world.

### **Establishment Of Islamic Higher Education Center**

Muslims are very diligent in studying the contents of the Qur'an and *Hadith* since the beginning of Islam. In addition to perseverance in worship, they are also not left behind in the quest for the discovery of other new general sciences. All this is intended for the benefit of mankind, both for the comfort of living in this world and to find happiness in the hereafter. For that reason, scholars were born in various fields spread throughout the Islamic world. Muslim leaders have taken the initiative to gather scholars somewhere and are rewarded for those who teach and do research from time to time. Eventually the place became a Center for Islamic Higher Education. Various strata of society come to the place either from within or outside the country such as students from Europe to gain various knowledge from famous figures.

### **Existence Of Translation Institutions**

The Europeans who settled in the Islamic states took the elements of Islamic Civilization then they brought them back to their respective states. Since they recognized the excellence of Islamic Civilization around the 11th century AD, then the higher their desire to absorb civilization in their daily lives. They thought of ways to get that very useful knowledge into Europe faster. Eventually the scholars among them agreed that the best way was translation.<sup>43</sup> Most of the translation efforts were done by scholars at the Islamic University in Spain, Sicily and Islamic scholars at the Islamic University in the East. Book translation efforts are running rapidly as they are capable of translating Arabic books into Latin and European languages. At first they only translated the philosophical

---

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

sciences and then this activity was continued to the fields of science. The books by Islamic scholars are used as a reference in their schools in Europe.

### **Establishment Of The First University In Europe**

The establishment of the first university in Europe was an initiative of European Christian students who had completed their studies in the East (Baghdad) and the West (Spain). The establishment of the university was also related to the Crusades due to the transfer of Islamic knowledge and culture as well as other scientific materials brought back to their country by the crusaders. The model of universities developed in their country is an imitation of the Islamic institutions of higher learning in Spain.

### **Use Of Arabic/Islamic Terms In Scientific Terms In The West**

Western scholars use many Arabic and Islamic terms in their centers of study in the West. This is because they used to learn from Islamic scholars and study the books written by them. Most of the Arabic and Islamic terms put forward by Islamic scholars in the past, they remain as Western scientific terms to this day. Examples are the terms *Sifr-sifar*, Zero, *Almanac-al-munakh* (weather), *Alcohol-alkuhul* and *Arsenic-al-zirnikh*.

### **CONCLUSION**

Both scholars from the West and Islam state that Islamic civilization has made a great contribution to Western civilization. There are also Western scholars who do not give due recognition to Islamic civilization. Islamic civilization empowered Europe in the field of science and knowledge saved them from the Dark Era where science was constrained by the Church. Islamic knowledge had arrived in Europe since the early 12th century, before the emergence of the Renaissance in northern Italy. (Hasan, 1987) In conclusion Islamic civilization played a very important role in the rise of the West. As a result of the acceptance of Islam, the formerly deprived Arab society has undergone a transformation as an area that was once isolated and backward in terms of civilization, into a great center of civilization. In the long run, the Arabs who led this new civilization, expanding the Islamic territories as far as *al-Andalus* brought together to those territories the achievements of a great civilization and through these new territories, the West was exposed and learned from Islamic civilization.

### **REFERENCE**

- Abdul Rahman Haji Abdullah. (1998). *Sejarah dan Tamadun Islam*. Kuala Lumpur: Teks Publishing Sdn Bhd.
- Ghazali Darussalam. (2006). *Sumbangan Sarjana dalam Tamadun Islam*. Kuala Lumpur: Utusan Publications & Distributors
- Hasan, M. (1987). *A history of Islam vol.1*. Lahore: Islamic Publisher.



Mahayuddin Yahaya. (2005). *Islamic civilization*. Kuala Lumpur: Publisher Fajar Bakti Sdn Bhd.

Mohamad Khadafi Hj Rofie. (2009). *Tamadun Islam: Prinsip dan Sumbangan Terhadap Peradaban Dunia*. Kedah: Pure Honey Interprise.

Mustafa Haj Daud. (2000). *Tamadun Islam* . Kuala Lumpur: Utusan Publication & Distributors.

Surah al-Baqarah verses 31-32

Surah an-Nahl verse 68-69

Surah an-Nur verse 35

Surah Yunus verse 5