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A BIBLIOMETRIC REVIEW ANALYSIS ON ENVIRONMENTAL CONSERVATION IN ISLAMIC PERSPECTIVES: MAPPING TRENDS

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ABSTRACT

An environmental crisis is critical as it hurts the ecological, physical, and spiritual aspects. An extensive ecological and spiritual is necessary to comprehend this issue. The purpose of this study is to review the plethora of studies on environmental conservation from an Islamic perspective. This study uses a bibliometric analysis using RStudio to analyse the current research stream and assess trends in this topic. A total of 451 publications were retrieved from the Scopus database to reveal the knowledge structure of the past, current and future trends by assessing the most influential past publication, determining the structure of the co-cited publications and evaluating trends for future studies, historical development, keyword, citation and co-citation, institutions, and country-wise analyses were performed. The study produced three ground-breaking research streams evaluated using bibliometric analyses: environment protection studies and sustainable development from an Islamic perspective, economics protection from an Islamic perspective and issues of environmental problems, socioeconomic and religion towards Islamic perspectives. The outcome would facilitate future scholars linking this topic to environmental conservation.

Keywords: Bibliometric analysis, Conservation, Islamic, Scopus

1.0 INTRODUCTION

Irresponsible resource management, exploitation, and a lack of conservation initiatives lead to environmental degradation. Environmental harm includes forest destruction, noise, and air and water pollution. Furthermore, climate change exacerbates problems associated with global warming, ocean acidification, sea level rise, drought, and storms that impact numerous countries worldwide. Thus, it is necessary to have balanced environmental planning and management based on the positive values that uphold good practices on the grounds. In this regard, the stewardship of Islamic teachings leads to the principles of peace and harmony between man and the environment. The Islamic idea of peaceful coexistence and religious harmony is that all people are united under one God. This makes it necessary for Muslims to build bridges of understanding and cooperation to create a social order environment (Mihlar et al., 2016; Abdelzaher, 2019).

Furthermore, the principle of Allah SWT is the owner of the universe, while human beings are merely trustees, which will help to imbue a sense of stewardship with accountability in environmental management (Al-Quran; Ta Ha:6). The natural world that exists between the sky and the earth is described in the passage, including the sun, heat, wind, clouds, and rain. "And what is under the soil" alludes to the materials that can be extracted and invested below the surface, whether geological, metallic, or natural. It also contains groundwater that can be

extracted and utilised for habitation and farming (Ibrahim Hazim, 1985). As trustees of the earth, humans are expected to use these resources wisely, considering the long-term impact on the environment and future generations. As such, in line with the teachings of Islam, humans are responsible to Allah, and as representative, steward or vicegerent (*Khalifah)* on the earth (Al-Quran; Al-An'am:165), they are entrusted to protect the environment (Ismail et al., 2014). Attention to ethical and religious values guarantees the protection of the environment (Emeri, 2017).

Islam is an all-encompassing religion that covers social, political, economic, cultural, and environmental facets of human existence (Abdelzaher, 2019). However, overuse by human activity can disrupt the natural equilibrium (Greenfield, 2020). It has been mentioned in the Qur'an that "Indeed, all things We created with predestination" (Al-Quran; Al-Qamar:49), which means that everything, whether big or small, stationary or moving, speaking or silent, everything is created by Allah with predestination (Bazina, 2023).

Bazina (2023) also explained the balance and due proportion in the environmental ecosystem. This is clear from the current environmental problems (Bazina, 2023), such as deforestation, especially regarding climate change and biodiversity. Humans are Earth's Caliphs, so humans must actively protect the environment (Abdelzaher, 2019; Bazina, 2023). Furthermore, Islam strongly emphasises adhering to ecological principles and implementing responsible development [Cite]. For instance, the concept of hima (Arabic: حمى), meaning "inviolate zone" or "private pasture", which normally refers to an area set aside for the conservation of natural capital, typically fields, wildlife and forests - contrasts ḥaram, which defines an area protected for more immediate human purposes (Muhammad et al., 2010; Abdelzaher, 2019). In modern society, Hima is known as the environmental protection that is essential to curb environmental degradation (Gari, 2006). "Hima" is defined by Gari (2006) as a restricted pasture where trees and grazing areas are temporarily or permanently shielded from indiscriminate harvesting. The community that owned the Hima reserves was expected to contribute to the area's conservation (Chaudhry, 2022). For instance, some organisations were in charge of conserving water, while others were in charge of keeping an eye on grazing and protecting land from exploiting natural resources (Llewellyn, 2003).

Environmental conservation is one of the important aspects of protecting and preserving the natural environment, including ecosystems, biodiversity, air, water and soil quality, for the benefit of present and future generations. Allah SWT said to the effect that "And We have certainly established you upon the earth and made for you therein ways of livelihood. Little are grateful" (Al-Quran; Al-'Araf:10). Preserving the environment is vital since it is everyone's urgent responsibility (Sayem, 2021). Unfortunately, rather than safeguarding the environment, human activity either directly or indirectly has harmed it. Modern science and technology have given much power to humans to exploit the natural world ruthlessly through excessive consumption, the use of natural resources without considering the impact, or unhealthy living habits in the community, such as not managing garbage and waste disposal. This misconduct (the abuse of entrusted power for profit gain) has been registered in the Qur'an when Allah SWT said, "Corruption has appeared throughout the land and sea by (reason of) what the hands of people have earned so He (i.e. Allah) may let them taste part of (the consequence of) what they have done that perhaps they will return (to righteousness)" (Al-Quran; Al-Rum:41). The examples of righteousness such as avoiding harmful act and striving for knowledge and wisdom.

Religion can help to create a relationship between humans and the natural world (Sayem, 2021). Islam's teachings include a way of life that can influence its followers' views on life in addition to rules and restrictions (Rohman & Ibrahim, 2022). The author also added that the way of looking at life explains to people what the universe and its surroundings imply, how nature and people are both perfect creations of Allah Ta'ala and how important nature is to human worship. Understanding environmental ethics from an Islamic perspective is crucial based on the Qur'ānic guidance. The Holy Qur'an sets out complete spiritual and more ecological guidelines for man ((Muhammad et al., (2010). For example, the practice of balance is mentioned in the Holy Qur'an, where Allah instructs not to disrupt the balance that exists in nature- "And the sky he has uplifted; and He hath set the measure. That ye exceed not the measure" (Al-Rahman, 55:7-8). In the Qur'ān, humans are described as vicegerent (*khalīfah*) of Allah on earth to play a responsible role (*amānah*) on His behalf. As intelligent and responsible beings, humans must take care of the earth on Allah's behalf and should not do anything that may threaten other creatures' existence (Sayem, 2021; Rohman & Ibrahim, 2022).

Focusing on environmental conservation from an Islamic perspective is rooted in the belief that human beings are the stewards (Khalifah) of the Earth, entrusted by Allah with the responsibility of maintaining its balance and protecting its resources for present and future generations. The main purpose of human creation is as the caliph and servant of Allah SWT. There is a special focus within the Quran on the environment and its protection. Humans are prohibited from harming the environment and are encouraged to clean up any pollution (Emari et al., 2017). From an environmental perspective, both social equilibrium and *Tawheed* should lead to socio-economic justice, meaning that each human should receive what they deserve from the natural world, as well as participate positively in maintaining a high quality of life for others (Naqvi 1981, 2003; Platonova, 2013). *Tawheed* is the spiritual part that manifests the spiritual inner connection between human beings and their surrounding environment. The new millennium and the modern ecological crisis have created a need for environmentally based religion and spirituality (Mihlar et al., 2016).

One term, (Eco-Islam) is created to explain the foundational principles of why humans should care about the environment (Abdelzahir et al., 2019). Ahmed (2012) recommended implementing environmental management accounting (EMA) at Islamic companies to ensure nature conservation and the prosperity of humans and all creatures. Environmental accounting is an essential tool for understanding the role of the natural environment in the economic ecosystem (Abdelzahir et al., 2019). It can provide data highlighting the contribution of natural resources to economic well-being and the costs imposed by pollution or resource degradation. Thus, the EMA practice relates to product pricing, budgeting and investment appraisal in environmental planning (Abdelzahir et al., 2019). Fakhruddin (2018) indicated that the Al Quran-based learning content of Islamic Religious Education (IRE) on environmental conservation covers the following topics: the role of humans as natural resource protectors, the sustainability of nature as a living system, the growth of responsibilities, respect, and a caring attitude toward nature; and the wisdom of using natural resources.

Expanding awareness of environmental education leads to the creation of groups of people who can take better actions in environmental conservation and protection (Mangunjaya, 2011; Mangunjaya & McKay, 2012). Therefore, environmental education, which is known as a process that allows individuals to explore environmental issues, engage in problem-solving works and take action to improve environmental quality, is a critical requirement (Abdelzahir, 2019). The United Nations Educational, Scientific and Cultural Organization (UNESCO) Environmental Education Conference 2007 emphasised the need for broader social and cultural studies, changes in educational thinking, and immediate maintenance of education institutions. The Education Sustainable Development (ESD) has been developed, and existing education programmes need to be re-aligned with the purpose of ESD (UNESCO, 2021). It emphasised the need for environmental education to address the harsh reality of unsustainable development and climate change. The conference aimed to create a global community concerned with the environment and committed to solving existing and future environmental problems.

Accordingly, this paper reviews the literature on environmental conservation from Islamic perspectives, identifies their thematic evolution, and then provides directions for future research within this problematic area. The bibliometric analysis method was applied to proceed with this review consistently. This paper's contribution matters because we need to understand the topic trends and its intellectual and conceptual structures and critically evaluate the current level of contribution.

We use VOSviewer and RStudio in the present study as visual and analytical research tools. The target articles were chosen by selecting titles that included 'environment or environmental', 'conservation or preservation or protection', and 'Islam or Islamic'. Several restrictions were set before the search. This study uses 451 papers, covering almost every important article in the field of research. The literature was downloaded in January 2024 from Scopus, one of the best academic databases.

The paper consists of five sections. The first section explains the introduction and concept of this paper. Section 2 describes the study's methodology and the sample construction of the review. Section 3 provides an in-depth discussion of the key results in the research streams derived from network and content analysis processes. Finally, Section 4 concludes the study and provides recommendations for future research.

2. METHODOLOGY

2.1 Bibliometric analysis

Bibliometric analysis is a quantitative approach that analyses published papers to evaluate academic publications in a specific field (Ding & Yang, 2020). Ellili (2023) states that bibliometric analysis depends on bibliographic materials highlighting a specific field's core theoretical and empirical research. Bibliometric analysis is useful for mapping the cumulative scientific knowledge of weak established fields by rigorously analysing a large volume of unstructured data (Donthu et al., 2021). A visual representation can reflect bibliographic units in the form of documents, words, journals and authors that serve as the mapping output (Donthu et al., 2021). The contribution of this study based on the method of incorporating bibliometric analysis to identify relevant and critical publications in environmental

conservation in Islamic perspectives (citation analysis; to provide the structural link and relationship between the most influential cited publications (co-citation analysis); and to evaluate emerging trends for future studies (co-occurrence of keywords analysis).

2.1.1 *Science mapping*

The techniques for science mapping include citation analysis, co-citation analysis, bibliographic coupling, co-word analysis and co-authorship analysis (Donthu, 2021).

2.1.2 *Citation analysis*

Citation analysis identifies the links between publications when one publication cites the other (Appio et al., 2014). The citation frequency indicates that such publication is significantly based on its high number of citations. Additionally, it communicates to the working researcher the noteworthy contributions to the field of research. In environmental conservation, this method would be an essential guide for scholars to follow while examining the major papers that might provide crucial insights into Islamic viewpoints on the conservation of the environment. Citation analysis offers important insights into the publications' relative importance. On the other hand, it falls short when assessing the networks of connections between the data (authors, publications, country, and journal). Co-citation analysis will be used to supplement this shortcoming.

2.1.3 *Co-citation analysis*

Co-citation analysis is a technique on the number of publications that are cited together frequently are similar thematically (Hjørland, 2013). The technique builds on similarity metrics between papers, journals, and authors using co-citation counts. Co-citation analysis allows researchers to identify theme clusters in addition to the most important publications. The listed papers serve as the basis for these theme groups. Co-citation analysis, on the other hand, focuses solely on highly cited articles, excluding recent or specialised publications from its topic clusters. Co-citation analysis is therefore appropriate for business academics looking to find foundational works and knowledge bases. According to van Eck and Waltman (2017), the co-citation counts and total link strength of prominent publications are used to calculate the overall strength of an author's co-authorship with other writers. Even though this method has been used in similar bibliometric research before, it is improved by combining it with citation analysis to determine the most important topics more accurately in Islamic literature and environmental conservation.

2.1.4 *Co-occurrence of keywords*

Co-occurrence of keywords or co-word analysis is a method for calculating the frequency of keywords occurring in the chosen publications is co-occurrence of keywords. The primary purpose is to investigate the keyword interaction that may point to the most prominent and significant issue during the research. It can also used to evaluate patterns and developments of research themes. Co-occurrence of keywords analysis looks at the relationships between ideas that appear more than once in the titles, keywords, and abstracts of texts. Integration of co-occurrence of keywords analysis and co-citation analysis offers a thorough assessment of a topic's structure and indicates the future course of research (Tan Luc et al., 2020).
This bibliometric study undertakes a systematic process that involves three stages.

1. Set the search process to;
   i) Identify the search in the Scopus platform by incorporating the relevant keywords into a logical search statement, including a Boolean function.
   ii) Introduce relevant inclusion and exclusion criteria to narrow down the scope of the literature.
   iii) Carry out bibliometric analysis (BPA) using RStudio and VOSviewer.

2.2 Data Collection

The data were obtained from the Scopus database. The data has been widely adopted in bibliometric analysis. Scopus is one of the largest curated abstract and citation databases with a broad global and regional coverage of scientific journals, conference proceedings, and books (Baas et al., 2020). In addition, an independent Content Selection and Advisory Board rigorously selects and re-evaluates content to ensure that only the highest quality data are indexed (Baas et al., 2020).

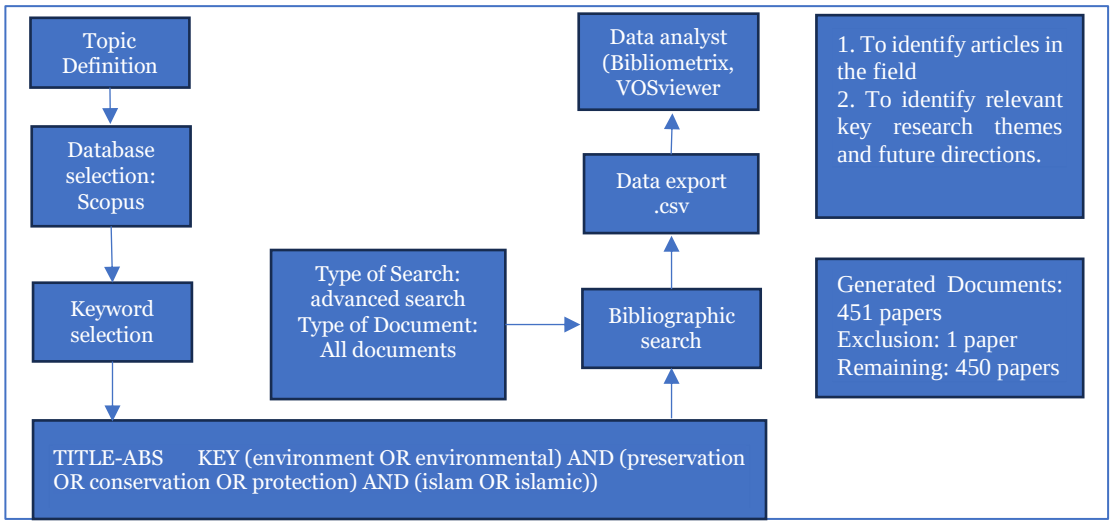

Figure 1: The methodology of the research

2.2.1 Search String

The following search string was used for this topic in the Scopus document search. All document types included journal publications, conference proceedings, books, book chapters, letters, and notes without applying any restrictions. The search was performed on 21st December 2023. The language is English. The process returned 451 publications ranging from 1980 to December 2023. The data were screened in stages, as shown in Table 1. After that, the data were exported to CSV format and uploaded to VOSviewer and Bibliometric RStudio.

Table 1: Search string used in the Scopus database.

Keyword using Scopus database	TITLE-ABS KEY (Environment OR environmental) AND (preservation OR conservation OR protection) AND (islam OR Islamic))

3.0 RESULT AND ANALYSIS

This section discusses the results using VOSviewer. First, we present the descriptive analysis and publication trends. Then, we present the top ten journal publications, the most productive and influential universities, the most productive and influential authors, and the most productive and influential countries. Secondly, we present network visualisations, co-citations of authors, co-authorships, and bibliographic coupling of authors, institutions, and countries.

3.1 Descriptive analysis and publication trends.

Table 2 provides information on articles retrieved from the Scopus published from 1959 to 2023. It was found that 451 papers were published in 64 years.

Table 2: Descriptive statistics from 1959 to 2023

Articles	451
Timespan	1959-2023
Authors	1066
Average citations per article	6.43
Single author documents	171
Co-author per document	2.48
International co-authorship %	14.44
Total journal	331
Authors per article	2.48
Author's keywords	1,864
Institutions	354
Countries	52

The descriptive analysis based on the data obtained can be seen in Figure 1. From the 451 publications, the highest citation was 73. The earliest publications were published in 1959. However, the frequency of production slowly increased until 2005. The topic received and upsurged in interest until the recent one. The highest number of articles were published in 2023. More studies are expected to be produced as environmental conservation from an Islamic perspective is highly anticipated. Furthermore, the emergence of several key streams in the field interests scholars and practitioners. The annual scientific production fluctuates throughout time, and the highest citation was in 2012.

The progression of papers published related to environmental conservation from 1959 to 2023 is shown in Figure 2. A clear upward trend over time can be observed, indicating the increased role of scientific research in environmental conservation from Islamic perspectives. The studied period can be divided into four stages: the first stage, from 1959 to 1980; the second stage, from 1980 to 2004; the third stage, from 2004 to 2013; and the fourth stage, from 2013 to 2023. The number of publications at the flat par in the first stage. At the second stage, it fluctuated from 1980 to 2004, with less than seven papers each year. In the third stage, it increased from 2004 to 2013 and dramatically in the fourth stage. This trend shows that this topic is receiving increasing attention, and more studies are being performed.

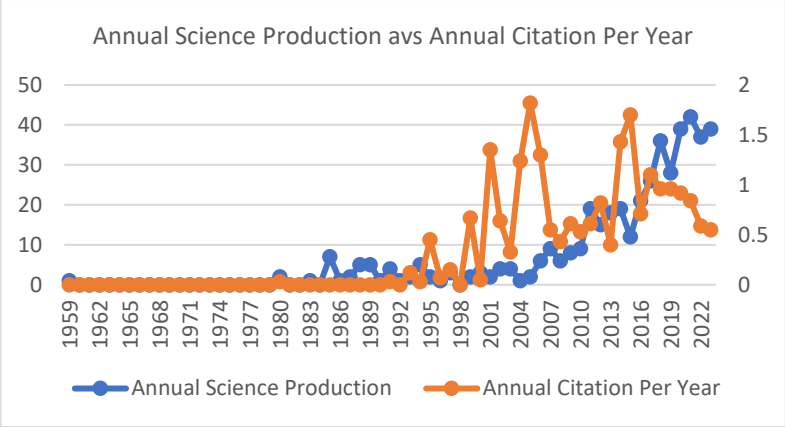

Figure 2: Number of annual scientific production from 1980 to 2023

Annual citation per year shows four stages: the first stage from 1959 to 1992, the second stage from 1992 to 2007, the third stage from 2007 to 2015, and the fourth from 2015 to 2023. The first stage shows no annual citation per year, except in 1980 with 0.03. The second stage fluctuated rapidly, indicating inconsistency of citation during this period. The third stage shows an increasing pattern of annual citations per year. However, the fourth stage shows that the pattern is slowly decreasing, which contradicts the amount of paper produced. Based on this observation, two research questions can be posed: i) Which authors and journals lead the literature related to this study are cited the most, and ii) What are the main topics that were researched and which countries contributed the most?

Table 3: Top 10 journal publications

Ranking	Journals	Number of Articles	Percent (of 450)
1	IOP Conference Series: Earth and Environmental Science	16	4
2	Department of State Publication. Background Notes Series	15	4
3	International Journal of Environmental Science and Technology	7	2
4	Journal of Islamic Marketing	6	2
5	Samarah	5	1
6	Advances in Science, Technology and Innovation	4	1
7	Journal of Environmental Studies	4	1
8	Pertanika Journal of Social Sciences and Humanities	4	1
9	Planning Malaysia	4	1
10	Religions	4	1
Ranking	Affiliation (Country)	Number of Articles	Percent (of 450)
1	Universiti Kebangsaan Malaysia (Malaysia)	25	5
2	Islamic Azad University (Iran)	13	3
3	University of Malaya (Malaysia)	11	2
4	Universiti Sains Islam Malaysia (Malaysia)	9	2
5	Universiti Malaysia Kelantan (Malaysia)	8	2
6	Qatar University (Qatar)	7	2
7	Tehran University of Medical Sciences (Iran)	7	2
8	Umm Al-Qura University (Saudi Arabia)	7	2
9	University of Florence (Italy)	7	2
10	University of Tabuk (Saudi Arabia)	7	2

Ranking	Subject categories	Frequency	
1	Social sciences	194	47
2	Arts and humanities	85	21
3	Environmental science	37	9
4	Engineering	25	6
5	Business	21	5
6	Economics	17	4
7	Computer science	15	4
8	Energy	11	2
9	Medicine	4	1
10	Mathematics	3	1

The bibliometric analysis results related to each research area are presented in Table 3. The subject category was based on the types of journals in the Scopus database. The ranking results reveal that the highly published papers in this field are the IOP Conference Series: Earth and Environmental Science (4%) and the Department of State Publication. Background Notes Series (4%) and Journal of Islamic Marketing (2%). For the affiliation, rank one is produced by Universiti Kebangsaan Malaysia with 25 articles (5 per cent), and rank two is produced by Islamic Azad University (Iran) with 13 articles (3 per cent). Islamic countries dominate the ranking. The top 10 subject categories in terms of frequency include social sciences (the highest frequency, 194), Arts and humanities (the second-highest frequency, 85), and environmental science (the third-highest frequency, 37). In addition, there are other subjects, such as engineering, business, and economics.

3.2 The most influential authors, organisations, and countries

The top ten cited authors, and their respective organisations are presented in Table 4. It shows that the UK has three authors from the top ten list (Baik et al.) and two from Malaysia, both from Universiti Sains Malaysia (Hassan & Hamidu).

Table 4: Top 10 cited authors

Authors	Title	Journal	Affiliation	Quarter (H-index)	Citation
Baik et al. (2015)	Integration of Jeddah historical BIM and 3D GIS for documentation and restoration of historical monument	International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences - ISPRS Archives	University College London, United Kingdom	Q1 (82)	68
Bhatia et al. (2017)	The Relationship Between Religion and Attitudes Toward Large Carnivores in Northern India?	Human Dimensions of Wildlife	Nature Conservation Foundation, India; Snow Leopard Trust, United States; Manipal University, India	Q2 (59)	64
Lopez-Arce & Garcia-Guinea (2005)	Weathering traces in ancient bricks from historic buildings	Building and Environment	Centro Tecnologico de Materiales, Spain; Museo	Q1 (189)	57

			Nacional de Ciencias Naturales, Spain		
Hamidu et al. (2015)	Corporate social responsibility: A review on definitions, core characteristics and theoretical perspectives	Mediterranean Journal of Social Sciences	University of Technology, Nigeria; Universiti Sains Malaysia, Malaysia	Q4 (30)	52
Seed (2015)	Sustainability in the Qatar national dietary guidelines, among the first to incorporate sustainability principles	Public Health Nutrition	Supreme Council of Health, Qatar	Q2 (156)	42
Sutton & Fahmi (2002)	The rehabilitation of Old Cairo	Habitat International	University of Manchester, United Kingdom; University of Helwan, Cairo, Egypt	Q1 (102)	42
Mangunjaya & McKay (2012)	Reviving an Islamic approach for environmental conservation in Indonesia	Worldviews: Environment, Culture, Religion	Universitas Nasional, Indonesia; University of Kent, United Kingdom	Q4 (17)	41
Li et al. (2014)	Effects of land use changes on soil erosion in a fast-developing area	International Journal of Environmental Science and Technology	Chinese Academy of Sciences, Guangzhou, China	Q2 (93)	39
Kula (2001)	Islam and environmental conservation	Environmental Conservation	University of Ulster at Jordanstown, United Kingdom	Q1 (97)	39
Arafat (2013)	Combined in situ micro-XRF, LIBS and SEM-EDS analysis of base metal and corrosion products for Islamic copper alloyed artefacts from Umm Qais museum, Jordan	Journal of Cultural Heritage	Technical University of Berlin, Germany	Q1 (78)	35

Baik et al. (2015) have 68 citations, and they investigated the digital method for documenting and restoring historical monuments. It was followed by Bhatia et al. (2017) with 64 citations, and his study proposed to integrate local religious philosophies into conservation practices. Ahmad & Hassan (2007) have 58 citations, and Lopes-Arce & Garcia-Guinea (2005) has 57 citations. In summary, this topic can be divided into Islamic technologies, cultural, historical, and environmental conservation.

Further analysis (Figure 3) identifies and investigates the country's scientific production in the literature on environmental conservation from Islamic perspectives. Indonesia has the highest scientific production with 18 articles, Malaysia has 13, and Iran has 6. The United Arab Emirates and the United Kingdom have three articles. In addition, Canada, Egypt, and India have two articles.

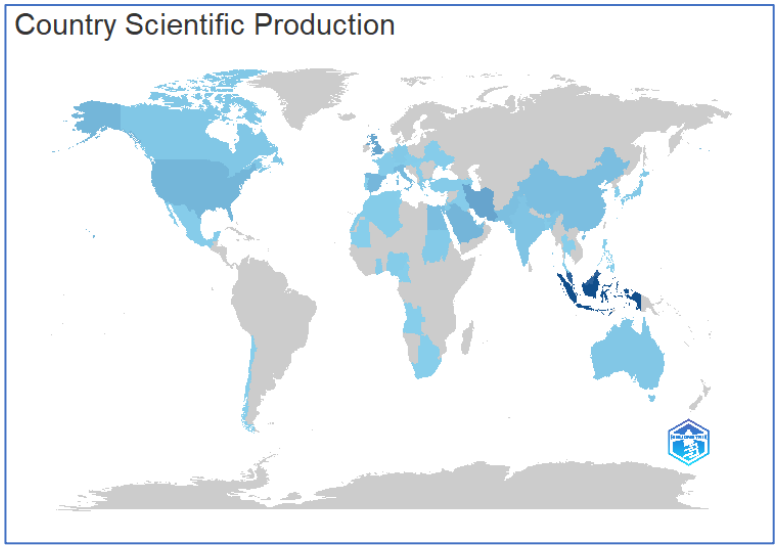

Figure 3: Country Scientific Production on environmental conservation in Islamic perspectives

3.3 Result of co-citation analysis

Figure 4 presents a cluster analysis of the most common keywords used by authors in the literature over the past 70 years. This study can also help identify emerging topics for the future. In this type of map, colours represent different clusters, and clusters are based on relationships. In the map, each keyword is represented by a circle. Co-occurrence analysis of all keywords was applied to conceptualise the development and growth of environmental conservation from an Islamic perspective. This analysis is done by selecting the type of analysis (co-occurrence) and unit of analysis (author keywords).

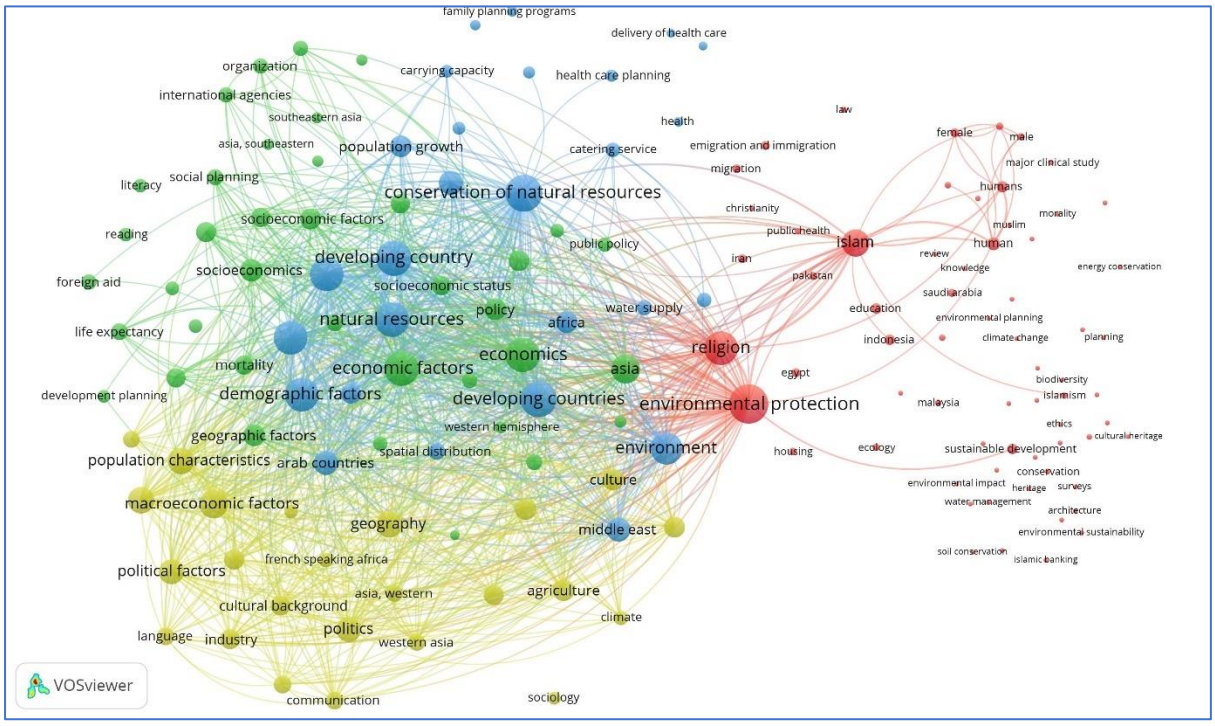

Figure 4: Co-0ccurrence analysis using VOSviewer

A minimum threshold of two for the occurrence of a particular keyword was required and filtered to arrive at a meaningful analysis. This resulted in 158 keywords for 450 papers, referring to studies between 1959 to 2023. The results are reported in Figure 4 and show that the most frequently used words are environmental protection, religion, and Islam. Overall, the keywords that appeared with the highest frequency in the selected articles were environmental protection (72 times), developing countries (64 times), economics (61 times), Islam (59 times), religion (50 times), environment (49 times), conservation of natural resources (38 times), natural resources (30 times).

These findings indicate a growing interest in this field. Nodes on the map represent every keyword. The diameter shows how many connections there are to other keywords. More linkages with additional terms would indicate a broader node. The line's thickness between two nodes indicates how frequently the keywords appear together. In this study, the frequent occurrence of these keywords among studies reflects more analyses applied to the Islamic environmental conservation field. As shown in Figure 2, there are four major clusters: environment protection and sustainable development in Islam (red), economic factors in developing countries (green), natural resources in developing countries (blue), and socioeconomics in south-eastern countries (green).

Referring to the clusters, there are three groups of studies as below: i) environment protection and sustainable development from an Islamic perspective (Mangunjaya & McKay, 2012; Koehrsen, 2017); ii) economics protection from an Islamic perspective (Hassan, 2014; Ahmad & Hassan, 2007; Siyavoosh et al., 2019) and iii) issues of environmental problem, socioeconomic and religion towards Islamic perspectives. Dividing the study period into sub-periods can help discover the changes and evolution of leading research themes in environment conservation analysis over time. Thus, emerging topics (Table 5) are identified using VOSviewer, and analysis uses time series analysis by slicing into several subperiods with an appropriate period.

Table 5. Slicing analysis

1980-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
rural development	environmental protection	education	primary health care	architecture	environmental management	controlled study	environmental conservation
agricultural development	macroeconomic factors	health education		heritage conservation	water management	Islamism	environmental education
social planning	environment			environmental impact	nature conservation	biodiversity	surveys
development planning	religion				environmental planning	soil conservation	sustainability
population characteristics	conservation of natural resources				sustainable development	biotechnology	conservation management
carrying capacity	population dynamics and growth				historic preservation		
urban and rural population	international cooperation				ethics		
	water supply						
	Islam						

Each subperiod text data can be seen as a topic. All keywords are screened, and all keywords of countries/regions are deleted as listed: India, Africa, China, Iran, United States, Southern Asia, Malaysia, Eurasia and Saudi Arabia. First, from 1980 to 1990, keywords focus on theory subject matters, such as the urban and rural population, social and economics, and the environment (protection and conservation). In the timeline 1991-2000, fewer articles were found; thus, keywords focused on education and health care. The keywords trend changed in the timeline 2001 -2010, focusing on more practical subjects such as environmental and water management, historic preservation, biotechnology, nature conservation, and sustainable development. Lastly, the 2011-2020 timeline shows highly conducted educational studies on sustainability, looking at the survey keywords, controlled study, environmental education, and sustainability. Studies also focus on soil conservation, biotechnology, and Islamism, which explains that these keywords are the future trends of this theme.

Further analysis (Figure 5) shows that nodes and links represent the bibliographic coupling, and the colour of nodes and lines represents different years. The bibliographic coupling of the authors formed 15 clusters, as shown in Figure 3. There was a group of primary authors with high indices of bibliographic coupling of 14 authors (red cluster). This group has the highest link strength; the authors, including Amin (2013), Dudley (2014), Farook (2016), Hasim (2020), Hasin (2022), Ibrahim (2011), Iswahyudi (2022), Mangunjaya (2012), McKay (2014) and others. The remaining cluster has several authors, from 4 to 12.

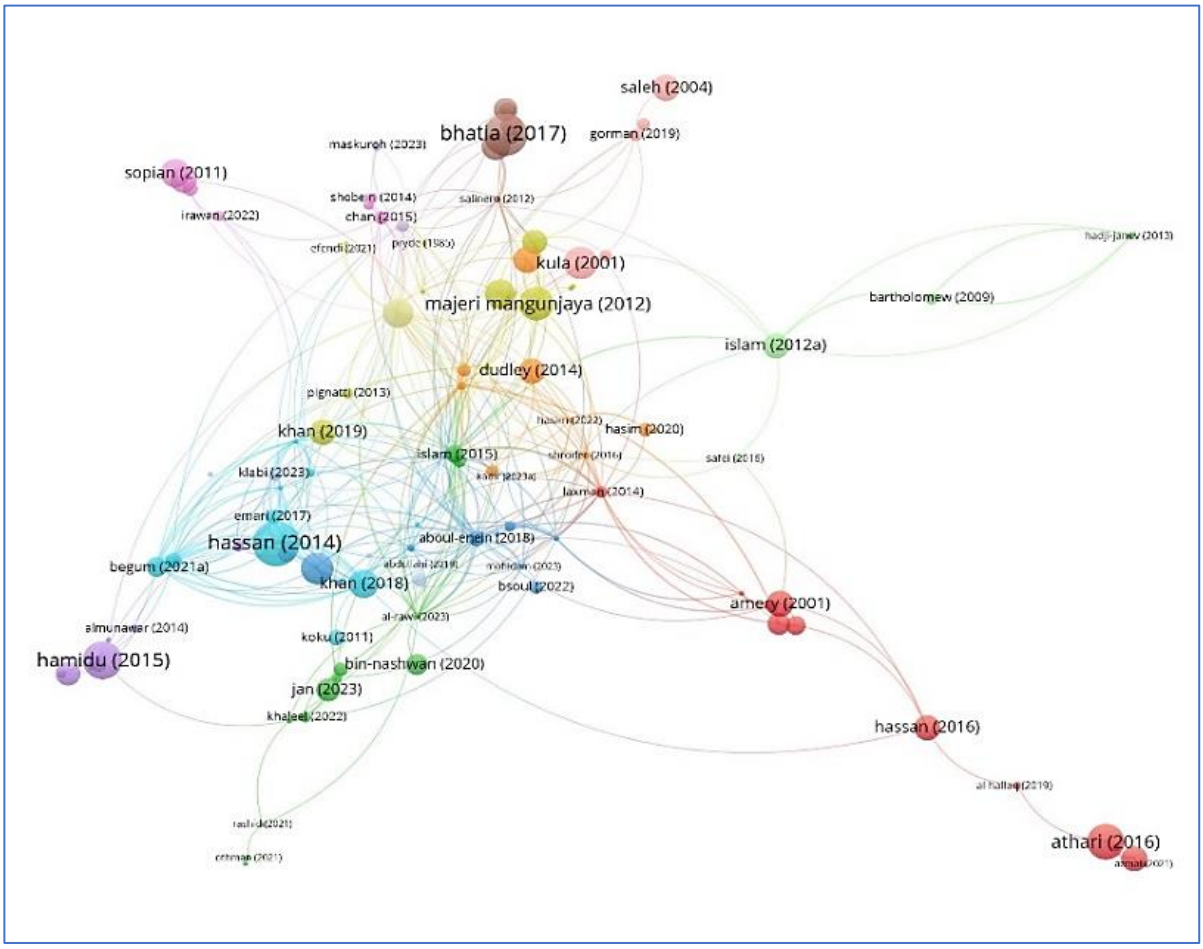

Figure 5: Bibliographic coupling

4.0 Conclusion

This study focuses on environmental conservation from Islamic perspectives to gain clearer insights into trends and historical developments through bibliometric methods. Although this study started earlier (1959), it shows a slow progress from 1960 to the 1990s. Nine out of ten affiliations originate from Islamic countries, suggesting that Islamic countries dominate the list.

The top ten cited authors and their respective organisations show that the UK has three top ten authors, two Malaysian authors, and both from Universiti Sains Malaysia. Further research shows that Indonesia generated the most scientific articles (18), followed by Malaysia (13) and Iran (6). The keywords that appeared with the highest frequency in the selected articles were environmental protection (72 times), developing countries (64 times), economics (61 times), Islam (59 times), religion (50 times), environment (49 times), conservation of natural resources (38 times), natural resources (30 times). The cluster analysis shows the findings of this study. The three groups of studies are: i) environment protection and sustainable development from an Islamic perspective, ii) economic protection from an Islamic perspective, and iii) issues of environmental problems, socioeconomic and religious towards Islamic perspectives.

Environmental conservation is a wide context and can be seen from the physical, social and economic perspective. Theoretical and practical reasons explain why understanding environmental conservation from the Islamic perspective is important (Gari, 2006; Kula, 2001; Mangunjaya & McKay, 2012). Thus, the interest of scholars in environmental conservation from an Islamic perspective has significantly increased over the past decade. Although some excellent reviews have been conducted (Koehrsen, 2020), discoveries about the updated scientific structure of environmental conservation, specifically from an Islamic perspective, still need to be made available.

A thorough mapping of this subject is required to obtain a comprehensive scientific framework that aids in forecasting future research paths in environmental protection. By bibliographic studies, this study investigates the scientific structures and connections among the foundational articles on the subject of environmental conservation by bibliometric analysis of research in this area. More precisely, an overview of this promising research theme's intellectual structure is provided by combining three bibliometric analysis methods: bibliographic coupling, co-citation, and co-word analyses. This enables researchers to locate their work in this field and pursue new avenues for future research. Results from bibliographic coupling analysis show that publications with the highest indices of bibliographic coupling are Hassan (2014), Mangujaya (2012), Kula (2012), Bhatla (2017) and Athari (2016). Results of keyword analysis show some suggestions for future research directions such as environmental education, sustainability and education sustainable development, environment protection and sustainable development in Islam, evaluation of natural resources and impact of socioeconomics towards environmental conservation.

The knowledge this study provides about environmental conservation from an Islamic perspective is anticipated to inspire future researchers to work on this burgeoning topic. Furthermore, the outcomes of bibliographic analysis assist researchers in placing their

ongoing studies in context and in identifying new avenues for future research. Lastly, policymakers can easily obtain academic information and an overall understanding of environmental conservation from Islamic views that can be implemented into practice thanks to this research's scientific framework of environmental conservation from Islamic perspectives. This is the first study that combines co-citation, co-word, and bibliographic coupling analyses with an examination of published works on environmental conservation. First off, Scopus provides the data sources for this study. Future research may include a larger range of data sources to ensure that no studies are overlooked. Second, by classifying and using keywords, other analytical methods like correspondence analysis can better understand and identify fresh patterns in social entrepreneurship. Lastly, the review's reliance on citation counts over an extended period obscures the significance of recently published research.

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References

Abdelzaher, D. M, Kot, A. & Helfay, A. (2019). Eco-Islam: Beyond the Principles of Why and What, and Into the Principles of How, *Journal of Bus Ethics*, 155, 623–643

Ahmad & Hassan (2007). Regulation and performance of Islamic banking in Bangladesh, *Thunderbird International Business Review*, 49 (2), 251 – 277.

Ahmed, A. A. A. (2012). Accounting from an Islamic perspective: A timely opportunity is a timely challenge. *ASA University Review,* 6(2), 11–31.

Athari S.A., Adaoglu C. & Bektas E., (2016). Investor protection and dividend policy: The case of Islamic and conventional banks, *Emerging Markets Review*, 27, 100-117.

Baik A., Yaagoubi R., Boehm J. (2015). *Integration of Jeddah historical bim and 3D GIS for historical monument documentation and restoration*, International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences - ISPRS Archives, 40.

Bazina, K. O. R., Mokhtar, A. I. & Kamarudin, M. A. (2023). The concept of Islamic sustainable development in human civilisation: Perceptions of Climate Change and its mitigation, International Journal of Advanced Research, Vol. 11 (12). 1072-1080.

Bhatia S., Redpath S. M., Suryawanshi K., Mishra C. (2017). The Relationship Between Religion and Attitudes Toward Large Carnivores in Northern India?, *Human Dimensions of Wildlife*, 22(1).

Chaudhry, S. (2022). Environmental Stewardship: Perspectives from the Islamic Teachings, African Journal of Sociological and Psychological Studies (AJOSAPS), Vol. 1 (1), 121-138

Ding, X. & Yang, Z. (2020). "Knowledge mapping of platform research: a visual analysis using VOSviewer and CiteSpace", *Electronic Commerce Research*, 1–23.DOI 10.1007/s10551-017-3518-2

Donthu, N., Kumar, S., & Pattnaik, D. (2020). Forty-five years of Journal of Business Research: A bibliometric analysis. *Journal of Business Research*, 109(October 2019), pp. 1– 14. https://doi.org/10.1016/j.jbusres.2019.10.039

Eck, N. J. V. & Waltman, L. (2023). *VOSviewer Manual*. Universiteit Leiden, January 2023.

Ellili, N.O.D., (2023). Bibliometric analysis of sustainability papers: evidence from environment, development and sustainability. *Environment, Development and Sustainability.* https://doi.org/10.1007/s10668-023-03067-6

Emari, H., Vazifehdoust, H. and Nikoomaram, H. (2017). Islam and Environmental Consciousness: A New Scale Development, *Journal of Religion Health*, 56, 706–724

Gari, L. (2006). *"A History of the Hima Conservation System". Environment and History*. The White Horse Press, Cambridge, UK. 12 (2): 213–228. doi:10.3197/096734006776680236

Greenfield, P. (2020). Humans exploiting and destroying nature on an unprecedented scale – report. https://www.theguardian.com/environment/2020/sep/10/humans-exploiting-and-destroying-nature-

on-unprecedented-scale-report-aoe
Hamidu et al. (2015). Corporate social responsibility: A review on definitions, core characteristics and theoretical perspectives, *Mediterranean Journal of Social Sciences*, 6 (4).
Hjørland, B. (2013). Facet analysis: The logical approach to knowledge organisation. *Information Processing and Management, 49*(2), 545–557.
Ibrahim Hazim (1985). *Al-Khawass Al-Qur'aniyyah wa Shumuliyyat Al-Hasr*,`Aalam Al-Binaa' magazine, July issue, Cairo.
Ibrahim (2011). Ibrahim P.; Basir S.A.; Rahman A.A., Sustainable economic development: Concept, principles and management from an Islamic perspective, *European Journal of Social Sciences*. 24 (3).
Ismail, M. S., Ramli, A., & Darus, F. (2014). Environmental management accounting practices and Islamic corporate social responsibility compliance: Evidence from ISO14001 companies. *Procedia-Social and Behavioral Sciences, 145*, 343-351.
Iswahyudi (2022). Cosmology and social stratification of the Madurese population in the XIX century, *Cogent Arts and Humanities*. 9(1).
Kamarrudin, H., Talib, O., Kamarudin, N., & Ismail, N. (2022). Examining the Trend of Research on Active Engagement in Science Education: Bibliometric Analysis. *Journal of Turkish Science Education*, 19(3), 937–957. https:// doi.org/ 10.36681/used.2022.157
Kent Baker, H., Pandey, N., Kumar, S., & Haldar, A. (2020). A bibliometric analysis of board diversity: Current status, development, and future research directions. *Journal of Business Research*, 108(August 2019), pp. 232–246. https://doi.org/10.1016/j.jbusres.2019.11.025
Koehrsen J. Muslims and climate change: How Islam, Muslim organisations, and religious leaders influence climate change perceptions and mitigation activities. *WIREs Clim Change*. 2021; 12:e702. https://doi.org/10.1002/wcc.702
Llewellyn, O. A., (2003). 'The Basis for a Discipline of the Islamic Environmental Law', in R. C. Foltz et al., Islam and Ecology, (Cambridge: Mass.: Center for the Study of World Religions, Harvard Divinity School; Harvard University Press.
Lopez-Arce & Garcia-Guinea (2005). Weathering traces in ancient bricks from historic buildings, *Building and Environment*, 40 (7).
Mangunjaya F. M & McKay J. E. (2012). Reviving an Islamic approach for environmental conservation in Indonesia, *Worldviews: Environment, Culture, Religion*, 16 (3).
Mihlar, A.M.M, Rahman, M.R.A., Mahyuddin, M. K., Mokhtar, A. N. & Ahmad, Y. (2016). Religious Harmony and Peaceful Co-Existence: A Quranic Perspective. *Journal of Islamic Social Sciences and Humanities*. 7. 47-62.
Muhammad, G., Shah-Kazemi, R. and Ahmed, A. (2010). *The Holy Qur'an and the Environment*. The Royal Aal Al-Bayt Institute for Islamic Thought. Kingdom of Jordan.
Naqvi, Syed Nawab Haider. *Ethics and Economics: An Islamic Synthesis*. United Kingdom: The Islamic Foundation, 1981. Islam, Economics and Society. London: Kegan Paul International.
Nik Hassan, N. M. H., Talib, O., Shariman, T. P., Rahman, N. A., & Zamin, A. A. M. (2022). A Bibliometric Analysis on How Organic Chemistry Education Research Has Evolved Collaboratively Over Time. *Jurnal Pendidikan IPA Indonesia*, 11(1), 73–90. https://doi.org/10.15294/jpii.v11i1.34185
Platonova E (2013). Corporate social responsibility from an Islamic moral economy perspective: a literature survey. *Afro Eurasian Stud* 2:272–297
Puspitarini, D., Degeng, I. N. S., Praherdhiono, H., & Suryati, N. (2023). Humanistic Pesantren: Systematic Literature Review and Bibliometric Visualization Analysis on Character, Moral, and Ethical Values. *Pertanika Journal of Social Sciences and Humanities*, 31(2), 465–490. https://doi.org/10.47836/PJSSH.31.2.01
Sayem, M. A. (2021). Islam and Environmental Ethics: A Qur'ānic Approach, *Islamic Studies* 60:2 (2021) pp. 157–172.
Sci2 Team. (2009). Science of Science (Sci2) Tool. Indiana University and SciTech Strategies, https://sci2.cns.iu.edu.
Seed (2015). Sustainability in the Qatar national dietary guidelines, among the first to incorporate sustainability principles, *Public Health Nutrition*, Vol. 18 (3). Pp. 2303 – 2310.
Sutton K., Fahmi W. (2002). The rehabilitation of Old Cairo, Habitat International, Vol. 26 (1).
Tan Luc, P., Xuan Lan, P., Nhat Hanh Le, A. and Thanh Trang, B. (2020). "A co-citation and co-word analysis of social entrepreneurship research", *Journal of Social Entrepreneurship*, 13 (3), 324-339.
Van Eck, N.J. and Waltman, L. (2017), VOSviewer Manual, Univeristeit Leiden, Leiden, 1-8.
Siyavooshi M., Foroozanfar A., Sharifi Y. (2019). Effect of Islamic values on green purchasing behaviour, *Journal*

of Islamic Marketing, 10 (1), 125 – 137.

Amin L., Fairuz Sujak S., Latif Samian A., Sabri Haron M., Nasran Mohamad M. (2013). Decision making on agro-biotechnology issues: An Islamic perspective, *Journal of Food, Agriculture and Environment*, 11. 1207 – 1215.

Dudley N., MacKinnon K., Stolton S. (2014). The role of protected areas in supplying ten critical ecosystem services in drylands: A review, *Biodiversity*. 15.

Farook F., Din N., Razali M.A., Ismail A. (2016). *Profundity in maxims of Eco-Islam among hospitality students.* [Paper presentation]. Heritage, Culture and Society: Research agenda and best practices in the hospitality and tourism industry - Proceedings of the 3rd International Hospitality and Tourism Conference, IHTC 2016 and 2nd International Seminar on Tourism, ISOT 2016.

Hasim N.A.; Amin L.; Mahadi Z.; Yusof N.A.M.; Ngah A.C.; Yaacob M.; Olesen A.P.; Aziz A.A. (2020). The Integration and Harmonisation of Secular and Islamic Ethical Principles in Formulating Acceptable Ethical Guidelines for Modern Biotechnology in Malaysia, Science and Engineering Ethics. 26 (3).

Wardi F., Suhaimi, F. M., Saffinee, S. S. (2023). Syariah and Law Studies in Facing the Contemporary Challenges" 388, Preservation of animal rights in Islamic jurisprudence. The 4th International Conference of the Postgraduate Students and Academics in Syariah and Law 2023 (INPAC 2023)