Mapping the Blue Economy: Trends and Themes Through Bibliometric Analysis

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ABSTRACT
Blue economy is broadly defined as the sustainable use of ocean and marine resources for economic growth, improved livelihoods, and jobs, while preserving the health of ocean ecosystems. This paper aims to analyse the trend of blue economy publications including themes, authors and countries that publish blue economy related publications. This systematic review paper uses bibliometric methods with VOSViewers tools. This study shows that the trend of publications related to the blue economy in the fields of management, business and economy has increased starting in 2018 and significantly increased in 2021. This is in line with the SDG's which prioritise goals on the blue economy. Meanwhile, countries that pioneer the publication of the blue economy are the United Kingdom and the United States. While related to the theme, some themes that have become a trend in the blue economy in the last two decades are sustainable development, sustainability, blue growth and fisheries. This is in line with the goals of the blue economy theme to improve the sustainability of the marine ecosystem. This paper has a contribution related to blue economy trends including blue economy policies that prioritise sustainability to improve the long-term economy. While the theoretical contribution adds to the literacy related to blue economy literature.

Keywords: *Blue economy, Sustainable development, Marine industry, Bibliometric, Systematic literature*

1. INTRODUCTION

The development of the blue economy has evolved significantly over the years, transitioning from traditional practices to innovative approaches that emphasize sustainability and regeneration. The concept of the blue economy has evolved significantly over the past few decades, emerging from the intersection of ocean-based economic activities and sustainable development. Initially centered on traditional sectors such as fisheries, shipping, and maritime transport, the scope of the blue economy has expanded to include innovative areas such as marine biotechnology, ocean energy, and coastal tourism, all underpinned by the principles of sustainability and inclusive growth (Lee et al., 2020; Vierros & De Fontaubert, 2017).

Currently, there is a growing trend towards integrating emerging technologies and practices that address challenges such as decarbonisation and digitalisation, highlighting the urgency of discussing the blue economy for its potential contributions to economic growth and environmental resilience (Ninawe, 2017; Sardinha, 2024). As the blue economy continues to gain traction, it is increasingly recognized not only for its potential to stimulate economic growth but also for its role in fostering social equity and environmental justice. The integration of sustainable practices within marine industries, such as eco-tourism and sustainable aquaculture, is pivotal in mitigating the adverse effects of overexploitation and pollution, thus enhancing community resilience and livelihoods in coastal areas (Djoric, 2022). Moreover, the shift towards circular economic models—where waste is minimized, and resources are reused—reflects a significant paradigm change that aligns with global sustainability goals. This evolution underscores the importance of collaborative governance frameworks that engage local communities, ensuring that the benefits of the blue economy are equitably distributed and that environmental stewardship becomes a shared responsibility among all stakeholders involved.

In recent years, scholarly and policy interest in the blue economy has surged. Bibliometric analyses reveal an exponential growth in publications related to ocean-based development, with dominant themes including marine spatial planning, blue growth, and ecosystem services (Eikeset et al., 2018; Voyer et al., 2022). A strong interdisciplinary trend is also evident, where economics, environmental science, marine biology, and public policy intersect in exploring sustainable maritime development. Additionally, technological innovation such as remote sensing, big data analytics, and marine robotics are being increasingly integrated into blue economy research and practice.

The urgency of advancing the blue economy arises from growing environmental pressures and the need for resilient, ocean-based livelihoods. Covering over 70% of the Earth, oceans provide essential ecosystem services but face escalating threats such as overfishing, pollution, and climate change (FAO, 2022). As a strategic response, the blue economy supports both ecological and economic sustainability, especially for coastal and small island developing states (Patil et al., 2016). Theoretically, it expands sustainable development discourse by promoting ocean-centered, cross-sectoral governance and circular economy principles (Pauli, 2010; Silver et al., 2015). Practically, it drives policy, investment, and innovation, as nations adopt blue economy strategies aligned with global sustainability goals. In the Anthropocene era, the blue economy has become both a conceptual advancement and a practical necessity for a sustainable planetary future.

2. LITERATURE REVIEW

2.1. Blue Economy

The blue economy is defined as an innovative approach to sustainable development that emphasizes the responsible use of ocean resources to foster economic growth, improve livelihoods, and preserve marine ecosystems (Luna, 2024). It encompasses various economic activities such as fisheries, aquaculture, tourism, shipping, seabed mining, oil and gas extraction, and renewable energy (Harris & Thompson, 2023). The concept of the blue economy is closely aligned with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 14 (Life Below Water) and SDG 15 (Life on Land) (Başhan & Çetinkaya, 2024). The blue economy encompasses several key sectors that are crucial for sustainable development. These include 1) Renewable Energy, offshore wind and tidal energy are significant contributors to the blue economy (Renaldo et al., 2024). 2) Marine Biotechnology, this sector focuses on the use of marine resources for the development of new products and technologies (Nguyen, 2024). 3) Sustainable Fisheries and Aquaculture, these sectors are essential for food security and economic growth (Nguyen, 2024). 4) **Coastal Tourism**, this sector contributes significantly to the economy of many coastal regions (Harris & Thompson, 2023). The research on the blue economy has been growing steadily, with a significant increase in publications after 2018 (Lu & Li, 2024). The field of study has expanded to include various aspects such as sustainable development, environmental conservation, and economic growth. The key research areas include the sustainable development of marine environments, management of marine ecosystems, and marine aquaculture (Lu & Li, 2024).

3. RESEARCH METHODS

This study adopts a bibliographic analysis methodology to systematically examine the intellectual development, thematic focus, and research dynamics of the blue economy. Bibliographic or bibliometric analysis is a quantitative method for evaluating scientific literature through statistical and network-based techniques, often used to understand the structure and progression of knowledge within a field (Aria & Cuccurullo, 2017; Donthu et al., 2021).

The primary data source for this study is the Scopus database, recognized for its extensive coverage of peer-reviewed literature across disciplines, particularly in environmental, economic, and marine sciences. Scopus was selected due to its reliability, comprehensive metadata, and suitability for bibliometric studies (Zupic & Čater, 2015). The bibliographic data were collected using the search query:

- Keyword: “blue economy”
- Subject Area: “Business, management, and accounting” and “economic, econometrics and finance”
- Timeframe: Publications from 2000 to 2024, capturing the period from the early discourse on the blue economy to the present.
- Document Types: Peer-reviewed journal articles, and reviews
- Language: English-only documents to maintain consistency in analysis.
- Publication stage: Final
- Exclusions: Duplicates, editorials, non-scholarly content, and inaccessible full-text entries were excluded.This approach ensures a focus on high-quality and thematically relevant literature.

The metadata were exported in CSV format and processed using the primary tools VOSviewer. VOSviewer is used for generating co-authorship, keyword co-occurrence, and citation networks (van Eck & Waltman, 2010). These tools facilitated both descriptive (e.g., publication trends, author productivity) and relational analyses (e.g., co-citation, collaboration networks).

The bibliographic analysis addresses four core research questions: 1) What are the publication and citation trends in blue economy research over the past two decades?. 2) Who are the most influential contributors (authors, institutions, and countries)?. 3) What are the dominant and emerging research themes?. 4) How has the intellectual and thematic

structure of blue economy research evolved?. This framework provides both a historical overview and future outlook on the field, supporting both theoretical advancement and practical policy formulation.

4. RESULTS AND DISCUSSIONS

Based on the processed data of articles related to the blue economy within the fields of management, business, and economics, a total of 189 publications were identified. These articles were further analyzed to extract key insights, including citation metrics, leading countries by publication output, trending topics, and top contributing authors. In line with this analysis, Table 1 presents the annual publication trends from 2011 to 2024. Notably, as the concept of the blue economy began to gain wider academic and policy attention around 2018, the number of related publications started to increase in 2019, with a significant surge observed from 2021 onward. A detailed overview of this trend is provided in Table 1 below.

Table 1. The yearly volume of published papers

Year	Number of Paper	Percentage
2011	1	0.53%
2014	2	1.06%
2015	3	1.59%
2016	3	1.59%
2017	3	1.59%
2018	16	8.47%
2019	18	9.52%
2020	15	7.94%
2021	31	16.40%
2022	36	19.05%
2023	27	14.29%
2024	34	17.99%
Total	189	100%

In addition to analyzing the annual publication trends, this study also examined the geographic distribution of research output in the field of the blue economy. Using VOSviewer for co-authorship and country-level analysis, the results indicate that the United Kingdom, United States, and Australia are the leading contributors in terms of publication volume (Figure 1). These countries demonstrate a strong academic engagement with the blue economy discourse, reflecting both their strategic maritime interests and robust research infrastructures.

In line with the analysis of publication volume, this study also identifies the most highly cited authors and publications within the dataset, as illustrated in Figure 2. Among the 189 articles analyzed, the works by Bennett et al. (2021) and Bueger (2015) emerged as the most frequently cited, indicating their substantial influence in shaping scholarly discourse on the blue economy. These are followed by notable contributions from Bennett et al. (2021) and Keen et al. (2018), further highlighting the central role of these authors in advancing theoretical and policy-related perspectives in the field.

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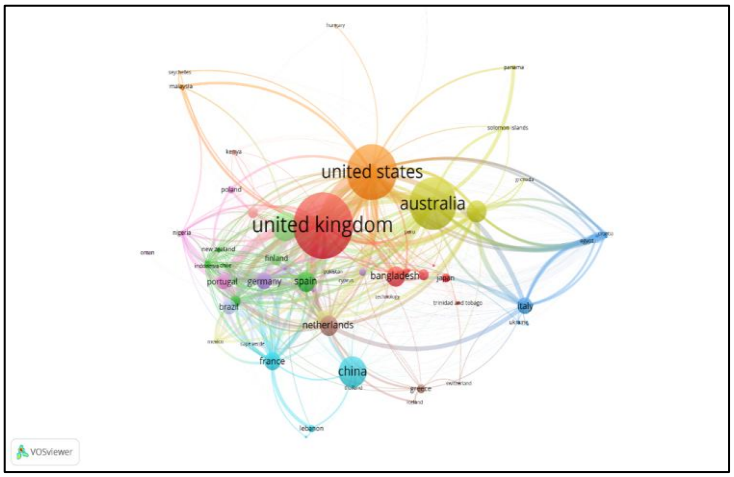

Figure 1 Bibliographic Coupling of Countries

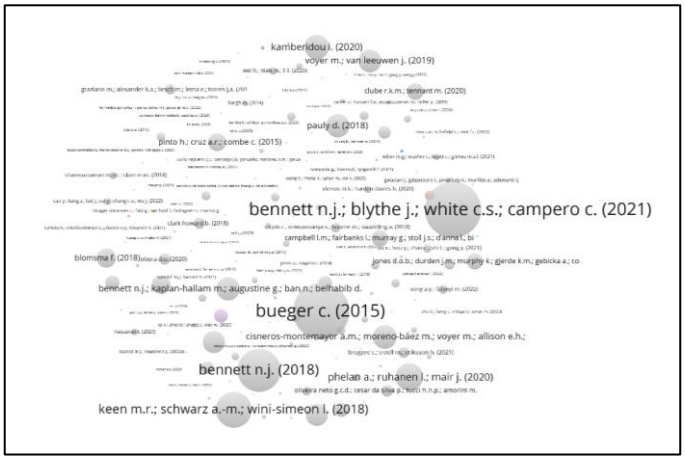

Figure 2 Citation of Document

Keyword occurrences help identify the most discussed topics in the blue economy and highlight areas with lower occurrences that have potential for further exploration. The keyword "Blue Economy" ranks highest with 112 occurrences, reflecting its central importance in current research as it encompasses a broad spectrum of economic activities and sustainable practices in ocean and marine environments. Following "Blue Economy," the keywords "Sustainable Development" (19 occurrences), "Sustainability" (17 occurrences), "Blue Growth" (16 occurrences), and "Fisheries" (12 occurrences) are also highly discussed. These keywords are popular among researchers due to their critical role in addressing global environmental challenges, promoting long-term ecological balance, and supporting economic resilience within coastal and marine contexts.

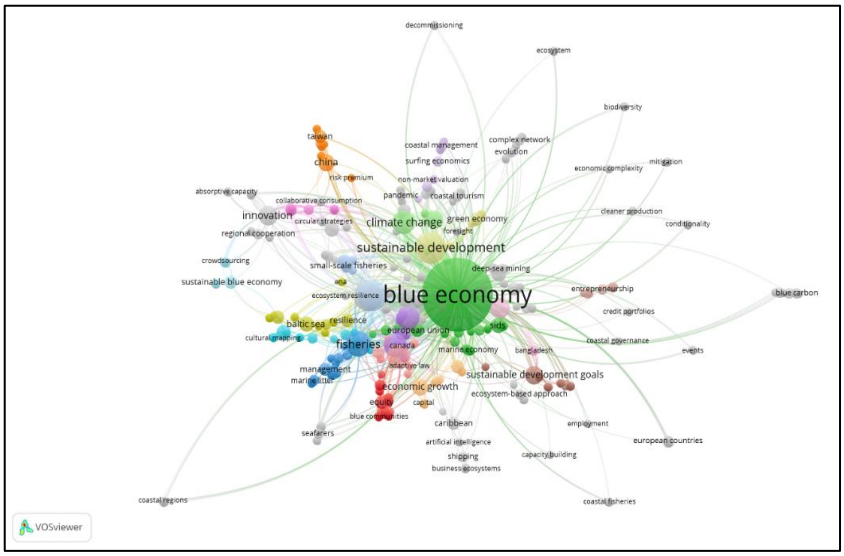

Figure 3 Co-occurrence of Author Keywords

Figure 4 highlights the top 10 keywords with the least occurrences, suggesting that future research could explore the roles of "Equity," "Management," and "Taiwan" in blue economy studies, potentially uncovering important yet underexplored aspects of the field. Additionally, investigating specific issues such as "Covid-19" and "Gross Domestic Product" in the context of the blue economy could provide valuable insights into the economic and social impacts of global challenges. Furthermore, Figure 4. Overlay Visualization through VOS Viewer opens up new avenues for research, offering significant potential for exploration in areas such as biodiversity, blue carbon, crowdsourcing, and coastal fisheries, all of which could contribute to a deeper understanding and further the growth of the global blue economy.

In addition, it is also possible to analyse institutions that publish blue economy publications. The analysis using VOSviewer with bibliographic coupling of institutions in Figure 5 also shows similar results, with Excelia Business School and the University of Portsmouth as the top institutions publishing Blue Economy papers. Excelia Business School from France and the University of Portsmouth from the United Kingdom lead in the first and second positions, with 4 publications each. Meanwhile, the Changshu Institute of Technology and the College of Maritime Economic and Management rank 9th and 10th, respectively; both institutions, based in China, have 2 publications each.

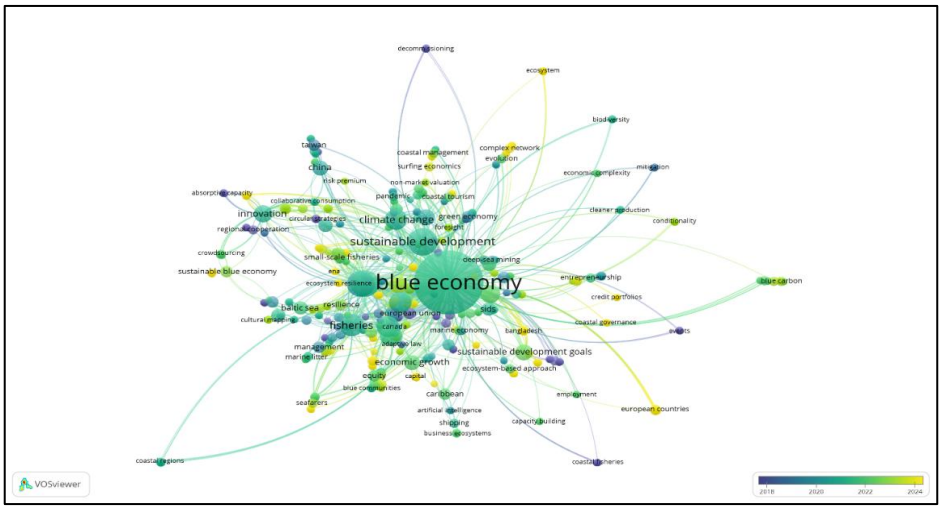

Figure 4 Overlay Visualization

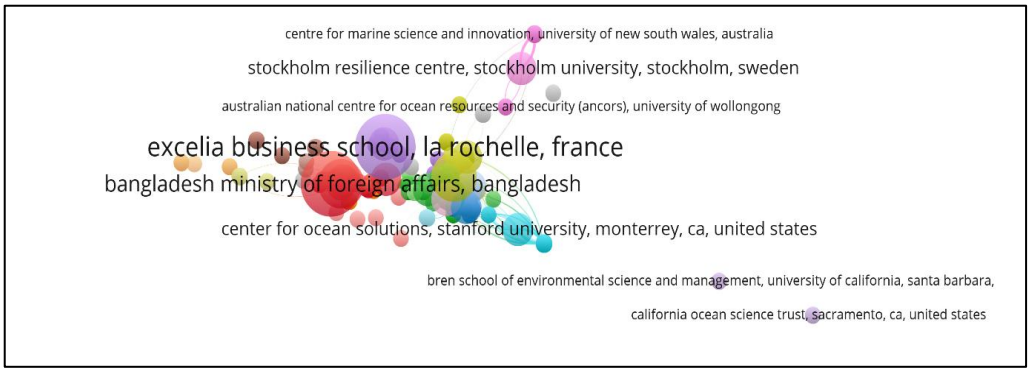

Figure 5 Bibliographic Coupling of Institutions

The bibliometric analysis reveals that scholarly interest in the blue economy has surged significantly since 2018, with notable peaks in 2021 and 2022. This aligns with the global prioritization of sustainability, particularly in the context of SDGs, where ocean health and marine-based economic development are increasingly emphasized (Lu & Li, 2024). The United Kingdom, United States, and Australia emerge as leading contributors, reflecting their strategic maritime priorities and research capacities. Dominant themes such as sustainable development, fisheries, and blue growth signal a convergence of economic and environmental goals, while underexplored topics like equity, governance, and biodiversity point to promising future research directions. Highly cited works, particularly by Bennett et al. (2021) and Bueger (2015), have significantly shaped the discourse, suggesting a growing theoretical maturity in the field. Institutional leadership, concentrated in European and Chinese universities, also underscores the global but uneven academic engagement with blue economy research.

5. CONCLUSION

This study maps the evolving landscape of blue economy scholarship using bibliometric methods. The findings highlight a rapid growth in publications, a concentration of research output in key countries, and the emergence of interdisciplinary themes aligned with sustainability. Theoretical contributions center on governance, circular economy, and marine resource management, while practical relevance is evident in the formulation of national strategies and policy agendas. To advance the field, future research should address underrepresented issues such as social equity, localized governance, and the socioeconomic impacts of marine innovation. The blue economy thus continues to serve as both a conceptual framework and a practical imperative for achieving ocean-based sustainable development in the Anthropocene era.

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