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Research Article

The Islamic World's Perspective on the Development of Modern Science

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Abstract. In responding to the dynamic development of modern science, the Islamic worldview has a crucial role that offers unique perspectives and valuable contributions in initiating and shaping the direction of modern knowledge progress. The research aims to see how much the Islamic worldview has influenced modern science. The research focuses on the Islamic concepts, values, and principles that can be found in the development of modern science, as well as how modernization in an Islamic context can proceed in line with religious values. The results show that the Islamic worldview has contributed significantly to the development of modern science, primarily through rationalization that

encourages critical thinking and abandoning taqlid in action. Although often associated with modernity, this study asserts that modernization in Islam does not contradict the basic teachings of the religion as long as Islamic values remain the leading guide. The method used in this research is a literature review.

Keywords: Modern Science; Islamic Views; Integration of Science

INTRODUCTION

The Islamic worldview has a significant role in the development of modern science. The long history of Islamic civilization has made an invaluable contribution to the formation of the foundations of science and important discoveries that define our modern world. Since its development in the 7th century AD, Muslims have made science an essential element in their lives. They developed a sophisticated educational system, translated Greek and Roman classical works, and advanced various branches of science, including mathematics, astronomy, medicine, chemistry, and philosophy. Their books became a window into the knowledge of the ancient world, which ultimately became the basis for the development of modern science (Makhmudah, 2017).

The development of Islamic science not only had an impact on the Muslim world but also brought significant changes to all human civilization. Much of the knowledge discovered by Muslim scholars was integrated into the global scientific heritage, and its influence can be seen in modern science, technology, and culture. The idea of harmony between religion and science, as well as the view that scientific discovery is a way to get closer to Allah, has encouraged Muslim scholars to pursue knowledge (Nuryanti & Hakim, 2020). This is because, in the Islamic view, everything is permissible in principle unless there is a firm argument that makes it haram. Islam provides guidance for using science and technology wisely and responsibly (Fauzi & Chudzaifah, 2019).

However, Muslims are faced with various challenges in facing developments over time. One of them is how to integrate modern science with Islamic religious principles (Ali, 2016). This is important because modern science often has the potential to conflict with Islamic religious beliefs. This challenge encourages the need to find ways to harmonize modern science with Islamic religious beliefs without conflict. Apart from that, social changes triggered by technological developments, globalization, and popular culture also bring new challenges to Islamic education.

However, within these challenges, there are opportunities to deepen understanding of the relationship between science and the Islamic religion. Science integration is a paradigm that seeks to unite science with religion so that the two can complement each other (Nuryanti & Hakim, 2020). This is an opportunity to develop concepts and thoughts that can help bridge the gap between modern science and Islamic religious values.

In the turbulent digital era, improving the quality of educational human resources, improving technological infrastructure, and utilizing digital-based learning media are the keys to overcoming the challenges of Islamic religious

education. By taking these steps, contemporary Islamic education can play an influential role in forming a generation that is competent, moral, and ready to face a future full of change (Nuryanti & Hakim, 2020). This can also ensure that Islamic education remains relevant and plays a role in advancing society in the digital era.

In this case, we will discuss the influence of the Islamic worldview in the development of modern science. Starting from the history of the relationship between Islam and modern science, contemporary issues in science and Islam, criticism of modern science, integration of science and Islamic values, and challenges and solutions for the Islamic world in the digital era.

RESEARCH METHODS

This research method uses a literature review approach to understand the research theme. Researchers systematically collect data from various sources, including scientific journals and expert discussions. Careful selection of literature was carried out at the data collection stage with a focus on credibility and relevance. Data analysis uses interpretation techniques involving identifying patterns and relationships between information by referring to relevant theories. The results of the analysis are presented with adequate explanations, outlining the implications of the findings for the problems studied and building a deep understanding of the theoretical context.

RESULTS AND DISCUSSION

History of the relationship between Islam and modern science

Islam emerged on the Arabian peninsula in the 6th century AD. Even though it initially faced cultural challenges because it came from a nomadic society that was less civilized and frequently migrated, Islam later attracted the attention of historians with its rapid spread. In a period of about 23 years, Islam was embraced by half the world's population. By the end of the 20th century, this religion had become one of the largest religions in the world, with more than one billion adherents spread across various regions of the world, especially in Asia and Africa (Harahap, 2020).

Islam, which involves its historical journey from the 6th century AD to the early 21st century AD, experienced ups and downs, which historians recorded into three periods. The initial stage is known as the classical period (650-1250). At this time, Islamic rule spread from Spain to mainland China. The peak of intellectuality is reached with an in-depth interpretation of the Koran and Hadith and an understanding of natural phenomena. After that, the middle period (1250-1800) emerged, where Islamic rule experienced political disintegration, and intellectuals experienced a decline with a shift in focus from pen to weapons, brain to brawn, and a reduction in interest in books. Furthermore, in the modern period (1800-now), areas previously controlled by Islam were seized and controlled by foreign nations, and intellectual development was influenced by advances in science and technology from outside (Makhmudah, 2017).

The birth of science in Islam is rooted in an intellectual tradition that cannot be separated from primary sources such as the Koran and the interpretations given by the Prophet. Suppose we categorize the birth of science in Islam into periods. In

that case, the stages can be described as follows: (1) Acceptance of revelation and evolution of the Islamic way of life, (2) Alignment of the structure of science with the teachings of the Qur'an and al-Hadith, (3)) The development of scientific traditions in Islam, and (4) The emergence of various scientific disciplines in the Islamic tradition. Furthermore, modern science refers to various branches of knowledge and research that have developed since the beginning of the Age of Enlightenment (17th to 18th centuries) until today. The main characteristics of modern science are research methods based on observation, hypothesis testing, experimentation, and data analysis carried out in a structured manner. Modern science is also known for its empirical approach, which focuses on empirical evidence that can be measured, tested, and replicated. According to Syed Naquib al-Attas, modern Western science, which is manifested in its worldview, is built on the basis of the intellectual and psychological vision of Western culture and civilization. In his view, there are five factors that shape Western culture and civilization: (1) Using reason as a guide for humans, (2) Having a dualistic concept of reality and truth, (3) Highlighting existential aspects that tend towards a secular view of life, (4) Supporting the doctrine of humanism, and (5) Emphasizing the significance of drama and tragedy as the main elements in human nature and existence (Makhmudah, 2017).

The relationship between Islam and modern science is often related to the idea of modernity. Furthermore, modernization does not have to be seen as something that should be fundamentally opposed as long as it remains rooted in Islamic teachings. Islam is a universal religion that does not hinder human development progress as long as Islamic principles are adhered to firmly. In the Islamic context, what must be avoided is Westernization, namely the total adoption of a Western lifestyle that is often dominated by secularism, which is often associated with atheism, and secularism is considered the root of the problem of morality. The essence of modernization, which aligns with Islamic religious principles, is rationalization, namely efforts to guide human behavior through rational considerations and judgments. This rationalization process will encourage Muslims to be critical and abandon taqlid (blind plagiarism), which is often criticized in the Islamic tradition. Thus, fundamentally, modernization does not conflict with the basic principles of the Islamic religion as long as it adheres to Islamic values (Harahap, 2020).

Contemporary Issues in Science and Islam

Education is a process that provides positive impacts and important values for human survival (Robiatul & Baharun, 2018). This process is the main element in efforts to develop thinking abilities and potential possessed by individuals, which in turn produces work, feelings, and determination. Basic Islamic education is an essential need to achieve interests and goals based on Islamic values. Islamic education leads to an educational process that originates from the basic principles and values contained in its basic sources, namely the Al-Qur'an and As-Sunnah (Akmansyah, 2015). This is a process that directs human growth in physical, intellectual, language, behavioral, social, and religious dimensions with the aim of achieving goodness. Contemporary Islamic education is a planned and systematic

effort to maximize students' potential by referring to the principles of the Islamic religion in the current context (Santosa & Rosnaeni, 2021). The goals of contemporary Islamic education must be in accordance with the goals of national education, which are based on Pancasila, the 1945 Constitution of the Republic of Indonesia, national cultural values, and responses to changing times.

Contemporary issues in science and Islam are the subject of in-depth discussion in the context of an ever-changing world. The main issue in this discussion is the relationship between modern knowledge and the principles of the Islamic religion. One of the main issues is how to combine scientific understanding with Islamic religious beliefs without conflict. Education also plays an important role in this understanding. How science is taught in religious education and efforts to integrate science into Islamic understanding are important aspects of pursuing harmony between science and religion. In addition, social changes triggered by technology, globalization, and popular culture have brought new challenges to Islamic identity. This is influenced by a number of external (from within) and internal (from outside) factors.

Several main aspects that influence Islamic education are internal factors. First, educational orientation has experienced significant changes, where education tends to emphasize pragmatic aspects, such as the needs of the job market, which obscures the orientation towards the cultural, moral, and social movement foundations of Islam (Robiatul & Baharun, 2018). Second, curriculum issues involve a change in approach that emphasizes understanding, meaning, and motivation in the Islamic religion rather than memorizing texts. This also involves changes in ways of thinking and developing curricula that better involve stakeholders, such as teachers and the community. Third, learning approaches and methods are still trapped in conservative methods that do not encourage students to think actively. Fourth, professionalism and quality of human resources (HR) in education are still serious problems. Even though the number of teachers is sufficient, their quality and professionalism still need to be improved. Lastly, the issue of education costs has not been properly met, even though regulations have set a minimum allocation of funds for education. The biggest problem in Islamic education is caused by the first external factor, namely "dichotomy" (Santosa & Rosnaeni, 2021). Dichotomy occurs in various aspects, such as the separation between Religious Science and General Science, between Revelation and Reason, and between Revelation and Nature. This dichotomy problem has been the subject of long-standing debate, and its symptoms began to emerge in the Middle Ages. At that time, there was a competition between law and theology to get the title of the most important science. The second external factor is the "Certificate Oriente," which reflects changes in the spirit of learning in the world of Islamic education. In the early days of Islam, the enthusiasm of the ulama to seek knowledge was driven by the pursuit of truth and the search for hadith, which required long journeys and risks. They look for teachers in various places for knowledge. However, currently, there is a tendency towards orientation towards certificates or diplomas alone. Seeking knowledge is no longer about the pursuit of in-depth knowledge but rather focuses on obtaining certificates. The enthusiasm for

learning and the quality of knowledge are priorities that receive little attention (Robiatul & Baharun, 2018).

Criticism of Modern Science from an Islamic Perspective

Investigating critical views on modern science from an Islamic perspective is an effort to question and evaluate the implications and impact of these thoughts in an Islamic context. In this process, it is important to understand that criticism of modern science does not aim to reject or oppose modern science as a whole but rather is a form of dialogue between Islamic scholarship and the modern scientific paradigm. Among several aspects of modern science, materialism, and secularism are things that are often criticized. This is because materialism and secularism can be seen as views that encourage a focus on absolute truth and an excessive emphasis on individualism rather than morality and religious values.

Materialism is an orientation that prioritizes material possessions and physical pleasures over spiritual or spiritual values. Kasser and Ahuvia argue that individuals who tend to be materialistic often become someone who is selfish and care less about the surrounding environment (Muttaqin et al., 2019). Buya Hamka, in the book *Tafsir Al-Azhar*, considers that materialism is a view that has the potential to ignore social justice, moral values, and concern for human welfare. Materialism in society results in a low sense of social solidarity due to thinking that only focuses on material values, a lack of cooperation in thinking, dialogue, and discussion, and encourages an attitude of individualism which causes arrogance and arrogance, thus having a negative impact on various aspects of social life (Khudzaifah et al., 2022). Therefore, materialism can threaten social solidarity, moral values, and social justice, so a balance is needed between material and spiritual values to create a more harmonious society.

Along with the progress of modern science, Islam has faced various challenges that have raised questions about the extent to which the principles of secularism are in line with or contrary to Islamic teachings. In the view of some critics of Islam, secularism is considered an ideology that can separate religion from the realm of science and public policy. It is feared that this separation could lead to the neglect of religious values in decision-making and the development of science that pays less attention to ethics and morals (Fata & Noorhayati, 2016). To overcome this understanding of secularism, Syed Naquib Al-Attas argues that the Islamization of science or "Islamization of Contemporary of Present Day Knowledge" is a necessary action. There are three main approaches to the Islamization of science. First is the liberation of humans from the influence of ideology and the perspective of secularism. Second, is the de-westernization process, which includes the separation of the main elements and concepts that created Western civilization and culture, and the third is integration, which includes the incorporation of key Islamic concepts and elements in various relevant branches of contemporary science (Sahidin, 2022).

In the Qur'an, there are guidelines for using scientific reasoning and observation in understanding the universe as signs of Allah's power. Islam supports the exploration and development of science and technology for human welfare as long as these efforts are carried out within the framework of good values and spiritual

transcendence (Fauzi & Chudzaifah, 2019). Therefore, criticism of aspects of modern science from an Islamic perspective must continue to be carried out to ensure that knowledge and its use are in line with religious values, morality, and the guidance and guidelines set by Allah SWT.

Integration of Science and Islamic Values

Science integration is a new paradigm in science that seeks to unite science with religion. This paradigm emerged as a response to the secularization process occurring in the West, which led to the separation of science and religion. The aim is to produce knowledge that is useful for humans but does not conflict with religious teachings (Subari et al., 2018).

In Islam, religion and science complement and support each other. Science is needed to understand religion, and religion is needed to provide direction and purpose for science. Therefore, it is important to study both together in order to achieve a comprehensive understanding of the world. Previous Muslim scientists have provided good examples of the importance of integration between religion and science. They master various scientific disciplines, including religious sciences and general sciences. This shows that integration between these two things can produce significant progress in the field of science (Mahrisa, 2022).

The earliest Muslim scientists mastered a wide range of disciplines, including religious and general sciences. This shows that they understood the importance of integration between religion and science. The Qur'an and hadith contain many verses and hadith related to science. This shows that Islam encourages its followers to study science.

Religion and science complement each other, need each other, and do not conflict. This integration can be seen in religion, which provides goals and morality for the development of science, while science provides an understanding of the universe and ways to solve problems (Sarbaini et al., 2022).

Islam encourages its followers to continue learning, including learning about nature. In Islam, the integration of science and religion are two fundamental things that are interrelated and complementary. Integrating science and religion can help humans face the challenges of the times and understand the existence and power of Allah SWT (Hidayat & Mulyono, 2019).

Integrating science has several benefits, including:

- a) Increasing human understanding of the world in a more comprehensive manner, both in terms of physical and spiritual aspects.
- b) Helping scientists develop science that is beneficial to mankind in accordance with religious teachings.
- c) Preventing the misuse of science, such as for military purposes or exploitation of nature.

Challenges and Opportunities for the Islamic World in the Digital Era

The main challenge in Islamic religious education is that the level of quality of education is still low, which has an impact on the quality of Human Resources (HR) of Muslims. The lack of initiative and commitment of Muslims in linking science with

the progress of the times has resulted in low enthusiasm for pursuing scientific knowledge. The Islamic education system is often managed separately by government agencies such as the Ministry of Religion and the Ministry of Education and Culture, which face challenges in the digital era (Aziz, 2022).

Education today is often considered only as an effort to prepare the workforce without adequate attention to social and moral aspects. The focus of education on developing technical skills and practical expertise often means that moral and social interests are neglected. Education should be about creating not only technically skilled workers but also citizens with moral values and social concerns. Apart from that, a weak understanding of information and communication technology is also a serious challenge.

Education must strengthen the understanding and application of information and communication technology so that students are ready to face the demands of an increasingly digitalized world. Therefore, there is a need for a paradigm shift in the education system to ensure that not only aspects of technical skills are considered but also the formation of character, morality, and mastery of information technology. Holistic and comprehensive education will help create a generation that is not only economically productive but also has moral integrity and is able to face the technological challenges of the future. The main challenge in Islamic religious education is that the level of quality of education is still low, which has an impact on the low quality of Human Resources (HR) of Muslims. The lack of initiative and commitment of Muslims in linking science with the progress of the times has resulted in low enthusiasm for pursuing scientific knowledge. The Islamic education system is often managed separately by government agencies such as the Ministry of Religion and the Ministry of Education and Culture, which face challenges in the digital era (Aziz, 2022). Education is considered only as preparation for the workforce, ignoring social and moral needs, as well as a weak understanding of information and communication technology.

According to Abdul Aziz (2022), solutions to this challenge include:

- a. Islamic religious educators need to improve the quality of human resources to optimize the use of resources and compete in the competitive world of education.
- b. Improvements to digital technology-based infrastructure are needed so that Islamic religious education can respond to the challenges of globalization.
- c. The use of digital and internet-based learning media is important to improve the quality of learning, considering that the current generation is very familiar with technology.

CONCLUSION

The Islamic worldview has had a significant influence on the development of modern science. This research explains that the Islamic worldview has contributed to the development of modern science in various aspects, including understanding rationalization, empirical approaches, and emphasis on moral values in the context of science. The Islamic worldview has also played an important role in encouraging intellectual criticism and emphasizing the importance of reason in the process of developing modern science. This research shows that the relationship between Islam

and modern science is complex, but in many cases, the Islamic worldview has been in line with the values that drive the development of modern science. Thus, the influence of Islam on modern science is not something that can be ignored, and further study of this relationship will provide deeper insight into the evolution of science in the Islamic world and beyond.

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