International Journal of Cyber and IT Service Management (IJCITSM)
Vol. 6, No. 1, April 2026, pp. 78−91
E-ISSN: 2808-554X | P-ISSN: 2797-1325, DOI:10.34306

Strategic Management and ICT Innovation for Climate Action SDG 13

Felix Sutisna[1*], Tiurida Lily Anita[2], Thomas Sumarsan Goh[3], Ahmed Khan[4], Efa Ayu Nabila[5]
[1]Department of Business and Management, Multimedia Nusantara University, Indonesia
[2]Faculty of Digital Communication and Hotel & Tourism, Bina Nusantara University, Indonesia
[3]Faculty of Management Science, Methodist University of Indonesia, Indonesia
[4]Ilearning Incorporation, Colombia
[5]Faculty of Science and Technology, University of Raharja, Indonesia
[1]felix.sutisna@lecturer.umn.ac.id, [2]tiurida.anita@binus.ac.id, [3]gohtho@gmail.com, [4]khan@ilearning.co, [5]efaayunabila@raharja.info
***Corresponding Author**

Article Info

Article history:

Submission October 2, 2025
Revised December 4, 2026
Accepted March 3, 2026
Published March 11, 2026

Keywords:

Strategic Management
ICT Strategy
Climate Governance
Bibliometric Analysis
VOSviewer

ABSTRACT

This study investigates how ICT-driven strategic management supports organizational climate action aligned with Sustainable Development Goal 13 (SDG 13). While prior studies have examined sustainability leadership and climate governance, limited attention has been given to how digital technologies enable strategic management practices that foster climate-conscious organizational cultures. Addressing this gap, **this research employs** a five-step bibliometric protocol using Scopus data to map the intellectual structure, thematic evolution, and collaboration patterns of strategic management research related to climate action. A keyword search of "strategic management" AND ("Sustainable Development Goal 13" OR "climate") initially yielded 424 records, which were refined through timeframe (2015–2025) and relevance filtering to produce a final dataset of 158 publications. Bibliometric mapping was conducted using VOSviewer and Bibliometrix, including co-authorship, keyword co-occurrence, source coupling, and country collaboration analyses. **The findings** reveal a significant growth in publications, rising from nine articles in 2015 to twenty-seven in 2024, indicating increasing scholarly and managerial attention to climate-oriented strategic management. **The results highlight** ethical, transformational, and adaptive management as dominant strategic dimensions, increasingly supported by ICT-enabled tools such as data analytics, digital monitoring systems, and innovation platforms. From a managerial perspective, **this study demonstrates** how digital strategic management insights can guide organizations in embedding climate objectives into governance structures, performance measurement, and decision-making processes, thereby strengthening institutional capacity to achieve SDG 13.

DOI: https://doi.org/10.34306/ijcitsm.v6i1.232

1. INTRODUCTION

Strategic Management (SM) increasingly addresses sustainability challenges from the global climate crisis. Climate Action under SDG 13 requires organizations to integrate climate considerations into governance and strategic decision-making [1]. This strategic shift is consistent with national and international policy frameworks on climate change mitigation and adaptation, including global initiatives such as the Paris Agreement

under the United Nations Framework Convention on Climate Change (UNFCCC) and national climate strategies that emphasize integrated governance, long-term planning, and measurable emission reduction targets [2, 3]. As a result, strategic management is no longer viewed solely as a mechanism for economic optimization, but as a critical framework for aligning organizational objectives with long-term environmental resilience and societal well-being.

Recent studies highlight that the effectiveness of climate-oriented strategies is closely linked to the adoption of Information and Communication Technologies (ICT) and digital innovation. Technologies such as data analytics, artificial intelligence, and the Internet of Things (IoT) help organizations assess climate risks and support evidence-based strategic decisions. This perspective aligns with governmental directives that promote digital governance and technology-driven decision support systems to enhance policy effectiveness, transparency, and accountability in addressing climate-related challenges. ICT-enabled capabilities therefore play a central role in supporting adaptive and transformational management practices by strengthening organizational learning and institutional readiness for climate uncertainty, which aligns with global climate governance frameworks such as the Paris Agreement and the United Nations Sustainable Development Goals (SDGs) that emphasize digital innovation and collaborative governance for climate action [2, 4].

Despite the growing body of literature on sustainability and strategic management, existing studies remain fragmented and lack a systematic understanding of how ICT-driven strategic management supports Climate Action under SDG 13. Prior research often focuses on individual technologies or leadership attributes in isolation, with limited efforts to map the intellectual structure, thematic evolution, and collaborative patterns of this interdisciplinary field. This gap is particularly evident when viewed against the backdrop of major global and national policy milestones implemented after 2015, which explicitly call for integrated, technology-enabled, and strategically governed climate action frameworks.

To address these gaps, this study conducts a comprehensive Bibliometric Analysis of ICT-driven strategic management research related to Climate Action (SDG 13) using Scopus-indexed publications from 2015 to 2025 [5, 6]. By applying a five-step bibliometric protocol and employing VOSviewer and Bibliometrix, the study aims to identify influential authors, institutions, and thematic clusters shaping the field [7]. The findings contribute by clarifying the strategic role of ICT-enabled management practices in advancing climate action, while also providing evidence-based insights that are aligned with governmental climate regulations and digital governance policies, thereby supporting more coherent integration between academic research, managerial practice, and public policy [8, 9].

2. RESEARCH METHODOLOGY

2.1. Data Collection

Climate change offers significant social and economic hazards, including increasing resource scarcity, disrupting food systems, and potentially fuelling conflict [10, 11]. The United Nations adopted SDG 13 to address climate change by incorporating measures into national policies, strengthening adaptive capacities, and increasing education and awareness [12]. Although international frameworks such as the Paris Agreement provide a starting point, turning global goals into local action remains a substantial problem. This asks for systemic transformation and a just transition, rather than incremental changes [13, 14].

Table 1 presents a concise overview of the bibliographic data collection process applied in this study to ensure transparency and reproducibility. The Scopus database was selected for its extensive coverage of peer-reviewed literature, using a targeted keyword strategy related to strategic management and Climate Action (SDG 13) within the 2015–2025 period. To maintain analytical consistency, only English-language articles, review papers, and conference proceedings within relevant subject areas were included. From an initial set of 424 records, a structured filtering process resulted in a final dataset of 158 publications, which were analyzed using VOSviewer and Bibliometrix.

To ensure methodological rigor and minimize selection bias, this study applied clearly defined inclusion and exclusion criteria in the bibliographic data collection process. These criteria were designed to capture high-quality scholarly contributions addressing the intersection of strategic management and climate action within the context of Sustainable Development Goal 13 (SDG 13). Attention was given to database selection, keyword formulation, time span, document type, language, and subject area to maintain analytical consistency. This structured approach enhances transparency, replicability, and the validity of subsequent bibliometric analyses. The detailed criteria are summarized in Table 1.

Table 1. Summary of Bibliographic Data Collection Criteria

Criteria	Description
Database	Scopus (Elsevier)
Search Keywords	”strategic management” AND (”Sustainable Development Goal 13” OR ”climate”)
Time Span	2015-2025
Date of Data Retrieval	January 2025
Document Types	Articles, Review Articles, Conference Papers
Language	English
Subject Areas	Business, Management and Accounting; Social Sciences; Decision Sciences
Initial Records Retrieved	424 documents
Records after Time Filtering	314 documents
Final Dataset Analyzed	158 documents
Analysis Tools	VOSviewer (v1.6.xx); Bibliometrix (R-package)

Table 2 complements the keyword co-occurrence network by clarifying the intellectual structure of the field. The dominance of the red cluster indicates that strategic leadership and climate action form the core of SDG 13-oriented strategic management research, while the presence of systems-oriented (green) and decision-complexity (yellow) clusters highlights the increasing role of data-driven and adaptive decision-making frameworks supported by ICT [15, 16].

Table 2. Keyword Cluster Summary Based on Co-occurrence Analysis

Cluster Color	Dominant Theme	Representative Keywords	Total Link Strength
Red	Strategic Leadership and Climate Action	climate change, strategic management, leadership, employee engagement, value creation	High
Blue	Organizational and Market Strategy	organization, business strategy, market, performance, governance	Medium-High
Green	Sustainability Systems and Development	sustainability, sustainable development, system thinking, urban resilience	Medium
Yellow	Decision-Making under Complexity and Uncertainty	decision making, complexity, uncertainty, adaptive strategy, resilience planning	Medium

The following search terms were used to retrieve bibliographic data from Scopus: ”strategic management” AND ”Sustainable Development Goal 13” OR ”climate”, because SDG 13 refers to the United Nations' SDG 13 which is ”take urgent action to combat climate change and its impacts” which has 5 targets, namely:

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
- Integrate climate change measures into national policies, strategies and planning covering.
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning the entire publication period from 2015 to 2025.
- Developed countries are committed to mobilizing USD 100 billion annually to support climate mitigation and transparency in developing countries and to operationalize the Green Climate Fund.
- Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

The Asia-Pacific region is struggling to meet SDG 13 goals due to the COVID-19 pandemic and climate change, disproportionately burdening vulnerable groups like women, children, indigenous populations, and migrants [17, 18]. The region has seven out of ten affected populations and eight out of ten highest frequencies of disasters between 2000 and 2019 [19, 20].

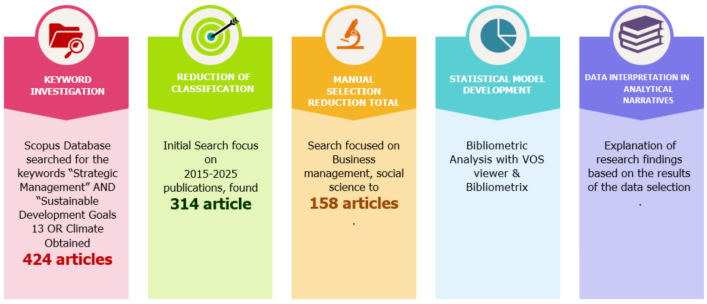

Figure 1. The bibliometrics proyocol of Strategic Management and SDG 13 or climate

The study utilized high-quality peer-reviewed data from the Scopus database, comprising 94 articles related to strategic management, sustainable innovation, and their connection to SDG-12 [21, 22]. The bibliometric protocol shown in Figure 1 began with a keyword-based search in Scopus using the query: "Strategic Management" AND "Sustainable Development Goals 13" OR "Climate", which initially produced 424 documents [23]. The dataset was then refined to include only peer-reviewed publications from 2015 to 2025, resulting in 314 articles, a period that reflects the increasing global policy and academic attention following the Paris Agreement and SDG implementation [24].

In the third step, manual selection criteria were applied to focus on publications in business management, social sciences, and decision sciences, resulting in a final dataset of 158 documents. These were further filtered to include only articles, reviews, and conference papers in English to ensure methodological consistency. Bibliometric analysis was then conducted using VOSviewer and Bibliometrix to generate network mapping, including co-authorship, source coupling, keyword co-occurrence, and country collaboration analyses. The final stage involved synthesizing the results to identify intellectual structures, influential authors, and emerging research trends related to SDG 13 [25].

2.2. Scholarly Publication Trends at the Nexus of Strategic Management, SDG 13 and Climate: 2015-2025

The scholarly discourse surrounding strategic management and its alignment with SDG 13 particularly in fostering climate-resilient organizational practices began with moderate attention between 2015 and 2017, with publications fluctuating from 9 in 2015 to just 4 in 2017. Early studies laid the groundwork for strategic climate change mitigation, focusing on low-carbon opportunities, particularly in developing countries, through carbon credit trading for business growth and profit increase [26].

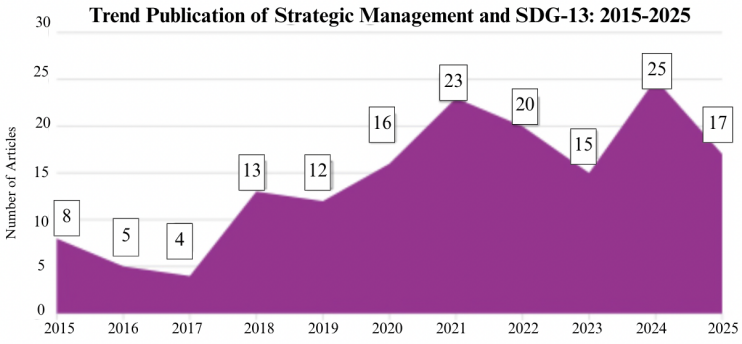

Figure 2. Publication Trends in Strategic Management and SDG 13.
Source : Scopus database 2025.

A noticeable uptick in academic interest began in 2018, with a rise to 13 publications, followed by a stable output of 12 publications in 2019. This growth reflects an increasing realization among scholars of the urgency to incorporate SDG principles into corporate governance. Notably, publications during this period began to pivot toward the operationalization of sustainability focusing on organizational learning, stakeholder engagement, and strategic alignment with global climate goals. A researcher [27–29] addressed how strategic management accounting can enhance competitive sustainability performance in industrial sectors, offering empirical insight into management systems that support low-carbon transitions.

The publication output surged between 2020 and 2021, with the number of articles growing from 16 to 23, reflecting a phase of significant intellectual expansion. This period coincides with intensifying global climate discourse, reinforced by policy mechanisms such as the UN's Decade of Action. Key themes in this period included climate resilience planning, SDG-aligned performance measurement, and sustainability innovation through cross-sectoral collaboration. Adler [30, 31] contributed a compelling critique of economic systems' responses to climate challenges, underlining the pivotal role of strategic systems in transitioning toward sustainability. The research focus also deepened around institutionalizing climate consciousness within organizational culture echoing the intent of SDG 13.

In 2024, a peak in publication occurred, with 27 articles, the highest output in the decade. This unprecedented spike likely corresponds to the global push for corporate climate disclosures and the mainstreaming of ESG strategies. [32, 33] developed research to integrate quantitative climate risk modelling with SWOT (strengths, weaknesses, opportunities, and threats) analysis commonly used in business planning and strategic investment, shifting the focus from avoiding negative outcomes to forward-looking planning in an evolving environment.

By 2025, the number of publications had reached 17, more than half of the publications in 2024. This reflects the enthusiasm for research in this topic related to the latest digital technology innovations, such as how to overcome the shortage of natural resources, the challenges of increasing water scarcity, and the impacts of climate change [34, 35]. Smart irrigation management is crucial to ensure food security and promote sustainable agriculture, reducing inefficiency, water waste, and preventing crops from being vulnerable to water stress. [36–38] proposed an innovative irrigation system that integrates the Internet of Things (IoT), embedded systems, fuzzy logic, and cloud computing for optimal water management.

2.3. Bibliometric Analysis

A multifaceted bibliometric study with country-couple, organization-couple, author-couple, source-couple, document-couple, and co-occurrence analysis of keywords and titles is carried out using VOS viewer and Bibliometrix [39–41]. Clusters align with strategic management and SDG 13, focusing on immediate action to mitigate climate change effects, linking to supply chain management, finance, organizational knowledge, and investment [42, 43].

Bibliometric data analysis from 2015–2025 using VOS viewer and Bibliometrix was conducted to obtain better analysis results. VOS viewer has strong visualization abilities, assisting in creating maps of intellectual content. These maps showed keyword clusters, author groups, and other main subjects in the literature, making it easier to see the conceptual structure and how the research field has changed, showing new topics and teamwork between scholars [44, 45]. Bibliometrix, as a Bibliometric Analysis tool, provided a solid way to study global research output. By using data mining, Bibliometrix helped find citation trends, three-field plots, and co-authorship matrices [46, 47]. Using both tools together allowed for a well-rounded and solid review of the literature, in line with reputable journal standards.

3. RESULT AND DISCUSSION

3.1. Country-couple Bibliometric Analysis

The international collaboration patterns and temporal evolution of research on strategic management and climate action were analyzed using a country-coupling bibliometric approach with VOSviewer. This method identifies relationships among countries based on shared reference patterns, highlighting influential contributors and emerging research networks over time. The overlay visualization illustrates the chronological development of scholarly output, enabling the observation of shifts in research intensity and thematic focus across countries. The results of this analysis are presented in Figure 3.

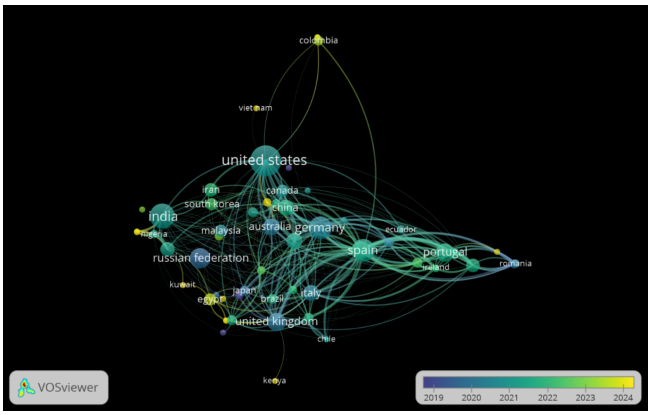

Figure 3. Country Coupling Overlay in Strategic Climate Research.
Source: Data processing by VOS viewer 2025.

Most of the early research period (2019-2021) was dominated by contributions from reputable academic institutions in Germany (14 documents, 311 citations), Spain (14 documents, 421 citations), and the United States (27 documents, 502 citations). These countries played a significant role in shaping the early theoretical development of strategic management in the context of climate action. During this period, a researcher examined how strategic management accounting practices could be used to improve industrial sustainability performance by integrating climate considerations into managerial control systems. Other early studies emphasized ethical leadership as a critical factor for embedding sustainability practices within organizational structures and decision-making processes. In addition, foundational contributions from Italy (7 documents, 257 citations) and the United Kingdom (9 documents, 217 citations) provided important conceptual groundwork by strengthening the linkage between strategic leadership, sustainable governance, and organizational climate resilience.

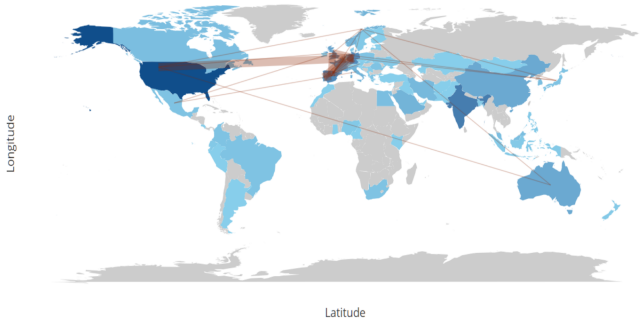

Figure 4. The country collaboration map bibliography of strategic management and SDG 13 or climate.
Source: Data processing by Bibliometrix 2025.

The most recent scientific research output (2023-2025) shows a clear trend toward cooperative, realistic approaches to climate adaptation, with Vietnam (1 document) and Colombia (3 papers, 6 citations) making new contributions. In line with recent studies on resilient urban development, these more recent entrants place an emphasis on strategic urban sustainability transitions and localized adaptation frameworks [48, 49]. A research analysis of systemic obstacles in economic structures reacting to global climate issues resonates with China's notable scholarly accomplishments in governance innovation and strategic alignment of climate policies (7 documents, 120 citations). Collectively, recent publications underscore an evolving strategic discourse emphasizing actionable climate strategies and the integration of ethical leadership and competitive sustainability practices [50, 51].

Recent scholarly developments, as illustrated in Figure 4, reveal extensive transnational collaborations that drive strategic management research aligned with SDG 13. Strong research linkages connecting the United States with European countries, Australia, and China indicate a shared commitment to globally integrated

climate resilience strategies. Recent studies demonstrate how climate-resilient strategic planning is increasingly supported by advanced decision-making frameworks that integrate risk mitigation into strategic management across diverse regional contexts. Other research emphasizes the importance of aligning corporate strategies with planetary boundaries, highlighting proactive environmental stewardship as a core component of long-term sustainability. Together, these collaborative interactions form a robust scholarly ecosystem that fosters innovative strategic management approaches to address global climate challenges.

In addition to these established networks, emerging academic collaborations involving countries such as India, South Korea, and Canada contribute novel strategic perspectives on climate adaptation and sustainability. Recent research has examined the combined influence of seasonal, environmental, and human factors on water resource management, offering adaptive frameworks relevant to strategic management practices across Asia-Pacific and North American contexts. Other studies have explored how digital financial innovations can support sustainability objectives and enhance climate-related financial inclusion, reinforcing the value of cross-country academic exchange. Collectively, these international research alliances integrate strategic management concepts with practical climate adaptation mechanisms, strengthening progress toward the objectives of SDG 13.

3.2. Organizational-couple Bibliometric Analysis

Organizational-level relationships in the strategic management and climate action literature were analyzed using an organizational-coupling bibliometric approach. This analysis focuses on the extent to which institutions are connected through shared references, providing insights into collaborative structures and knowledge concentration across organizations. The density visualization allows the identification of institutions with high research intensity as well as emerging contributors within the SDG 13 research landscape. The resulting institutional density patterns are presented in Figure 5.

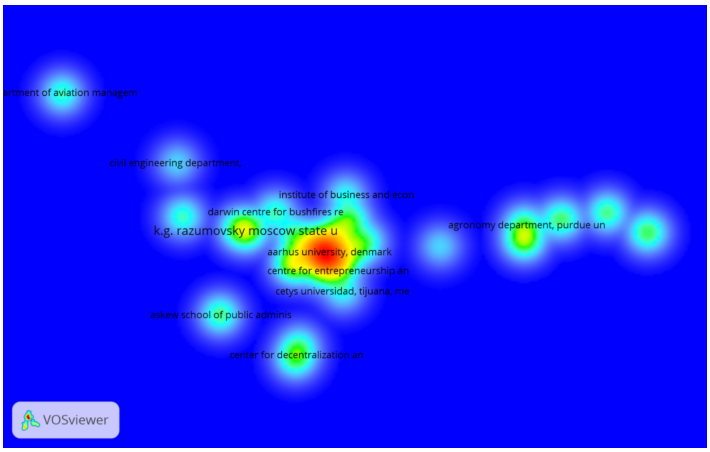

Figure 5. Density Visualization of Organizational Coupling in SDG 13.
Source: Data processing by VOS viewer 2025.

The organizational-coupled density visualization in Figure 5 highlights influential institutional clusters shaping ICT-driven strategic management research related to SDG 13. Warmer colors (red–orange) indicate higher research density and stronger bibliographic coupling, while cooler colors (green–blue) represent lower density and emerging contributors. High-density hotspots represent established research organizations that play a central role in advancing climate governance and sustainability-oriented strategic management, while lower-density areas reflect emerging institutions contributing adaptive and innovation-driven perspectives. This distribution indicates a maturing intellectual ecosystem in which foundational institutions provide theoretical and methodological anchors, complemented by newer contributors introducing interdisciplinary approaches supported by digital innovation. Overall, the visualization demonstrates how institutional collaboration strengthens strategic management practices in advancing climate action.

3.3. Author-couple Bibliometric Analysis

The overlay map in Figure 6 highlights early author-coupled clusters, shown in deep blue, representing seminal contributions between 2015 and 2021 that established the theoretical foundation for strategic manage-

ment in climate action. Early studies examined carbon markets as mechanisms to support environmentally responsible land management and explored strategic management accounting techniques that integrate climate metrics into managerial systems to enhance sustainable performance. Other research also emphasized the role of supervisor support in fostering climate-conscious organizational cultures aligned with SDG 13.

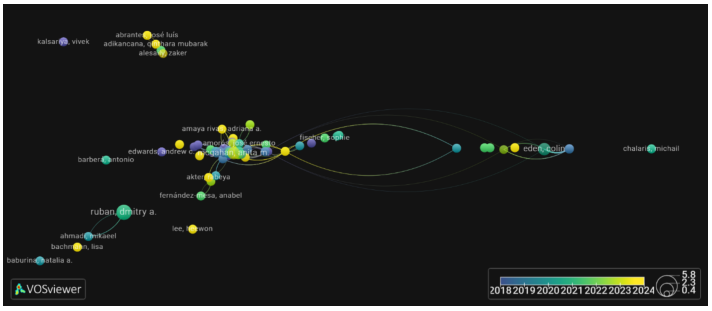

Figure 6. Author Coupling Overlay in Climate Strategy Research.
Source: Data processing by VOS viewer 2025.

These foundational works, despite modest citations, have formed intellectual hubs that continue to influence contemporary discourse on SDG 13. In contrast, recent research, represented by bright yellow–green hues, shows a surge in high-impact studies on decarbonization and business models for clean energy transition, and on the relationship between strategic management and climate change, demonstrating a shift towards actionable interdisciplinary strategies. This emerging group reflects the field's maturity and its alignment with SDG 13's ambitious goals.

3.4. Source (Journal)-couple Bibliometric Analysis

The source-level relationships within the strategic management and climate action literature were examined using a source-coupling bibliometric approach. This analysis identifies patterns of intellectual proximity among academic journals based on shared reference structures, revealing dominant publication outlets and emerging interdisciplinary sources related to SDG 13. The density visualization enables the assessment of journal influence, research concentration, and thematic convergence across sources. The resulting source-coupled density patterns are presented in Figure 7.

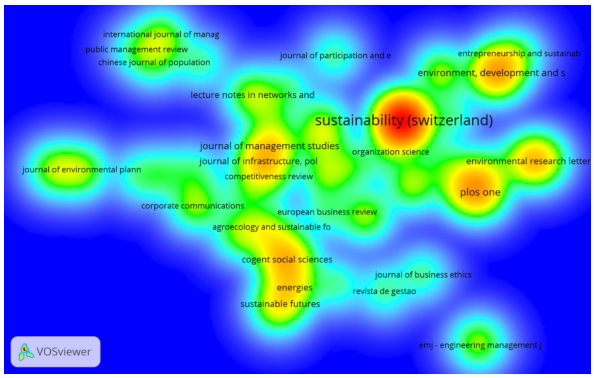

Figure 7. Journal Source Density in Strategic Climate Research.
Source: Data processing by VOS viewer 2025.

The density visualization in Figure 7 highlights a prominent concentration of research in Sustainability (Switzerland), which leads with 13 publications, followed by Sustainable Futures and Energy, each contributing 2 papers related to SDG 13. Switzerland has emerged as a central hub for pioneering research on climate action. Notably, research introduced the "city of the future" framework, and other studies focused on the strategic role of fintech innovations in driving climate finance and inclusion. In the Sustainable Futures journal, a significant study explored the integration of planetary boundaries into corporate strategies, reinforcing the

importance of proactive environmental practices. These journals and publications play a significant role in shaping interdisciplinary solutions for climate action.

On the other hand, the cooler green–blue clusters represent emerging academic outlets such as the Journal of Environmental Planning and Management, Environmental Research Letters, and Plos One. The Journal of Environmental Planning and Management published research that addresses the influence of socio-economic, political, and public management obstacles on cities' energy sustainability plans. Environmental Research Letters featured a new framework for balancing security, resilience, and sustainability, addressing trade-offs between these interconnected dimensions. Plos One emphasized the importance of evaluating models' ability to accurately represent real-world processes, which is crucial for making informed management decisions in the context of climate adaptation.

3.5. Document-couple Bibliometric Analysis

Document-level relationships in the strategic management and climate action literature were analyzed using a document-coupling bibliometric approach. This analysis maps the intellectual structure of the field by identifying connections among individual publications based on shared references, revealing clusters of foundational and emerging studies related to SDG 13. The network visualization enables the examination of knowledge flows, thematic interlinkages, and the evolution of strategic perspectives within the literature. The resulting document-coupled network is presented in Figure 8.

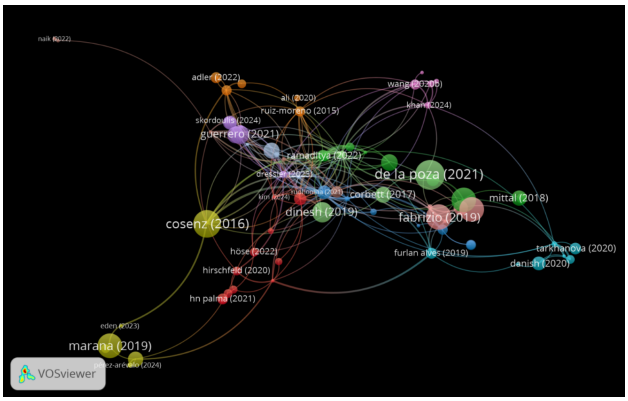

Figure 8. Document Coupling Network in Strategic Climate Research.
Source: Data processing by VOS viewer 2025.

Figure 8 illustrates the green cluster as a strategic foundation for climate-conscious governance, emphasizing the integration of climate resilience into long-term planning through cross-sector collaboration and performance metrics supporting low-carbon initiatives. In contrast, the yellow cluster represents emerging adaptive methodologies, particularly decision-support systems that utilize real-time data to optimize resource allocation under climate uncertainty. The presence of cross-cluster connections indicates strong intellectual interaction between foundational strategic frameworks and emerging methodological innovations, enhancing the field's capacity to provide actionable solutions supporting SDG 13.

Beyond cluster-level insights, the document-coupling structure shows convergence between strategic management theories and climate-oriented methodologies. Interconnected documents act as intellectual bridges that spread climate resilience concepts across planning, governance, and decision-making. This pattern reflects a maturing research landscape where methodological innovation supports integrated strategic responses to climate challenges aligned with SDG 13.

3.6. Co-occurrence Keyword Bibliometric Analysis

Keyword co-occurrence analysis was conducted to identify dominant themes and conceptual linkages within the strategic management and climate action literature. This approach examines the frequency and co-appearance of keywords across publications, enabling the mapping of core research topics and their interrelationships related to SDG 13. The network visualization provides insights into thematic clustering, research emphasis, and the integration of ICT-driven perspectives in strategic management studies. The resulting keyword co-occurrence network is presented in Figure 9.

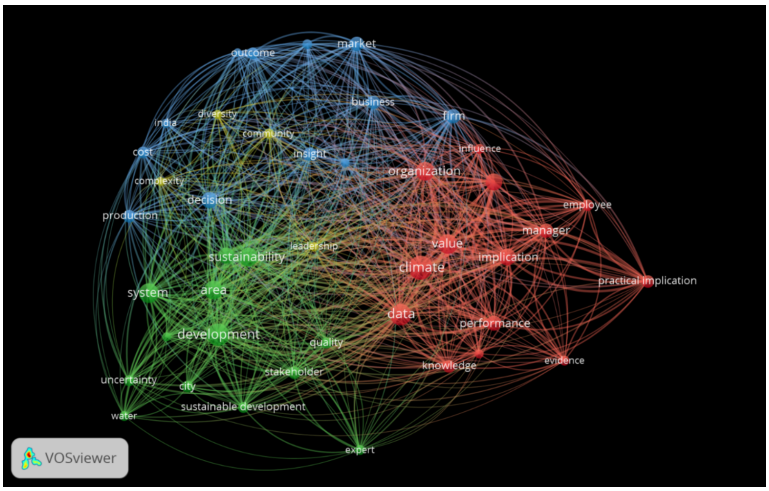

Figure 9. Keyword Co-Occurence Network in Climate Strategy Research.
Source: Data processing by VOS viewer 2025.

The keyword co-occurrence network in Figure 9 reveals the conceptual structure of ICT-driven strategic management research related to SDG 13. The visualization shows several interconnected thematic clusters, indicating that climate action is closely linked with strategic leadership, organizational dynamics, sustainability systems, and decision-making under complexity. The prominence of clusters related to leadership and organizational strategy suggests that climate action is increasingly addressed through managerial and governance-oriented perspectives, rather than purely technical or environmental approaches. The presence of systems-thinking and decision-complexity themes further reflects the growing role of digital technologies and data-driven strategies in supporting adaptive and resilient organizational responses to climate challenges. Overall, the network demonstrates how ICT-enabled strategic management integrates multiple perspectives to advance climate action in alignment with SDG 13.

4. DISCUSSION

The interpretation of bibliometric findings is strengthened through the use of a Sankey diagram that visualizes relational flows among prolific authors, dominant thematic descriptors, and contributing countries within the strategic management and climate action literature. This visualization facilitates an integrated understanding of how scholarly contributions are distributed across authorship, research themes, and national contexts, particularly in relation to Sustainable Development Goal 13 (SDG 13). By mapping these multidimensional linkages, the diagram provides an overview of knowledge diffusion and thematic convergence across the global research landscape. The resulting Sankey visualization is presented in Figure 10.

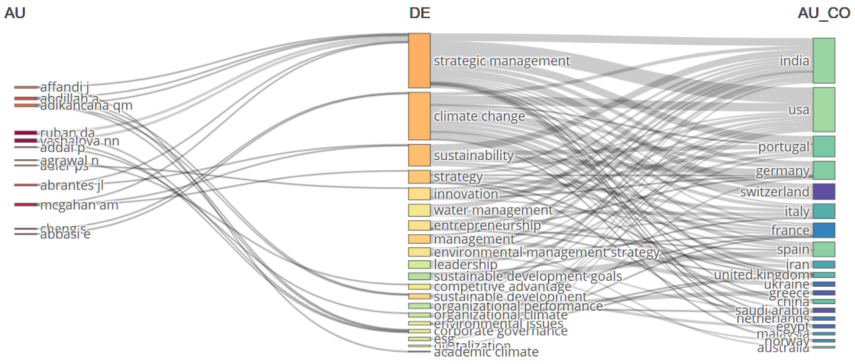

Figure 10. Sankey Visualization of Author Keyword Country Relationships.
Source: Data processing by Bibliometrix 2025.

This integrative perspective is essential for interpreting how strategic management scholarship operationalizes climate action across diverse institutional and geographical settings. By capturing authorship influence, thematic emphasis, and country-level contributions, the analysis reveals the multi-scalar nature of SDG 13 research, where scholars, conceptual frameworks, and national research priorities interact dynamically. Such visualization-based interpretation offers insight into the production and dissemination of climate-resilient strategic management knowledge within global research ecosystems.

The Sankey diagram in Figure 10 illustrates the triadic flow among prolific authors, thematic descriptors, and leading countries in strategic management and climate action research related to SDG 13. India, the United States, and Portugal emerge as major contributors, with India focusing on climate resilience and adaptive governance, the United States leading interdisciplinary integration of climate policy and strategic management, and Portugal addressing Mediterranean sustainability challenges. Overall, the findings synthesize digital and green innovation pathways, reveal key intellectual clusters in climate-resilient strategic management, and highlight the role of emerging research hubs in advancing decision-support and governance frameworks for SDG 13.

5. MANAGERIAL IMPLICATIONS

Managers should leverage insights from both digital and green innovations to enhance climate resilience, optimizing resource allocation through integrated analytics platforms that combine IoT-based monitoring and machine-learning risk assessment. Cross-functional teams bridging technology, operations, and sustainability expertise are crucial for real-time decision-making and driving accountability. Firms should prioritize the integration of ethical, transformational, and adaptive management practices to foster a climate-conscious culture, embedding climate performance metrics into strategic planning and performance evaluation. Additionally, companies are encouraged to form inter-organizational partnerships with academic and policy institutions to co-develop scalable solutions, such as fintech-driven climate finance and circular economy models, while accessing cutting-edge governance frameworks to accelerate the adoption of best practices for long-term climate resilience.

6. CONCLUSION

This study presents a comprehensive Bibliometric Analysis of ICT-driven strategic management research supporting Climate Action under SDG 13. By applying a five-step bibliometric protocol and examining 158 Scopus-indexed publications from 2015 to 2025 using VOSviewer and Bibliometrix, the research captures the intellectual structure, thematic evolution, and collaboration patterns within this growing field. The results reveal a consistent increase in scholarly output, particularly after major global policy milestones such as the Paris Agreement and the United Nations Decade of Action, indicating heightened academic and managerial attention to integrating climate considerations into strategic management frameworks.

The findings demonstrate that ethical, transformational, and adaptive management emerge as the most influential strategic dimensions shaping climate-conscious organizational cultures. These management approaches are increasingly supported by ICT-enabled capabilities, including data analytics, digital monitoring systems, and innovation platforms, which facilitate evidence-based decision making and strategic alignment with climate objectives. Bibliometric network analyses highlight the role of influential authors, interdisciplinary journals, and international research collaborations in advancing knowledge on climate-oriented strategic management. The convergence of strategic leadership, sustainability systems, and digital innovation underscores a shift from normative sustainability discourse toward more actionable, technology-enabled strategic frameworks.

From a practical perspective, this study offers valuable insights for managers and policymakers seeking to embed climate action into organizational governance and long-term strategy. By leveraging ICT-driven strategic management tools, organizations can strengthen institutional capacity, enhance performance measurement, and align decision-making processes with SDG 13 targets. Beyond consolidating fragmented literature, this research provides a structured knowledge base that can guide digital transformation initiatives, inform climate governance policies, and support the development of resilient organizational strategies. Future research may build upon these findings by integrating empirical case studies and advanced analytics to further examine how digital strategic management accelerates climate action across diverse economic and institutional contexts.

7. DECLARATIONS

7.1. About Authors

Felix Sutisna (FS) https://orcid.org/0009-0005-0503-6736

Tiurida Lily Anita (TL) https://orcid.org/0000-0003-0167-1204

Thomas Sumarsan Goh (TS) https://orcid.org/0000-0002-3389-8107

Ahmed Khan (AK) -

Efa Ayu Nabila (EA) https://orcid.org/0000-0002-6446-2613

7.2. Author Contributions

Conceptualization: FS; Methodology: TL; Software: TS; Validation: AK and EA; Formal Analysis: TL and TS; Investigation: AK; Resources: EA; Data Curation: AK; Writing Original Draft Preparation: AK and EA; Writing Review and Editing: AK and EA; Visualization: FS; All authors FS, TL, TS, AK, and EA, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

7.4. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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