

SCIENCE INTEGRATION IN ISLAM

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Abstract: *The purpose of this article aims to describe and analyze the science integration in Islam. The intended science integration is a condition in which one science with another is not mixed, so that it loses its ontology, epistemology and axiology, but an effort to synergize, dialogue, communicate, and bring together, so that between the sciences there is a common ground, and devoted not only to the interests of science itself, but according to its main function, namely to provide light, explanation, convenience and guidance for humans in responding to various phenomena of life. This study actually started a long time ago, but until now it is still not finished so that in practice the Islamic higher education institutions each have different formulations and models in the implementation of the integration of this knowledge. The method in this study uses a library method or approach (library research). Literature study can be interpreted as an effort to collect research data through notes, transcripts, books, newspapers, magazines, journals and so on.*

Keywords: *Science Integration and Science Integration Model at Islamic Education Institution*

Introduction

Science is knowledge that has been classified, organized, systematized, and interpreted. Science produces objective truth that has been verified and can be scientifically retested. Etymologically, the word science means clarity, therefore everything that is formed from the root has the characteristic of clarity (Abd. Rachman Assegaf, 2017: 266). Therefore, someone who deepens certain knowledge is called a specialist. So from a philosophical point of view, science is more specialized than knowledge.

Generally, society thinks that "religion" and "science" are two entities that cannot be reconciled. Both have their respective entities, which are separate from one another, both in terms of formal-material objects, research methods, criteria of truth, the role played by scientists and the status of their respective theories even down to the organizing institution. In simple language, science doesn't care about religion, and religion doesn't care about science. This is what illustrates the practice of education and scientific activities in the country today with various negative impacts felt by the wider community. Therefore, these wrong assumptions need to be corrected and straightened, so that the general public understands that there is no conflict and dichotomy (separation) between religion and science.

In line with that, Islam views without dividing lines between religious knowledge and general knowledge. Religion is role model values that guide human behavior and outlook on life, while science is something that is achieved by humans thanks to their abilities as a gift from God the Almighty. The inseparability of religion and science means the integration of caution and knowledge, only conscience and science. So, we can understand that why Islam from an early age considered the need for integration between religion and science and at the same time put people who believe and knowledge in a higher (see, QS. Al-Mujadalah: 11).

In the realm of Islamic intellectualism, the dichotomy of religious and non-religious

sciences does not cause too much trouble for the Islamic education system. However, since the Western secular education system was introduced to the Islamic world through imperialism and colonialism, the scientific status of the religious sciences has often been underestimated. They often claim it as a science that has no scientific nature because it talks about unseen, quasi-scientific things. Meanwhile, according to Western circles, science can only be said to be scientific if the objects of study are empirical. That is, a very strict dichotomy between the religious sciences and the non-religious sciences diametrically occurred in the Muslim world occurred when the empiric-positivistic secular sciences were introduced by the imperialists and colonialists (Mulyadi Kartanegara, 2005: 19).

Result

1. Fundamentals of Science Integration

Integration in the Indonesian Dictionary is defined as "unification to become a whole or unified whole" (Depdiknas, 2008: 559). The integration of science is a condition in which one science with another is not mixed so that it loses its ontology, epistemology and axiology, but an effort to synergize, dialogue, communicate, and bring together, so that between the sciences there is a common ground, and it is not only in the interests of science itself, but in accordance with its main function, namely to provide light, explanation, convenience and guidance for humans in responding to various phenomena of life (Abuddin Nata, 2018: 287).

In the structure of Islamic teachings, monotheism or acknowledging the oneness of Allah SWT is something that must be done. Because it is on the basis of tawhidlah all Islamic structures are manifested, both aspects of worship, morals, and muamalah, including the development of science, culture and civilization. The concept of monotheism is of course taken from the conventional Islamic formula "La Ilaha Illallah" which means "there is no God but Allah". This sentence is the most fundamental principle in Islamic teachings, and in relation to the integration of science, has become the most important principle of the principles of Islamic epistemology, so that it has become the unifying principle or the basis for the integration of human science. (Mulyadi Kartanegara, 2005: 32).

Tauhid in a transformative manner has an integrated relationship with various aspects of life, especially with the development of science. In this case, the role of tauhid in the integration of science is divided into three aspects, namely:

1) Tauhid Integrating Aspects of Ontology (Science Source)

Tawheed can be understood as an effort to integrate or unify or to see that in essence all sources for the development of knowledge itself, and come from Allah SWT. The sources that come from Allah SWT are in the form of the verses of the Qur'an (revelation) which are the verses of Allah (see Q.S. al-Anfaal: 2 and al-Baqarah: 106); *kauniyah* verse or laws that exist in the universe (see Q.S. Ali-Imran: 190 and al-An'aam: 126); *insaniyah* verses or laws in society / social phenomena (see Q.S. ar-Ruum: 21); mind and conscience (see Q.S. an-Nahl: 78 and Fushilat: 53).

2) Tauhid Integrating Epistemology Aspects

Tauhid also unites aspects of the method or steps in scientific research. Based on the nature and method of work, the research can be divided into five types, namely:

First, research of *bayani* or *ijtihadi*. Namely, research aimed at exploring the teachings or laws contained in the Qur'an regarding various lives: faith, worship and law; the world and the hereafter, material and spiritual, individual and social, physical and spiritual, with very broad details. Second, *ijbari* or *tashkhiri* research is carried out by observing and exploring the secrets contained in the universe, so that its laws, properties, and wisdom are known to be compiled into

science. Third, *burhani* research is a study of human behavior in various aspects. Fourth, *jadali* research is a study of everything in terms of its essence, concept or soul, which is carried out using reason (logic) which is carried out in a deep, radical, universal, systematic and speculative way, namely looking to the limit that cannot be reached anymore. Fifth, *irfani* research, which is research that uses the conscience (*al-qalb*) and the inner eye (*al-fu'ad* or *al-af'idah*) by cleansing it through repentance, *zuhud*, patience, sincerity, *tawakal*, *muraqabah*, *mahabbah*, and *liqa Allah*.

3) Tauhid Integrating Axiological Aspects

Tauhid (faith) is closely related to safety, peace, prosperity and trustworthiness. This implies the need for moral responsibility from science, namely that science which is built on the basis of faith is knowledge devoted to realizing world peace, security, prosperity, and inner and outer happiness. (Abuddin Nata, 2018: 108-114).

2. Models of Science Integration

Actually the idea of the Islamization of science originated from the thought of M. Naquib al-Attas, a contemporary Muslim scholar who emphasized the importance of the Islamization of education, science and science which he expressed at the First World Islamic Education in 1977 in Mecca which was attended by around 313 scholars from the Islamic world. (Rosnani Hasyim and Imran Rossidy, 2000: 44). Al-Attas is of the view that Islamization does not mean totally rejection of the West, because at a certain level there are similarities between Islam and the West, especially those related to the sources and methods of science, the same way of knowing things that are rationalistic and empirical, a combination of realistic, idealistic and pragmatic as a foundation, philosophy of science and its processes. The root of the problem between secularization and the Islamization of science is based more on the basis of metaphysical ontology and sources of knowledge. For al-Attas, revelation is a source of knowledge in addition to the five senses and reason. Revelation is a source of knowledge about reality and ultimate truth and revelation becomes a metaphysical framework for exploring the philosophy of science that states truth and reality from the point of view of rationalism and empiricism (Naquib al-Attas, 1989: 9).

The model referred to here is an example, for example, the shape and size that have been standardized and fixed, then used as a reference, or pattern in forming something. The integration of science as explained above is an effort to find a point of equality in the source area (ontology), method (epistemology) and benefits (axiology) of the science. The points of these equations are then used as a bridge to integrate. An example: in jurisprudence about the chapter on purification, for example, one finds a discussion about water. Furthermore, in physics also discussed about water. Therefore, jurisprudence and physics can integrate with each other. Fiqh discusses in terms of the law, while physics is in terms of water matter. Likewise, health and jurisprudence can also meet each other. For example, in order for the disease to be cured, you must take medicine, the law of medicine to be eaten is a matter of jurisprudence, while the type of medicine is a matter of health sciences.

The following will describe some of the models for integration of knowledge put forward by several Muslim scientists:

1) Integration of Knowledge through the Purification / Islamization Model of Science (Al-Faruqi and Muhammad Naquib al-Attas)

The integration of knowledge with the purification model (cleansing) of knowledge or the Islamization of knowledge was initiated by two figures, namely Islamil Faruqi and Muhammad Naquib al-Attas. For al-Faruqi, as stated by Muhaimin, the approach used is by recounting the entire treasury of Western knowledge in an Islamic framework which in practice is nothing more

than an attempt to rewrite textbooks in various disciplines with the insight of Islamic teachings. According to Muhaimin, that the idea of al-Faruqi can be categorized into a purification model, this can be achieved in four steps: (1) mastery of Muslim scientific treasures; (2) mastery of contemporary scientific treasures; (3) identification of scientific deficiencies in relation to Islamic ideals; and (4) reconstructing these sciences so that they become an amalgamation of harmony with Islamic ideals and insights (Muhaimin, 2010: 331).

Muhammad Naqui al-Attas said that the biggest challenge faced by Muslims today is the challenge of knowledge, not in the form of ignorance, but knowledge that is understood and spread throughout the world by Western civilization. According to al-Attas, there are at least two steps, namely: first, Western knowledge must first be cleaned of elements that are foreign to Islamic teachings, then formulate and integrate essential Islamic elements into key concepts. thus producing a composition that summarizes the core knowledge. This can be done by cleansing from the secularistic view that separates religion from mundane affairs and science, especially insights that are transcendental, metaphysical, spiritual, moral and belief in God. Then it is cleared from an anthropo-centered view (relying solely on the senses and reason and human effort) which is equipped with theo-centered, eliminating liberalism by including the notion of having to submit to God's rules; and cleared from the viewpoint of positivism and empiricism solely, namely, which considers that what exists is only what can be observed, observed, touched, seen, weighed, measured, calculated and quantified; by incorporating metaphysical, transcendental, occult, spiritual and moral elements.

Second, eliminating the mythical element from science, namely belief in something that does not make sense and cannot be based on convincing evidence; eliminating elements of khurafat, bid'ah, and superstition as possessed by primitive societies. In this way, science will be filled with tawhid, which is the belief that the universe and everything in it that is the object of knowledge are the verses of Allah SWT or evidence of His power, which leads every scientist to get closer to Allah, know, love and feel the greatness of Allah SWT.

Thus, the purification or Islamization of science can be understood as an effort to rebuild the spirit of Muslims in knowledge, to develop it through freedom of intellectual reasoning and empirical rational study or the spirit of scientific and philosophical development (scientific inquiry) and philosophy which is a manifestation of concern, loyal commitment to fundamental doctrines and values contained in the Koran and as-Sunnah (Abuddin Nata, 2018: 290).

2) Integration of Science through the Islamic Modernization Model

The integration of science through the Islamic modernization model departs from the concern for the underdevelopment of Muslims in the world today, which is caused by pettiness in thinking, ignorance and closeness in understanding the teachings of their own religion, so that the Islamic education system and science are left behind against the advances achieved by the West. Therefore, the Islamization of science offered by the Islamic modernization model is to build the spirit of Muslims to always be modern, advanced, and progressive, and continuously strive for improvements for themselves and their communities so as to avoid backwardness and being left behind in the science and technology field. The Islamization of knowledge for modernists means building the spirit of Muslim scientists to be flexible, open, scientific, rational, dynamic, and progressive in developing science and technology, without hesitating for transformation. Accommodation, or even the adoption of the thoughts and findings of science and technology, as well as the modern education system originating from non-Muslims, in order to catch up and achieve Islamic progress itself, without leaving a critical attitude towards the negative elements of the modernization process (Abuddin Nata, 2018: 290).

3) Integration of Science through the Neo-Modernism Model

The integration of science or the Islamization of science through the Noe-Modernism model is based on the following methodology: (1) contemporary problems of the ummah must be sought for explanations from tradition, from the results of *ijtihad* by previous scholars to the *sunnah* which is the result of interpretation of the *Koran*; (2) if the tradition does not find anything that is in accordance with the guidance of contemporary society, then further examining the socio-historical context of the verses of the *al-Qur'an* which is the target of the *ulama's ijtihad*; (3) through historical analysis will reveal the true moral message of the *Koran*, which is the social ethics of the *Qur'an*; (4) from the social ethics of the *Qur'an*, it was then revealed in the context of the people today with the help of the results of careful studies of the problems faced by the people; (5) the function of *al-Qur'an* here is evaluative, legitimate to provide moral grounding and direction for the problems to be overcome. (Muhaimin, 2010: 339-341).

4) Integration of Science through Fazlur Rahman's Model

The integration of science through Fazlur Rahman emphasizes more on the axiological aspect or the use of science, not on the ontology and axiology, or on the mental, spiritual, transcendental, and morality aspects, but on the people who use it. That is, there is nothing wrong with science, what is wrong is its use. For example: the atom science has been discovered by Western scientists, then use it to be electric power and then they create the atomic bomb. Now the making of the atomic bomb is still being made and even used as a competition. Scientists then anxiously find a way to stop the manufacture of this powerful weapon (Fazlur Rahman, 2000: 57-58).

5) UIN Syarif Hidayatullah: *Interaction of Open and Dialogical Science*

According to Azyumardi Azra (Azra, 2006), there are a number of important rationale for the change of IAIN Jakarta to UIN. The most basic argument is that the dichotomy between religious and general education that has been practiced in Indonesia has created inequality and injustice from various aspects of life, social, political, and economic. Among other things, IAIN which has focused on "religion only" education has not been able to play a significant role in the academic, bureaucratic or social world at large, and its graduates are known to be only preaching-oriented. In addition, in terms of sharing and budget allocation, there is a huge imbalance between public universities and Islamic religious colleges. For example, the budget for 14 IAINs throughout Indonesia is almost equivalent to the budget for one Medical Faculty UI. Furthermore, according to Azra, the IAIN curriculum has not been able to respond to the very rapid development of science and technology with an increasingly complex social structure. This dynamic must be addressed by UIN Jakarta through the development of interdisciplinary and multidisciplinary methodologies, which allow dialogical interactions to occur, borrow and assimilate, and create new knowledge. With the opening of general science faculties, UIN Jakarta can accelerate the integration of its knowledge without theological hindrance and move to strengthen academic traditions and be projected to produce new sciences (Kemendiknas, 2019).

6) UIN Sunan Kalijaga Yogyakarta: *Integration of Interdisciplinary and Multidisciplinary Knowledge with a Spider Web Approach Scheme*

The change from institute to university was carried out as an effort of UIN Sunan Kalijaga Yogyakarta to proclaim a new intellectualism or paradigm in seeing and conducting studies on religious sciences and other sciences, which is better known as the integration-interconnection paradigm. In this case, Amin Abdullah carries the integration-interconnection paradigm which is an open science paradigm that provides space and opportunity for interaction between various religious and general disciplines, so as to produce science that is relevant to the demands of the times that does not trigger conflicts with one another. By using four empirical cases in Indonesia,

Amin Abdullah, concluded that it is necessary to raise a paradigm of integration and interconnection which he symbolizes by the spider web of science (the spider web of science) in which religion and general science greet each other and complement each other in building civilization mankind (Abdullah Amin, 2012).

7) UIN Maulana Malik Ibrahim: *Integration of science with the symbolization of the Tree of Science*

UIN Malang tries to eliminate the dichotomy of science and reconstructs the paradigm of science by placing religion as the basis of knowledge, where the building of the structure of science is based on the universality of Islamic teachings. Imam Suprayogo carries the paradigm of integration with the metaphor of the Tree of Science which means that if a tree grows and develops, so will science. If a tree develops, branches and has branches, so is science. Suprayogo made the Al-Quran and Hadith as the foundation for the whole educational process. With this paradigm, the development of science does not only come from scientific methods through logical reasoning such as observation and experimentation but also from the Koran and Hadith (Imam Suprayogo, 2006: 49-59).

8) UIN Sunan Gunung Djati Bandung: *Integration of Science with the symbol of the Wheel of Science with the principles of Revelation Guiding Science*

The integration of science is described by UIN Sunan Gunung Djati Bandung as a dynamic rotating wheel with components in it which include the wheel axle as the central point of the power of human reason which comes from divine values. The wheels or bars illustrate the very diverse branches of science, but all of them still pivot on divine values and finally the tires made of rubber, as a picture of the reality of life that is inseparable from divine values and scientific studies (Kemenag, 2019).

9) UIN Alauddin Makassar: *Integration of Science with the symbol of the House of Civilization*

The illustration of the philosophy or model of integration of science with the metaphor of 'House of Civilization' at UIN Alauddin Makassar is inspired by the local treasures of the people of South Sulawesi which are known to have unique and distinctive traditional house forms and philosophies, and are encouraged by the vision of UIN Alauddin as 'the center of enlightenment and knowledge transformation. and Islamic civilization-based technology'. Each element in the construction of the 'House of Civilization' is described as follows: (1) its foundation represents the Koran and Hadith; (2) the pillars are religious values and local wisdom; (3) the floor and the courtyard are manners; (4) the walls are applicable science and technology; (5) the windows symbolize openness, insight and broad views; and (6) the roof is brotherhood and egalitarianism, as well as a reflection of a moderate, tolerant and inclusive attitude. Meanwhile, the prerequisites for a 'House of Civilization' are a discipline, integrated science, knowledge that is applicable and useful for humanity (Kemenag, 2019).

10) UIN Sunan Ampel Surabaya: *Integration of Knowledge with the symbol of the Twin Towers Connected to the Bridge*

UIN Sunan Ampel Surabaya seeks to build a scientific structure that allows religious and social sciences to develop simultaneously and adequately, where the status of religion and other sciences are equal, equally strong without anyone feeling superior to others. Through this integration, UIN Surabaya hopes to produce graduates who are *ulul albab*, who are able to integrate *dhikr* practices and the ability to think in everyday life. The bridge symbolizes that in the development of the religious sciences and other sciences simultaneously, it is possible for both of them to be able to interact with each other mutually. The bridge has another symbolic function,

namely the interaction between the religious sciences and other sciences to enrich the tradition of both scientific construction (Kemenag, 2019).

11) UIN Walisongo Semarang: *Integration of Science is denoted as Diamond Science*

UIN Semarang believes that all knowledge is basically one unit that comes from and leads to Allah Almighty, through His revelation. Therefore, all knowledge must lead to one goal that can bring the student closer to Him (Kemenag, 2019).

3. Science Integration Strategy

There are several steps for the integration of religious and general sciences that can be used as follows:

1) Science Integration through the Curriculum

The idea of integrating religious and general sciences through curriculum, among others, was put forward by Dede Rosyada, using a curriculum concept from Ronald C. Doll in his book *Curriculum Improvement, Decision Making and Process* published by Allyn and Bacon, Boston, 1951 which states that curriculum is not only the set of materials to be studied and the sequence of lessons that students and students must take, but the entire experience offered to them under the direction and guidance of the school or campus, provides an opportunity to integrate religious and general sciences. Dede Rosyada said that "if they aspire to become experts in pharmacy, then all branches of pharmacy must be studied properly", as well as other skills (Dede Rosyada, 2016: 50).

Then Dede Rosyada also offered a model for the shared curriculum (quote Fogarty's opinion, 1991:62) which is a curriculum like binocular binoculars, which includes two disciplines in one learning design. In the context of the integration of science and religion, this model includes elements of science in pure religious subjects such as faith, worship, and morals, or vice versa incorporates religious elements in scientific professional courses.

In addition, Dede Rosyada also offers a third model called the integrated model, which integrates several scientific disciplines to form one concept, skill and attitude. This model has implications for the preparation of learning designs that are carefully analyzed by a team of teaching lecturers (Dede Rosyada, 2016: 55-58).

2) Integration of religious studies and general science through syllabus

Dede Rosyada said that the model chosen was to include several religious subjects in the curriculum. The composition of religious subjects is given at each level. However, this model is still constrained by the scientific tradition in Indonesia where each study program is controlled by scientific associations or professional associations which strictly maintain the minimum standards that must be met by each study program. However, according to Dede Rosyada, we must look for a different form of integration that does not interfere with the competency standards of the study program, but is still able to fulfill the mission of integrating religion in science, social and humanities (Dede Rosyada, 2016: 61).

3) Science Integration through team teaching

Namely as a learning activity in which two or more lecturers are responsible for one course which is attended by a large number of students in the form of a class that is larger than the average class in general. In addition, team teaching can also be defined as a teaching activity by bringing together several focus discussions from several lecturers in one subject, including combining several specializations or methodologies (Dede Rosyada, 2016: 65). In its implementation, team teaching can be done by complementing and complementing each other. The steps taken include: (1) searching for courses to be taught by means of team teaching, for example, fiqh subjects; (2) contacting the lecturers who will join the teaching team; (3) the

lecturer who has been determined in the teaching begins to discuss the subjects to be taught together; (4) dividing the time proportionally to each class teaching and learning activity.

- 4) Religious integration can also be done in a way, a student is asked to write a paper or article on a certain topic using a religious science approach and a modern science approach

This can be done by: (1) determining the topics to be discussed; (2) sources that will be used in the discussion; (3) the paper, page and font size that must be used; (4) the characteristics of the discussion are synthetic dialectic, namely not only seeking justification from the al-Qur'an and as-Sunnah but also finding new original concepts and according to findings; (5) conduct a comprehensive, objective, and holistic analysis.

- 5) Knowledge integration can be done by inviting experts in various fields of different disciplines to write books with specific themes

In this connection, for example, there is a book entitled "Insan Kamil" which was edited by Dawam Raharjo, and published by Pustaka Grafitipers, in 1987, containing writings about humans from various perspectives, namely in terms of philosophy, Sufism, humanism, and sociology (Abuddin Nata, 2018, 305). This is a concrete example of efforts to integrate religious and general knowledge using a neo-modern approach, as mentioned above.

4. **Benefits of Science Integration**

The integration of science is very beneficial for human life, for several reasons as follows: (1) To overcome a lame culture. Muslims tend to prioritize religious knowledge; while the general public tends to prioritize general science, as a result they are equally lame. To advance in a balanced manner, science integration can be carried out. (2) With the integration of knowledge, a scientist will not only progress intellectually and socially, but will also progress morally, spiritually, culturally and so on. (3) With the integration of knowledge the various scattered forces can be united (Abuddin Nata, 2018: 297).

Conclusion

In the structure of Islamic teachings, monotheism occupies a very strategic main position. Tauhid underlies all the building of Islamic teachings in terms of faith, worship, morals, and muamalah. Tauhid in a transformative manner has an integrated relationship with various aspects of life, especially with the development of science.

The science integration model is a pattern, measure or standard that is standardized and programmed in integrating one science with another, so that even though the names of these sciences are different, each one integrates with one another. Then, through their hard work, experts have tried to offer various models of science integration based on the results of their in-depth studies, and each of these integration models has advantages and disadvantages and therefore can complement each other. As in practice in several Islamic higher education institutions, especially at State Islamic Universities, each of which has different characteristics and models of science integration.

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