

Islamic Philosophy of Science as a Halal Science Framework: Literature Review

BITARA

Volume 6, Issue 2, 2023: 220-232
© The Author(s) 2023
e-ISSN: 2600-9080
<http://www.bitarajournal.com>
Received: 19 March 2023
Accepted: 9 April 2023
Published: 30 June 2023

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Abstract

Islamic philosophy of science refers to knowledge that basically involves all the efforts of the mind assisted by the senses to explain the facts obtained according to scientific research. It is also applied according to the progress of science and technology. Therefore, the Islamic philosophy of science has a faculty of thought that is the basic framework in the field of science today. The same is the case with the field of halal science which involves the scientific research process as well as being competitive in the development of science and technology. Halal science also covers various aspects such as the food industry, pharmaceuticals, cosmetics, biotechnology, agrotechnology, veterinary, and others. Therefore, the question arises, what is the philosophy of Islamic science that is the basic framework for the advancement of halal science? What are the important values in the philosophy of Islamic science that make halal science the true Islamic track? To answer the question, this paper has three main objectives, namely first, to identify the concept of Islamic science philosophy. Second, explain the important elements of Islamic philosophy of science as a halal science framework, and thirdly explain the importance of Islamic science philosophy as a halal science framework. This library study found that there are three important elements of the philosophy of Islamic science as a halal science framework, namely first science is only a tool and should make people more obedient to Allah SWT, the second element; is the integration of *naqli* and *aqli* knowledge and the third element; the principle of *ta'abbudi* as the strength of morals and values in halal science.

Keywords: Philosophy, Islamic Science, Halal Science

Cite This Article:

Shahirah Said, Mohd Shukri Hanapi, Siti Sarah Izham, Emie Sylviana Mohd Zahid & Mohd Marbawi Taha. (2023). Islamic Philosophy of Science as a Halal Science Framework: Literature Review. *BITARA International Journal of Civilizational Studies and Human Sciences* 6(2): 220-232.

Introduction

Scientific knowledge results from the scientific method, which is accurate sensory observation, systematic testing, or both. In general, all scientific disciplines involve the search for knowledge

in the form of assumptions (hypotheses) and theories about the basic laws of the physical world that contain the general facts of natural phenomena (Badrom, 2012).

There is a difference between science and technology. Science is an effort to explain natural phenomena and it is theoretical (*nazariyyat*). While technology is a tool to facilitate work ('*amaliyat*'). Both depend on humans to make science and technology useful or otherwise (Suharto, 2012). Meanwhile, Jusoh (2014) on the other hand stated that Islamic science refers to knowledge that involves all efforts of the mind assisted by the senses to explain data or facts obtained according to scientific research studies. It is also applied according to the progress of science and technology. The significant difference between modern science and Islamic science is that Islamic science involves three parts: natural science.

In general, halal science also involves the theory and practicality of Islamic science. Halal science means a halal-related research activity that involves the use of science and technology elements. More specifically, the Akademi Sains Malaysia (2019) explained, halal science refers to halal knowledge obtained through systematic research such as observation, and experimentation to explain and explain natural phenomena regarding halal practice. Usually, this scientific research involves current and contemporary legal issues. In addition to research activities, halal science also includes the production, processing, packaging, production, distribution, and the final stage of halal products reaching consumers.

Therefore, the Islamic philosophy of science has a faculty of thought that is the basic framework in the field of science today. The same is the case with the field of halal science which involves the scientific research process as well as being competitive in the development of science and technology. Halal science also covers various aspects such as the food industry, pharmaceuticals, cosmetics, biotechnology, agrotechnology, veterinary, and others. Therefore, the question arises, what is the philosophy of Islamic science that is the basic framework for the advancement of halal science? What are the important elements in the philosophy of Islamic science that make halal science the true Islamic track? To answer the question, this paper has three main objectives, namely first, to identify the concept of Islamic science philosophy. Second, analyze the important elements of Islamic philosophy of science as a halal science framework, and thirdly explain the importance of Islamic science philosophy as a halal science framework.

This paper uses descriptive research and uses secondary data as a reference and analysis. Discussion and analysis also use other secondary sources such as journals, books, theses, articles, and others.

Concept of Islamic Science Philosophy

From an etymological aspect, the word philosophy comes from a Greek word that has two syllables, which is *philein* which means to love and *sophos* which means wisdom and when combined it becomes *philosophia* which means deep love for knowledge and wisdom. Knowledge is also associated with wisdom which means any field of knowledge, understanding, moral practice, and proliferation of viewpoints and attitudes that lead to happiness (Ismail, 2006).

In the context of science, philosophy is not something separate from scientific exploration. Even scientific theories themselves were founded by philosophers who were interested in the field. The results of their thinking culture and empirical studies have produced new discoveries, for example, al-Kindiy, Ibnu Sina and Elbert Einstein himself was a philosopher before engaging with science (Long, 2015). The philosophy of science itself arose when human life was surrounded by physical and metaphysical phenomena. Physical phenomena can be explained by scientific studies in the laboratory while life involving the metaphysical realm requires a philosophical approach to describe and explain it. According to al-Kindiy(796), philosophy involves three main things which are physical science, mathematical science, and divine science. In the meantime, al-Farabiy (870-950) asserted that philosophy is the science of existence and does not conflict with religion. In contrast to al-Kindiy, al-Farabiy divides philosophy into two things which are first, a theory that covers mathematics, physics, and metaphysics; and second, includes morals that are ethics and values.

Al-Attas (2011) also stated that philosophy and science cannot be separated since philosophy works to find the unlimited knowledge found in science. This is because science is only limited to sources and methods of knowledge that are purely empirical. In other words, the discussion of the philosophy of science needs to be put together so that a wider, holistic, scientific, empirical, and metaphysical science is built that has divine values (Awang, 2003: Pigluccin , 2010).

Generally, the philosophy of science is also known as Islamic science or Islamic natural science According to Ismail (2012), scientific discussions on natural science need to involve the support of reason based on the understanding of Islamic science scientists. Next form a view of life or other terms such as *tasawur* or paradigm (Hassan, 2018 and Zarman, 2016).

Based on the entire discussion, the definition of Islamic science philosophy used in this study refers to a science that has the role of explaining the truth of natural science based on the Qur'an and Sunnah. Islamic philosophy of science also involves thinking activities using the rational mind and its ability to explore and understand various fields of knowledge as well as all the natural worlds created by Allah SWT on earth. In addition, the thinking activity also needs to include the five characteristics stated by Abdullah (2010) which are thinking critically, integrated, universal and fundamental and in line with the fact of monotheism to Allah SWT. Therefore, monotheism is the main goal in the field of philosophy. Next, the studied universe uses the power of argument, logic and mathematics that prove the pinnacle of human thought to understand nature. Natural phenomena are understood by using a scientific approach to find out the truth and *sunnah* of Allah (Osman, 2011; Ismail, 2013:3).

Halal Science Background

In the context of Malaysia, the food industry is expected to continue to grow in parallel with the development of science and technology (Ab. Rahman & Che Man, 2011). The effect of the development of science and technology also causes the production of halal products to be better, faster, more efficient, and successfully meet consumer demand (Jamaludin, 2013). Therefore, Malaysia always strives to empower the halal industry by introducing the Malaysian Halal ecosystem. There are five important agendas to boost the nation's halal ecosystem that is being

set in motion by the government for the period 2018 to 2020 at the international level. The Deputy Prime Minister at the time, Datuk Seri Ahmad Zahid Hamidi, said the five intended agendas were to empower the Halal Professional Board (HPB) at the international level, the establishment of the International Halal Authority Board (IHAB) which functions to standardize all halal bodies in the world in halal certification, form The International Halal Research Academy (HIRA) which has never existed in this region, established the Malaysian Halal Academy Institution (MIHA) which is to produce a generation of technocrats in the halal industry and finally established the Halal Technology and Innovation Center (HITeC) to further develop the level of creativity and innovation in the halal industry. In addition, the Malaysian Halal Council also decided that Malaysia should be a member of the Board of Directors of the *Standards and Metrology Institute for Islamic Countries (SMIIC)* in 2017. This statement was announced in 2017 and at that time DS Zahid Hamidi was still holding the position of Deputy Prime Minister. While the five agendas mentioned involve the next two years which is 2018-2020 (Ismail, 2017).

To improve research in the halal field, many halal and bio-halal science research centers have been established (Ab. Rahman, 2013). For example, in Malaysia, there is the Malaysian Islamic Development Department (JAKIM), *Halal Industry Development Corporation (HDC)*, Standards and Industrial Research Institute of Malaysia (SIRIM), Research and Agricultural Institute in Malaysia (MARDI), BiotechCorp and others. All of them play their role to help the development of halal science in Malaysia whether in the mastery and use of aspects of science and technology, the production and market of halal products to help give understanding about halal products in the community and industry players and others.

This proving that Malaysia which has been the chairman of the Conference of Islamic countries (OIC) and recognized as the Halal hub of the World in 2010 has introduced halal standards comprehensively and expanded its concept using e-halal. Malaysia is also the first country in the world to list halal food standards covering aspects of production, preparation, handling, and storage. There are guidelines and practices for the food industry regarding the preparation and handling of halal food, basic rules for food products and food trade or business in Malaysia (MS 1480:1999), food safety according to hazard analysis and critical control points " Hazard Analysis and Critical Pain Control: (HACCP), MS1514:2001 General Principles of Food Hygiene and MS1500:2009 Halal Food – Production, Preparation, Handling and Preparation. Its halal standards have been adopted at the international level. In the meantime, the advantage of this MS1500:2009 is the emphasis on Islamic values and adherence to Islamic principles and all processes from the initial stage must really comply with the meaning of halal according to Islamic Sharia (Ghazali & Md. Sawari, 2015).

In the field of halal science, the term scientist is closely related to those who carry out research and development (R&D) in various disciplines related to halal. Those who are referred to as halal industry scientists also work and contribute their respective services and expertise in the fields of the spectrum of science related to the halal industry. This is not limited to science and technology or pure science only but includes the field of social science. The need for research in the field of the halal science industry initially revolved around the scope of ingredients and additional flavors, especially to identify food and drink products that are free from clearly illegal ingredients such as pork and alcohol.

This effort is still ongoing and now the researchers focus on the safety and health aspect of a product in accordance with the *halal tayyiban concept*. The products being studied now not only involve food but include pharmaceuticals, cosmetics, and personal care items (Has-Yun Hashim, 2017). Therefore, the expertise of halal scientists covers a wide range of fields including agriculture, biology, food technology, medicine, and so on (Zarmani, Ramli & Shaikh Mohd Salleh, 2015).

In more detail, there are several problems in the field of halal science philosophy that need to be paid attention to, among them, the scientific method used is very helpful, especially in the process of setting laws, especially contemporary issues (Man, 2013; Jamaluddin & Ramli, 2013; Danial Zainal Abidin, 2003). However, according to Awang (2013), there needs to be a clear interest so that there is no damage to the face of the earth. At least there are three importance of halal science considered important to face the problems of contemporary society. First, halal science can meet the growing market demand. The global halal market is now estimated to be worth USD2.3 trillion and is expected to continue to grow (Mohd Shahwahid et al., 2015). The Muslim population is estimated to be 1.8 billion Muslims worldwide and is expected to increase to 27% of the world's population in 2030 (MIHAS, n.d). Therefore, it is not surprising if the market for halal products and services receives attention worldwide, especially in the food industry (Riaz, 2007:192 and Fischer, 2016). Now, halal products are not only gaining a place among Muslim consumers but also attracting non-Muslim consumers who are aware of the importance of quality, clean and safe products (Azizol, 2016). The increase in the global halal market requires the advancement of halal science to produce halal products and services more efficiently and economically (Jamaludin & Ramli, 2013) and can be marketed to consumers worldwide (Ab Rahman, 2007: 102). Halal science can also produce a large amount of food in a certain period in addition to being able to be stored for a long period of time because through preservation methods or established expiration dates, flavor enhancers, stabilizers, emulsifiers and others (Has-Yun Hashim, 2015)

Second, the development of the halal science industry can also establish the stability of the quality and safety of halal products. It gives incentives to industry players to improve quality and variety to be marketed in the open market. In Islam, the health and safety of food are very important (Jamaluddin, 2013; Ab. Rahman & Che Man, 2011:123; Ahmad & Mustafa, 2014; Hashim & Abd Rahim, 2014; Malboobi & Malboobi, 2010).

The Main Structure of Islamic Science Philosophy

Elements of Islamic Science

Islamic philosophy of science not only plays a conceptual role but involves practical issues in the field of halal science itself. Its wide ecosystem of knowledge such as the field of halal science construction, halal science research, technological science development, social issues of the use of halal products in the community, environmental development issues and others require a precise and integrated scientific philosophy discipline (Othman, 2017).

In general, all those fields contribute to the development of civilization. It also symbolizes the achievements of science and technology that lead humans to glory, thus

respecting science. The source of knowledge or epistemology in the philosophy of science according to Islam places revelation as a source that is believed to be true. Epistemology also involves the process of intellectual debate, the classification of knowledge, its specialization, and the scope of the limitations of intellect to deal with it. In addition to epistemology, there are two other elements to the Islamic philosophy of science, namely ontology and axiology (Abdullah, 2010; Awang, 2003; Zein, 2014).

Axiology means the science of values, theories, and value systems. Advances in science allow humans to measure value objectively and accurately. Value means an element that reflects human behavior. According to Islam, the value of knowledge and thought is the most important element that determines human actions and behavior. In addition to epistemology and axiology, Abdullah (2010) puts another feature that must be present in the philosophy of science, which is ontology. Ontology discusses the scope or limitations in the scope of knowledge. Usually, the scope of knowledge is limited to empirical experience only but according to Islam, the scope of knowledge also involves metaphysical knowledge or the supernatural. Therefore, the discussion of the philosophy of Islamic science also needs to include its epistemology, axiology, and ontology either directly or indirectly (Awang, 2003 & Jusoh, 2014).

Looking at the division in the philosophy of Islamic science, halal science is also a branch of Islamic science. This is because the scope of halal products covers a wide range of aspects of community life. Among them are faith, worship, morals, economy, family, muamalat, crime, clothing, entertainment, and so on (Man & Yahya, 2014:18). However, more specifically according to Malaysia International Islam Finance Center (MIFC) (2014), halal products and ecosystem services are divided into three groups namely food, tourism, lifestyle, and finance. In more detail, the first group is halal food products consisting of production, distribution, and logistics. The second group refers to the tourism sector which includes hotels/resorts, flights, and restaurants. This second group also consists of lifestyle including cosmetics, pharmaceuticals, and media. Finally, the third group includes aspects of halal finance that refer to banking, takaful (insurance) and the capital market. Therefore, the aspect of science cannot be separated either in theory or application in the field of halal industry which has very wide importance in society.

Principles of Islamic Science

Monotheism is a basic principle in the philosophy of Islamic science. This distinguishes the Islamic philosophy of science from the modern philosophy of science as explained by Mohd Salleh (2014:68) and Othman (2014) who use the term monotheistic science in describing the Islamic philosophy of science. Jusoh and Muhammad (2007) directly link the science of monotheism with the Qur'an. According to the writer, there is a word of Allah SWT that is repeated 2,697 times which can be studied through the three principles of Islamic science philosophy namely ontology, epistemology, and axiology.

Meanwhile, Mohd Salleh (2014) in discussing the existence of Allah SWT can give three philosophical understandings of divine science, namely first, Allah SWT as Creator and Administrator. Second, humans act as servants of Allah SWT and His caliphs and third, this world was created by Allah SWT to provide well-being to humans.

Despite this, Othman (2014) explained the paradigm of monotheism by placing Allah SWT at the highest position, then below him, there is a human being who has a spirit, heart, mind, soul, and body. Next, the human being is responsible for humans (society) in social, economic, political, and other aspects. At the same time, humans also have a role to observe, reason and analyze nature. In addition, there are five main entities in the framework, namely Allah SWT, humans, nature, the Qur'an, and the Sunnah. Therefore, the paradigm of tauhid formulated by Othman (2014) is more detailed in understanding the science of tauhid. Next, there are similarities between the writers in expressing three types of relationships in the science of monotheism, namely, the relationship of Allah SWT with nature, the relationship of God with humans and the relationship of humans with nature.

Next, the concept of tawhid was explained earlier by al-Ghazaliy (Harun, 2007). According to him, science produced through empirical methodology can be accepted with one condition, which is to acknowledge the role of the creator in giving birth to the nature of 'natural relationships' in this world. According to Bakar (2008), there is a close relationship between the spiritual elements of Islam and natural science. To revive Islamic science in today's modern age, it is necessary to focus on that close relationship. Tawhid not only teaches people how to do charity, act, and work but also a way of knowing and thinking.

According to Nasr (2008), the most basic knowledge is about unity (*tawhid*) which includes knowledge about the essence of Allah SWT, the nature, power, and actions of Allah SWT which includes all His creation. With that, Islam widely developed an organized and systematic knowledge that can be termed as 'science'. Nasr (2008), Bakar (2008), Radiman (2010), Ismail (2006), Harun (2007) and Azhar (2017) also link monotheism and knowledge as the main support in building Islamic civilization and science.

Characteristics of Islamic Science

Othman (2014) explained seven basic concepts of Islamic science philosophy that need to be understood, namely religion as al-Din, man as man, the knowledge that includes the concept of *ma'rifat*, wisdom or wisdom in the process of charity, justice, a charity in business to sow devotion and carry out his function as caliph and manners and morals. The understanding of these seven concepts aims to ensure that Islamic science can function as it should. In addition, Ramli Awang (2003) lists six basic principles that must be present in Islamic science, namely monotheism, caliphate, worship, halal, and haram, just and unjust as well as public interest and waste.

To detail the characteristics of Islamic science philosophy, Sardar (1992) has listed 15 characteristics of Islamic science that can be identified to distinguish the characteristics of the Islamic philosophy of science from the characteristics of the philosophy of modern science. First, believe in revelation. Second, science is only a tool to seek the pleasure of Allah SWT. Third, there are many methods based on reasoning and revelation, both objective and subjective, and all of them are valid. Fourth, emotions are necessary to improve scientific knowledge from a spiritual and social point of view. Fifth, in favor of the truth. Sixth, subjectivity in the verification of scientific statements. Seventh, practice making judgments in the results of scientific research. Eighth, synthesis is the dominant way to achieve scientific progress. Ninth, science is interdisciplinary, intradisciplinary and holistic. Tenth, human universality. Eleventh,

science is a fardu kifayah responsibility. Twelfth, science has values that may be good or otherwise. Thirteenth, loyalty only to God and His creatures. Fourteenth, Science is a resource whose value is very high and needs to be managed as best as possible. Fifteenth, the ends do not justify the means.

As a result of all the fifteen characteristics of Islamic science philosophy, researchers found that they were also discussed by other writers such as Ismail (2006), Othman (2014), Othman (2009) and others. But the study of the characteristics of the philosophy of science is different. In the meantime, Bakar (2008) explained that the Islamic philosophy of science should be guided by the correct methodology to avoid being influenced by the modern philosophy of science. Among the features that need to be focused on is the methodology that relies on the Qur'an as its epistemology. The philosophy of Islamic science is also based on the unity and complementarity between revelation sources and intellectual intuition. In order to understand natural phenomena, the Islamic philosophy of science also needs to harmonize and pay attention to two relationships, namely Islamic spirituality and natural science.

Halal Science Philosophy as a Halal Science Framework

There are four requirements and connections between philosophy and practical life. First, philosophy plays the role of guiding people to identify the cause of the problem, make a classification, and then be able to think to find a solution. Second, philosophy also advocates thinking critically, logically, systematically, orderly, rationally, and with objectivity. Third, philosophy can also open the mind so that the issue being debated is more holistic and covers various fields but still focuses on the issue being discussed. Fourth, philosophy also summarizes the end of the thought process (Zakaria and Long (2013). Nevertheless, philosophical discussions based on Islam need to return to the source of revelation. This refers to the use of several methods of referring to the Qur'an while emphasizing the '*tadabbur*' aspect of natural events, the liberation of the human mind from taqlid, and others (Hamat, 1998).

So, the Islamic philosophy of science not only plays a conceptual role but involves practical issues in the field of halal science itself. Its wide ecosystem of knowledge such as the field of halal science construction, halal science research, technological science development, social issues of the use of halal products in the community, environmental development issues, and others requires a precise and integrated scientific philosophy discipline (Othman, 2017).

For example, there are halal science products that have long-term adverse effects on humans such as genetically modified food (Ariff & Mohd Tahir, 2015) and food additives (Monosodium Glutamate-MSG) (Hisham, Omar & Yaakob & Mat Noor, 2017). It is a duty for Muslims to obtain halal products such as food, pharmaceuticals, cosmetics, daily use materials, and others as best as possible and bring benefits to life, religion, descendants, and property (Awang, 2017).

Halal science needs to be explained based on three main elements, namely ontology, epistemology, and axiology of Islamic science. Everything needs to be based on Allah SWT as al-Khaliq, revelation as the master of knowledge, and human morals and values. Each element has its basic discussion details. However, the principle that is the strength of halal science philosophy is monotheism in Allah SWT. The high position of monotheism causes people to

understand the position of Allah SWT as al-Khaliq who created humans and nature. Similarly, the theme of revelation is the master of knowledge in the philosophy of halal science. Revelation is the main difference between the Islamic philosophy of science and modern science. Although the methodology and application are the same, the Islamic philosophy of science places revelation in a high position. This at the same time guides people in every study done and causes people to know their God better.

Third, is the theme that is discussed the longest, which is morals and human values. This element explains the role and responsibility of humans to manage and use natural resources and then make them halal and beneficial sustenance. Allah SWT also provides a guide to human limits and limitations. Therefore, only tawhid becomes a human being as His servant and caliph to comply and submit to His command. Thus, indirectly the fourth research question involves monotheism as a principle that becomes the strength of the three philosophical themes of halal science in the Qur'an.

The study of halal science has also given many contributions and benefits back to the community. The ability and prowess of the human mind in studying, building, and preparing halal products starting from the surrounding natural resources up to the production of complex products but the laws and benefits are doubtful. Among them are tableware based on bone powder, the use of electricity stunning in the slaughter of cattle, injection of FSH-P hormone into halal livestock for breeding purposes, application of biotechnology in the production of pharmaceutical products sourced from pigs and many others (Jamaludin, Ramli & Ab Rahman, n.d and Othman Jaludin, Man & Baharuddin, 2018). Everything is debated by contemporary scholars especially in the field of *usul fiqh* since it is a contemporary issue and its focus is on the aspect of *maqasid al-syari'at*, that is every matter that is decided must be guided by five things which are to protect religion, life, reason, lineage, and property.

Thus, in halal science, in addition to taking scientific studies and the approach of *usul fiqh*, the axiology aspect of halal science is also a key factor to ensure that the science and technology do not bring harm to humans (Othman Jaludin, Man & Baharuddin, 2018). The determination of halal status usually involves the source of basic materials, additional materials, and the logistics process involved, but in the philosophy of Islamic science, the determination of halal also considers morals, ethics a human procedure to manage it.

In the halal industry, profit is the main factor for either industry players or consumers. Industry players are doing their best to reduce costs and reduce losses. Consumers tend to get halal products that are more economical and meet their needs (Awang, 2017). Science and technology can produce the dumping of low-quality halal products thus endangering health such as the use of Monosodium Glutamate (MSG), a dangerous coloring agent to attract attention, food flavorings not from natural ingredients, and others. This is also often the case with genetically modified foods (GMOs).

Curbing and limiting the use of science and technology is the responsibility of humans themselves. Be careful in using natural resources, do not damage the ecosystem and ecology, do not care about the profit of one side only, and do not cheat and deceive the users and others like it are the rulings that Allah SWT has stated in the Qur'an.

Conclusion

In general, although most of the halal science studies conducted are empirical studies, the combination with religious scientists is the best way to solve contemporary halal science issues. Religious scholars should consist of *usul fiqh* or Islamic science thinkers themselves. Therefore, it is hoped that this study will be used as a link between the approach of scientific research and religious principles. Elements of ontology, epistemology, and axiology contribute to the application process of halal science and are not purely philosophical in nature. Next, the findings of this study also give an understanding that in choosing halal products, it should be beneficial, not harmful, not prioritize profit alone, and so on. In the modern era as well, society tends to seek certainty based on scientific evidence first. Therefore, may this study not only explain but also state the limitations and limitations of humans in the process of thinking based on scientific research according to true Islam.

Appreciation

The highest appreciation for Universiti Teknologi MARA is below MyRa Research Grant (GPM) for the years 2022-2024. Grant titled The Philosophy of Halal Science in Food Safety Issues in Malaysia: A Study of Food Entrepreneurs in Malaysia. RMC/ RD/85/022/2022

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