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Towards Tawhidic Oceanography: An Islamic Epistemological Framework for Marine Science

Menuju Oseanografi Tauhidik: Kerangka Epistemologi Islam untuk Ilmu Kelautan

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Abstract

Modern marine science is often shaped by a positivistic paradigm that separates scientific inquiry from ethical and spiritual values, contributing to ecological exploitation and environmental degradation. This study aims to reconstruct the epistemological foundation of oceanography through an integrative Islamic framework combining Bayani (revelation), Burhani (empirical-rational inquiry), and Irfani (spiritual-intuitive insight). Using a qualitative philosophical approach based on library research and critical-constructive analysis, this study examines the limitations of secular scientific ontology and proposes the concept of "Tawhidic Oceanography." The findings reveal that the integration of empirical, normative, and spiritual dimensions produces a more holistic understanding of marine science, where the ocean is viewed simultaneously as an ecological system, a divine trust, and a manifestation of God's signs. The study contributes an operational epistemological model for integrating scientific rigor, ethical responsibility, and spiritual awareness within marine research and education.

Keywords: Tawhidic Oceanography; Islamic Epistemology; Philosophy of Science; Marine Ethics; Knowledge Integration

Abstrak

Ilmu kelautan modern umumnya dibangun di atas paradigma positivistik yang memisahkan penelitian ilmiah dari nilai etis dan spiritual, sehingga berkontribusi pada eksploitasi ekologis dan degradasi lingkungan laut. Penelitian ini bertujuan merekonstruksi landasan epistemologi oseanografi melalui kerangka Islam integratif yang menggabungkan Bayani (wahyu), Burhani (rasional-empiris), dan Irfani (spiritual-intuitif). Dengan pendekatan filsafat ilmu kualitatif berbasis studi pustaka dan analisis kritis-konstruktif, penelitian ini mengkaji keterbatasan ontologi sains sekuler serta menawarkan konsep "Oseanografi Tauhidik." Hasil penelitian menunjukkan bahwa integrasi dimensi empiris, normatif, dan spiritual menghasilkan pemahaman ilmu kelautan yang lebih holistik, di mana laut dipandang sebagai ekosistem, amanah ilahiah, sekaligus manifestasi ayat-ayat Tuhan. Penelitian ini menawarkan model epistemologis operasional yang mengintegrasikan ketelitian ilmiah, tanggung jawab etis, dan kesadaran spiritual dalam riset dan pendidikan kelautan.

Kata Kunci: Oseanografi Tauhidik; Epistemologi Islam; Filsafat Ilmu; Etika Kelautan; Integrasi Ilmu

INTRODUCTION

The ocean covers more than 70 percent of the Earth's surface and plays a vital role in sustaining human life. However, the 21st century has witnessed alarming degradation of marine ecosystems, ranging from rising sea temperatures and ocean acidification to overfishing. In Indonesia, as the world's largest archipelagic state with marine territory comprising two-thirds of its sovereign area, this condition has become increasingly critical and demands serious attention.[1] Data from the Ministry of Marine Affairs and Fisheries (KKP) in 2023 indicate that approximately 35% of Indonesia's coral reefs are in damaged to severely damaged condition.[2] Furthermore, studies by the National Research and Innovation Agency (BRIN) show that Indonesia remains the second-largest contributor of plastic waste to the oceans globally. This crisis is not merely technical-ecological, but also philosophical and paradigmatic in nature.[3] Modern marine science, largely derived from Western traditions, operates within a secular-positivistic epistemology that separates facts from values.[4] Within this framework, the ocean is viewed as *res nullius*—a neutral natural resource ready for exploitation in the name of industrial progress, without regard for its sacred dimension.

Within the Muslim world, a significant epistemological gap persists. On one hand, the Qur'an contains hundreds of verses that invite humans to study the ocean as signs of divine greatness (*ayat kauniyah*). On the other hand, marine science education in many Muslim countries largely adopts value-free Western scientific curricula.[5] As a result, Muslim marine scientists often emerge as technically competent but spiritually disconnected from the very objects of their study. They are capable of measuring ocean salinity with precision, yet fail to understand the ocean as a manifestation of God's attribute *Al-Muhith* (The All-Encompassing).[6] This disconnect reflects a deeper crisis in how knowledge is framed and internalized, where scientific mastery is not accompanied by metaphysical awareness.[7]

Previous studies on Islam and marine issues have generally been limited to two main approaches: first, a juridical (*fiqh*) approach focusing on the permissibility of marine resources;

1 A. Nurjaman, "*The Theological Implication of Oceanography Concept in the Qur'an*," ISLAMICA: Jurnal Studi Keislaman 18, no. 1 (2023): 52, DOI: 10.15642/islamica.2023.18.1.50-74.

2 Kementerian Kelautan dan Perikanan (KKP), "*Status Sumber Daya Ikan dan Lingkungan Laut Indonesia 2023*" (Jakarta: KKP, 2023), 15.

3 Badan Riset dan Inovasi Nasional (BRIN), "*Laporan Status Lingkungan Laut Indonesia 2022*" (Jakarta: BRIN, 2022), 8.; Pratama, Muhammad Yusuf, Luthfan Nursyamsul Ahfi, Alfin Isy Ni'mah, Naqiyatuz Zakia, Muhammad Nabil Amjad, Khusnul Mariah, Hardiansyah Tri Bima, and Mutma'inah. "Revitalization of Beach Tourism Area Through Integrated Waste Cleanup Movement for Environmental Sustainability, Case Study: Tirang Island." *MIMBAR INTEGRITAS: Jurnal Pengabdian* 4, no. 1 (2024): 235-245. https://doi.org/10.36841/mimbarintegritas.v4i1.5686.

4 Seyyed Hossein Nasr, *Religion and the Order of Nature* (Oxford: Oxford University Press, 1996), 45.

5 A. Nurjaman, "*The Theological Implication of Oceanography Concept in the Qur'an*," 55. Asnawi, Aqdi Rofiq, Ali Mahfuz Munawar, Ahmad Fadly Rahman Akbar, Wahyu Seprianto, Mujib Abdurrahman, and Eci Lestarinda. "Ecological Discourse Construction in Qur'anic Verses on the Earth: A Semitic Rhetorical Analysis." *Dirasat Qur'aniyyah wa Hadithiyyah* 1, no. 1 (2026): 62-73. https://darulilmijournal.com/index.php/daqiyah/article/view/112

6 A. Pratama & D. Sari, "*The Validity Analysis of Integration Between Science and Religion in Learning*," Science and Religion Education Journal 5, no. 1 (2024): 4, DOI: 10.46627/sipose.v5i1.395.; Anshari, Farhan Ahsan. 2026. "Cosmology in the Qur'an: A Thematic Interpretation of the Universe Phenomena: (Kosmologi Dalam Al-Qur'an: Kajian Tafsir Tematik Tentang Fenomena Alam Semesta)". *Theosinesis: Journal of Integrative Understanding and Ethical Praxis* 2 (1): 52-61. https://darulilmijournal.com/index.php/theosyn/article/view/109

7 Osman Bakar, *Tawhid and Science: Essays on the History and Philosophy of Islamic Science* (Kuala Lumpur: Secretariat for Islamic Philosophy and Science, 2008), 25.

and second, a textual exegesis approach interpreting Qur'anic verses about the ocean.[8] Few studies have addressed the epistemological and methodological dimensions—namely, how to construct a comprehensive marine science grounded in an Islamic worldview. The absence of such an epistemological foundation has caused the discourse on the "Islamization of knowledge" in marine contexts to remain largely rhetorical, lacking clear methodological implementation. Consequently, there is a pressing need to move beyond slogans toward a structured and applicable framework.[9]

This article offers a novel contribution by proposing an operational reconstruction of Islamic oceanographic epistemology. It goes beyond philosophical critique by introducing a concrete model that integrates empirical scientific methods with Islamic sources of knowledge. The central question addressed is: how can a marine research methodology be developed that integrates revelation, reason, and intuition within the framework of Islamic philosophy of science? Through an analysis of the epistemological thought of Muslim scholars such as Al-Jabiri, Nasr, and Bakar, this study aims to provide a philosophical foundation for the emergence of a new paradigm in marine studies in Indonesia.[10]

Method

This study employs a qualitative research design in the form of a philosophical-conceptual library study.[11] It is grounded in the philosophy of science, with particular emphasis on epistemology (the theory of knowledge) and ontology (the nature of being). The primary sources consist of classical works in Islamic philosophy as well as contemporary scholarship on the integration of knowledge, while secondary sources include national and international academic journals addressing oceanography, environmental ethics, and Islamic studies. This combination of sources enables a comprehensive exploration of both traditional intellectual foundations and modern scientific discourse, allowing the study to critically engage with existing paradigms while proposing an alternative framework rooted in Islamic thought.

Data collection was conducted through a systematic literature review, involving the identification, classification, and synthesis of relevant texts.[12] The data were then analyzed using content analysis to extract key concepts related to Islamic epistemology and its application to marine science.[13] The analytical approach follows a critical-constructive method: first, by examining and critiquing the limitations of modern scientific ontology, particularly its reductionist tendencies; and second, by constructing an alternative epistemological model based on the Islamic intellectual tradition. To ensure the validity and reliability of the findings, source triangulation was employed by comparing perspectives from various Muslim philosophers and

8 A. Ibrahim & R. Hassan, "*Islamic Environmental Ethics: Principles and Applications*," Journal of Islamic Accounting and Business Research 5, no. 2 (2014): 198, DOI: 10.1108/JIABR-03-2013-0010.

9 M. E. Osman & A. Bakar, "*The Challenges of Islamic Philosophy of Science Based On Contemporary Islamic Science Thinkers*," International Journal of Academic Research in Business and Social Sciences 8, no. 5 (2018): 1240, DOI: 10.6007/IJARBSS/v8-i5/4232.

10 F. Mangunjaya, "*Epistemologi Sains Islam dan Tanggung Jawab Manusia sebagai Khalifah*," Teologia 26, no. 1 (2015): 5, DOI: 10.21580/teo.2015.26.1.407.; Pratama, Muhammad Yusuf, and Ahmad Nabil Annuha. "Digital Da'wah Transformation of Nahdlatul Ulama: Religious Moderation Strategies in the Technological Era." *NAHNU: Journal of Nahdlatul Ulama and Contemporary Islamic Studies* 2, no. 2 (2024): 321-338. https://doi.org/10.63875/nahnu.v2i2.53

11 A. Pratama & D. Sari, "*The Validity Analysis of Integration Between Science and Religion in Learning*," 3.

12 M. E. Osman & A. Bakar, "*The Challenges of Islamic Philosophy of Science*," 1242.

13 H. Prasetyo, "*Epistemologi Bayani, Irfani dan Burhani Muhammad Abed Al-Jabiri*," Journal of Religious and Theological Education 2, no. 2 (2019): 150, DOI: 10.24260/jrtie.v2i2.1277.

scholars to identify areas of theoretical convergence and coherence.[14] This methodological approach ensures that the proposed framework is both critically grounded and systematically developed.

RESULTS AND DISCUSSION

Ontological Critique: The Desacralization of the Ocean in Modern Science

From an ontological perspective, modern science views the universe, including the ocean, as a vast machine operating under mechanistic cause-and-effect laws. This perspective, often referred to as scientific materialism, eliminates any spiritual dimension from the objects it studies.[15] Seyyed Hossein Nasr critiques this worldview as the "desacralization of nature," where the ocean loses its status as a *theophany*—a manifestation of the Divine—and is reduced to mere inert matter.[16] As a result, nature is no longer seen as something meaningful or sacred, but simply as a resource to be analyzed and utilized.

In modern oceanography, the validity of knowledge is determined solely by the ability of instruments to measure physical parameters. This leads to what Osman Bakar calls the "fragmentation of knowledge," where marine scientists no longer ask about the purpose behind the creation of the ocean, but focus only on how it can be utilized.[17] The consequences of this ontological stance are evident in the current environmental crisis. When the ocean is stripped of its sacred value, exploitation to the point of destruction becomes economically rational, even if it is ecologically irrational. This reflects a deeper imbalance between human knowledge and ethical responsibility.[18]

Fazlun Khalid argues that the environmental crisis is fundamentally a spiritual crisis. The degradation of coral reefs and the proliferation of plastic pollution are not merely technical problems, but symptoms of a deeper moral and spiritual disconnection between humans and the Creator.[19] This disconnection results in a worldview that prioritizes control and exploitation over stewardship and care. Therefore, purely technical solutions are insufficient to address these challenges. What is required is a transformation at the level of paradigm—a reorientation of the scientific worldview that restores the spiritual and ethical dimensions of nature, particularly in the study of the ocean.

Triadic Epistemology: Bayani, Burhani, and Irfani in Oceanography

To address the reductionism of modern science, Islamic epistemology offers a more holistic framework of knowledge. Mohammed Abed Al-Jabiri classifies Islamic epistemology into three systems: Bayani (textual/revelation-based), Burhani (rational/empirical), and Irfani (intuitive/spiritual).[20] In the context of oceanography, these three sources do not contradict one another but instead complement each other within a hierarchical structure of knowledge. This integrative approach allows scientific inquiry to remain rigorous while being grounded in ethical and spiritual meaning.

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14 A. Fauzi & D. Rahman, "*The Islamic Perspective on Trilogy Epistemology: Bayāni, Burhāni, and 'Irfāni*," Tajdid: Jurnal Pemikiran Islam 29, no. 1 (2022): 48, DOI: 10.36667/tajdid.v29i1.857.

15 S. Nasr, *Religion and the Order of Nature*, 78.

16 Ibid., 120.

17 Osman Bakar, *Tawhid and Science*, 45.

18 Fazlun M. Khalid, *Signs on the Earth: Islam, Modernity and the Climate Crisis* (Markfield: Kube Publishing Ltd, 2002), 34.

19 Ibid., 56.

20 Mohammed Abed Al-Jabiri, *Takwin al-'Aql al-'Arabi* (Beirut: Markaz Dirasat al-Wahdah al-'Arabiyyah, 2010), 25.

Burhani Dimension (Empirical-Rational)

Islam does not reject empirical methods. The Qur'an itself encourages observation (*nazara*) and exploration (*safar*) to understand the natural world.[21] In oceanography, the Burhani dimension includes the use of satellite technology, water sampling, and statistical analysis. However, unlike secular science, Burhani in Islam is guided by the principle of *tawhid*. Empirical data should not lead to conclusions that deny the role of God, such as scientific atheism. Instead, scientific findings are understood as part of a broader reality that includes both physical processes and divine order.[22]

Bayani Dimension (Textual-Normative)

The Bayani dimension functions as an ethical guide and an ontological boundary for scientific inquiry. The Qur'an and Hadith provide insights about the ocean that cannot be accessed through physical instruments alone, including its purpose and limits of human use.[23] For example, Qur'an Surah Ar-Rahman (55:19–20) states:

مَرَجَ الْبَحْرَيْنِ يَلْتَقِيٰنِۙ ١٩ بَيْنَهُمَا بَرْزَخٌ لَّا يَبْغِيٰنِۚ ٢٠

> *"He released the two seas, meeting [side by side]; between them is a barrier [so] neither of them transgresses."*

This verse about the meeting of two seas is not merely a geographical observation, but also a sign of divine power. It is to be explored through scientific investigation (Burhani) and affirmed through revelation (Bayani), illustrating the integration between faith and empirical inquiry.[24]

Irfani Dimension (Spiritual-Intuitive)

The Irfani dimension is often neglected in modern scientific practice. It involves the purification of the self (*tazkiyatun nafs*) so that the researcher can perceive the deeper spiritual meanings behind natural phenomena.[25] A Muslim scientist approaches the ocean with the awareness that they are "reading" the open book of God's creation.[26] The knowledge gained is therefore not limited to information, but extends to wisdom (*hikmah*). This dimension transforms scientific activity into a reflective and meaningful experience, where understanding nature also deepens one's awareness of the Creator.

Tawhidic Oceanography Model

The Tawhidic Oceanography model is a conceptual framework that seeks to integrate modern science with Islamic values in a practical, not merely normative, way. It emerges from a critique of the positivistic approach that separates facts from values, resulting in knowledge that is technically advanced but devoid of meaning. Within this model, the ocean is not only understood as a physical object that can be measured, but also as a sign (*ayat kauniyah*) carrying theological significance. Therefore, marine research should not stop at data collection and

21 A. Nurjaman, "*The Theological Implication of Oceanography Concept in the Qur'an*," 60.

22 B. Setiawan, "*Epistemologi Sains Islam Perspektif Agus Purwanto*," Analisis: Jurnal Studi Keislaman 17, no. 1 (2017): 95, DOI: 10.24042/ajsk.v17i1.898.

23 A. Nurjaman, "*The Theological Implication of Oceanography Concept in the Qur'an*," 65.

24 M. Habibi & S. Irfani, "*Methods of Interpretation: Epistemological Views of Bayani, Burhani, and Irfani*," INTIHA: Islamic Education Journal 2, no. 2 (2025): 278, DOI: 10.58988/intiha.v2i2.334.

25 R. Hidayat, "*Epistemology of Laduni Science on Muhammad Al-Ghazali Thought*," Al-Ulum 18, no. 2 (2018): 255, DOI: 10.30603/au.v18i2.546.

26 S. Ahmad & M. Khan, "*Al-Ghazali's Theory of Real Knowledge: An Exploration of Integration Features*," International Journal of Humanities and Social Science Studies 10, no. 2 (2023): 240, DOI: 10.48165/ijhess.2023.10215.

analysis, but should lead to a deeper understanding of the relationship between humans, nature, and God. This is where the model offers a more holistic approach, placing *tawhid* (the oneness of God) as its primary epistemological foundation.

Methodologically, this model operates through three forms of validation: empirical, normative, and spiritual. Empirical validity ensures that research adheres to scientific standards such as observation, measurement, and data verification. Normative validity functions as a guide, ensuring that both the process and outcomes of research align with Islamic ethical and legal principles. Meanwhile, spiritual validity emphasizes the inner awareness of the researcher in grasping the deeper meaning behind natural phenomena. These three forms of validation do not function independently; rather, they complement one another at every stage of research. As a result, scientific findings are not only accurate in a technical sense, but also ethically grounded and spiritually meaningful.

The fundamental difference between secular oceanography and tawhidic oceanography can be seen clearly across each stage of the research process. In secular approaches, scientific activity is largely technical and value-neutral, whereas in the tawhidic approach, each stage is enriched with broader layers of meaning. This distinction does not aim to reject modern science, but to complete it so that it does not lose direction. The following table illustrates this comparison more concretely:

Table 1. Comparison of Secular Oceanography Methods and Tawhidic Oceanography Methods

Research Stage	Secular Oceanography (Positivistic)	Tawhidic Oceanography (Integrative)
Observation	Collecting objective physical ocean data	Collecting data as an act of reflecting on *ayat kauniyah*
Hypothesis	Based on existing theories	Formulated in alignment with *tawhid* and Sharia principles
Analysis	Pure statistical and mathematical logic	Scientific analysis framed by ethical responsibility as *khalifah*
Conclusion	Value-free scientific facts	Scientifically valid conclusions with theological and ethical meaning
Objective	Technological control and exploitation	Attaining *ma'rifatullah* and public benefit

Source: Nasr [27]

At the observation stage, the tawhidic model does not alter scientific techniques, but transforms the researcher's perspective. Data collection is no longer seen as a neutral activity, but as an act of "reading" the signs of God in nature. This perspective encourages scientists to be more careful, honest, and responsible, as research is viewed as a form of worship. In this way, observation becomes more than a technical process; it becomes both an intellectual and spiritual experience. As a result, researchers are not merely seeking data, but also meaning, making their work more reflective and less confined to a purely mechanistic approach.[28]

In the stages of hypothesis formation and analysis, the integration of values becomes even more evident. Within the tawhidic framework, hypotheses must not contradict fundamental principles of faith, ensuring that research remains aligned with *tawhid*. Data analysis still relies on statistical

27 Osman Bakar, *Tawhid and Science*, 60; S. Nasr, Religion and the Order of Nature, 150.

28 A. Nurjaman, "*The Theological Implication of Oceanography Concept in the Qur'an*," 70.

and scientific methods, but is guided by ethical awareness rooted in the concept of humans as stewards (*khalifah*) on Earth. This means that conclusions are evaluated not only in terms of accuracy, but also in terms of their environmental and social impact. Such an approach prevents the emergence of findings that may be scientifically valid yet ethically problematic, such as justifying excessive exploitation of marine resources.

The distinction becomes most pronounced at the level of conclusions and research objectives. In secular oceanography, conclusions typically end with value-neutral scientific facts. In contrast, the tawhidic approach connects these findings to broader ethical and theological meanings. For instance, the phenomenon of upwelling is not only understood as a process that enhances fish productivity, but also as a manifestation of divine mercy in sustaining marine life. Through this lens, the purpose of research shifts from mere technological mastery toward understanding God's creation and contributing to societal well-being. This transformation of purpose lies at the core of Tawhidic Oceanography, positioning science as a means of devotion rather than mere exploitation.

Implications and Applications of Tawhidic Oceanography

The implications of the Tawhidic Oceanography model extend beyond conceptual discourse and reach real practices in marine research. This approach brings a fundamental shift in how scientists perceive scientific activity, transforming it from a purely academic task into a form of moral and spiritual responsibility. Knowledge is no longer considered neutral, but is inherently tied to higher values and purposes. In this context, axiology—or the dimension of values—becomes crucial, as it determines how knowledge is applied and for whose benefit it is intended. Tawhidic Oceanography requires that every research activity consider its impact on the environment, society, and the human relationship with God, ultimately producing knowledge that is not only accurate, but also wise.

One of the most significant implications appears in the ethics of sampling in marine research. In conventional approaches, minor ecological damage is often accepted as a reasonable trade-off for obtaining scientific data. However, within the tawhidic perspective, such actions cannot be justified carelessly, as the ocean is viewed as a trust (*amanah*) from God. The principle of *la dharara wa la dhirar* (causing no harm to oneself or others) becomes a fundamental guideline in determining research boundaries.[29] Consequently, scientists are encouraged to develop methods that are more environmentally friendly and minimize destructive impacts. This perspective promotes methodological innovation that is not only scientifically effective but also ecologically ethical.

Another key implication relates to the orientation of benefits derived from marine research. Tawhidic Oceanography rejects the notion that research success is measured solely by academic publications or citation metrics. Instead, knowledge must provide tangible contributions to societal well-being, particularly for coastal communities that directly depend on marine resources.[30] Research is directed toward addressing real-world issues such as food security for fishermen, sustainable resource management, and disaster mitigation. This aligns with the Islamic concept of *'ilmu nafi'* (beneficial knowledge), which emphasizes that the true value of knowledge lies in its usefulness. Through this orientation, marine science becomes more contextual and socially relevant.[31]

29 F. Mangunjaya, "*Epistemologi Sains Islam dan Tanggung Jawab Manusia sebagai Khalifah*," 15.

30 A. Wibowo, et al., "*Quran-integrated Science in the Era of Industrial Revolution 4.0*," Journal of Physics: Conference Series 1155 (2019): 5, DOI: 10.1088/1742-6596/1155/1/012001.

31 Abu Hamid Al-Ghazali, *Ihya' Ulum al-Din* (Beirut: Dar al-Ma'rifah, 2015), 45.

In the realm of education, this model calls for curriculum reform in higher education institutions, especially within Islamic universities. Learning should not be limited to technical subjects such as marine biology or physical oceanography, but must also incorporate philosophical and spiritual dimensions. Students need to understand that science is not value-free, but part of a broader epistemological system within Islam. This integration aims to produce scientists who are not only academically competent but also possess ethical awareness and spiritual depth. As a result, education becomes a process of shaping well-rounded scholars, rather than merely producing technically skilled professionals.[32]

A concrete application of Tawhidic Oceanography can be seen in the study of deep-sea phenomena such as hydrothermal vents. In secular perspectives, these phenomena are often viewed primarily as potential sources of energy and mineral resources for exploitation. Research tends to focus on economic and technological benefits, often overlooking deeper meanings. In contrast, the tawhidic perspective interprets these phenomena as evidence of divine power, demonstrating that life can exist in extreme environments without sunlight.[33] This perspective does not reject scientific investigation, but rather expands its meaning to include spiritual reflection and deeper contemplation.

This approach also influences the attitude of scientists toward their objects of study. Researchers are no longer positioned as dominant controllers of nature, but instead develop humility and awareness of the limitations of human knowledge. A sense of *khashyah*—a blend of awe and reverence toward God—becomes part of the scientific experience, allowing research to produce not only knowledge but also existential awareness.[34] This is essential in preventing scientific arrogance, which often emerges in modern paradigms where humans assume complete control over nature. The tawhidic framework reminds scientists that human knowledge remains limited compared to the infinite knowledge of God.

Overall, the implications and applications of Tawhidic Oceanography demonstrate that the integration of science and religion is not merely theoretical, but can be practically implemented across research and education. This model offers not only an alternative paradigm but also a concrete direction for developing marine science that is more sustainable and meaningful. By combining empirical, ethical, and spiritual dimensions, Tawhidic Oceanography has the potential to establish a more harmonious relationship between humans and the ocean. Ultimately, it reinforces the idea that science should serve as a means to preserve ecological balance and bring humans closer to God, rather than as a tool for unchecked exploitation.

CONCLUSION

The reconstruction of Islamic oceanography epistemology in this study results in an integrative model that operationally combines three primary sources of knowledge—Bayani, Burhani, and Irfani—within the stages of marine scientific methodology. The key finding demonstrates that this approach successfully shifts the orientation of science from mere data production toward a more holistic understanding, where the ocean is simultaneously perceived as an ecological system, a normative trust, and a spiritual sign of God. The main contribution of this study lies in the formulation of the "Tawhidic Oceanography" model, which is not only philosophical but also practically applicable in research contexts. This model offers a new framework for Muslim scientists to integrate empirical rigor, ethical responsibility, and spiritual awareness without compromising modern scientific standards.

32 A. Pratama & D. Sari, "*The Validity Analysis of Integration Between Science and Religion in Learning*," 8.

33 A. Nurjaman, "*The Theological Implication of Oceanography Concept in the Qur'an*," 72.

34 Osman Bakar, *Tawhid and Science*, 80.

However, this study is not without limitations, as it remains largely conceptual and has not yet been empirically tested in real-world marine research settings. In addition, the practical implementation of this model within educational systems and national research policies has not been systematically evaluated. Therefore, future research is recommended to empirically examine the application of Tawhidic Oceanography through field-based case studies, develop more measurable and operational methodological tools, and explore its integration into academic curricula and institutional research frameworks. Such efforts are essential to ensure that the proposed model moves beyond theoretical discourse and can be effectively applied in advancing a more sustainable, meaningful, and value-driven marine science.

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