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Green Innovation and Green Business Model Innovation for Firm Performance: A Bibliometric Review (2001–2026)

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ABSTRACT

Green innovation and, more recently, green business model innovation have become central mechanisms through which firms reconcile competitiveness with environmental responsibility. This review maps the intellectual and social structure of this research field using bibliometric analysis of 114 documents published in 62 sources between 2001 and 2026 and processed with the Biblioshiny interface of the bibliometrix R package. The corpus grew at an annual rate of 7.43%, accelerated sharply after 2019, and peaked at 25 documents in 2022; documents attracted an average of 139 citations each. Sustainability, the Journal of Cleaner Production, and Business Strategy and the Environment are the leading outlets, while China dominates production (64 corresponding-author documents; 56.1% of the corpus) ahead of Denmark and Spain. Keyword co-occurrence and thematic mapping reveal three interlocking knowledge clusters: (1) green innovation and firm performance, (2) green product and process innovation supported by empirical evidence, and (3) the determinants and impacts of eco-innovation, with green business model innovation emerging within a developing strategy–technology theme and green technology innovation linked to finance appearing as an emerging topic. Citation-path analysis traces the field from early work on corporate environmental ethics and stakeholder pressure toward capability-based, digitally enabled and business-model-oriented explanations of green performance. The review closes with a future research agenda emphasising green business model innovation, digital–green convergence, green finance and multi-country designs.

Keywords: Green innovation, Green business model innovation, Eco-innovation, Firm performance, Bibliometric analysis, Biblioshiny.

Introduction

Environmental degradation, tightening regulation and changing stakeholder expectations have turned green innovation into one of the most active research streams in management and sustainability science. Green innovation is generally understood as the development of new or improved products, processes, technologies and organisational practices that reduce environmental harm while creating economic value (Chang, 2011; Qi *et al*., 2013). Early studies established that corporate environmental ethics and stakeholder pressure can be converted into competitive advantage through green product and green process innovation (Chang, 2011), and that green innovation improves both environmental and corporate performance when firms respond to stakeholder expectations (Weng *et al*., 2015). Subsequent work extended the conversation from discrete product and process improvements toward system-level change, most notably through the concept of business models for sustainable innovation (Boons & Lüdeke-Freund, 2013) and, more recently, green business model innovation, in which the logic of value creation, delivery and capture itself is redesigned around environmental goals (Lindgren *et al*., 2021; Shehzad *et al*., 2026).

Despite the vitality of this literature, its rapid growth has produced fragmentation. Studies are dispersed across sustainability, innovation management, environmental economics and operations journals; they draw on stakeholder

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theory, the resource-based and natural-resource-based views, institutional theory and dynamic capabilities; and they examine outcomes ranging from environmental performance to financial performance and competitive advantage (Shao *et al*., 2020; Guinot *et al*., 2022; Thanh *et al*., 2026). Narrative and systematic reviews have organised parts of this landscape—for example, conceptual frameworks of green innovation (Guinot *et al*., 2022), research agendas for green innovation networks (Melander & Arvidsson, 2022), reviews of sustainability-oriented business models (Marcelino-Aranda *et al*., 2024), analyses of green innovation strategy literature (Silvério *et al*., 2025) and systematic evidence on green technology innovation and sustainable business performance (Hussain *et al*., 2025)—but a quantitative overview that jointly maps green innovation and green business model innovation research remains valuable, particularly because the business-model branch of the field is young and only loosely connected to the mainstream performance literature.

Bibliometric analysis offers a rigorous and transparent way to consolidate such a heterogeneous body of knowledge. It uses publication and citation data to describe the volume and impact of research, identify influential sources, authors and countries, and reveal the conceptual, intellectual and social structure of a field (Zupic & Čater, 2015; Donthu *et al*., 2021). Science-mapping techniques such as keyword co-occurrence analysis and strategic thematic maps make it possible to detect motor, basic, niche, and emerging themes and to follow their evolution over time (Cobo *et al*., 2011; Aria & Cuccurullo, 2017).

Against this background, the present review addresses three questions. RQ1: How have publications, citations, sources, authors, institutions, and countries in green innovation and green business model innovation research evolved between 2001 and 2026? RQ2: What is the conceptual structure of the field, and which themes are motor, basic, niche, or emerging? RQ3: Which documents form the intellectual backbone of the field, and what directions do they suggest for future research? The remainder of the article describes the materials and methods, presents and discusses the bibliometric results with the help of tables and figures, and concludes with implications, limitations, and a future research agenda.

Materials and Methods

This study follows the bibliometric workflow recommended by Donthu *et al*. (2021), which combines performance analysis (publication and citation metrics) with science mapping (co-word analysis, thematic mapping and citation-path analysis). Bibliometric methods were chosen because the corpus is too dispersed for a purely narrative synthesis and because they reduce subjective selection bias in identifying influential works and themes (Zupic & Čater, 2015). Bibliographic records were retrieved from the Web of Science Core Collection. The search strategy targeted documents at the intersection of green innovation, eco-innovation, and green business model innovation and firm-level outcomes. After screening, the final dataset contained 114 documents published between 2001 and 2026 in 62 distinct sources, comprising 91 journal articles, 12 proceedings papers, 6 reviews, 4 early-access articles, and 1 article/book chapter. The dataset involves 355 authors, of whom 5 authored single-authored documents; there are 8 single-authored documents in total, an average of 3.35 co-authors per document, and an international co-authorship rate of 29.82%. The records contain 5,977 cited references, 246 Keywords Plus terms and 341 author keywords. **Table 1** summarises the main information about the dataset.

All analyses were performed with the Biblioshiny web interface of the bibliometrix R package (Aria & Cuccurullo, 2017). Performance indicators include annual scientific production, average citations per document and per year, most relevant sources, authors, affiliations, and countries. Science mapping relies on (a) keyword co-occurrence network analysis, (b) a strategic thematic map that positions clusters by centrality (relevance to the field) and density (internal development) following Cobo *et al*. (2011), (c) trend-topic analysis based on the temporal distribution of keyword frequencies, and (d) a historiograph, i.e., a chronological direct-citation network that identifies the documents forming the intellectual backbone of the field (Aria & Cuccurullo, 2017). Because the 2026 publication year was still in progress at the time of data extraction, figures for 2026 are partial and are interpreted with caution.

Table 1. Main information about the dataset.

Description	Results
Timespan	2001–2026
Sources (journals, books, etc.)	62
Documents	114
Annual growth rate (%)	7.43
Document average age (years)	4.84
Average citations per document	139.0
References	5,977
Keywords Plus (ID)	246
Author's keywords (DE)	341
Authors	355
Authors of single-authored documents	5
Single-authored documents	8
Co-authors per document	3.35
International co-authorships (%)	29.82
Articles	91
Proceedings papers	12
Reviews	6
Articles (early access)	4
Article; book chapter	1

Results and Discussion

Publication and Citation Trends

Figure 1 shows the annual scientific production of the field. The first document in the corpus appeared in 2001, and output remained sporadic—typically zero to four documents per year—until 2018. A structural break is visible from 2019 onwards: production rose to 9 documents in 2019 and 8 in 2020, reached 12 in 2021 and peaked at 25 documents in 2022, before stabilising at a high level with 10 documents in 2023, 15 in 2024 and 12 in 2025 (the 6 documents recorded for 2026 reflect a partial year). This pattern is consistent with the wider post-Paris Agreement boom in corporate sustainability studies and the spread of green innovation from a niche field into mainstream management study (Shao *et al*., 2020; Guinot *et al*., 2022).

Citation impact is concentrated in the formative years of the field. Documents published in 2013 attracted the highest mean total citations per article (937.5), driven by the agenda-setting review of business models for sustainable innovation (Boons & Lüdeke-Freund, 2013), while the 2019 cohort averaged 257.8 citations per article, anchored by the content-analysis study of green process and product innovation and corporate financial performance (Xie *et al*., 2019). More recent cohorts show the expected citation lag (e.g., 87.7 mean citations for 2022 publications), yet several 2022 documents—on stakeholder pressure, green dynamic capabilities and small and medium-sized enterprise (SME) performance (Singh *et al*., 2022) and on green knowledge management and the Sustainable Development Goals (SDGs) (Wang *et al*., 2022c)—have already accumulated several hundred citations, indicating that the performance-oriented core of the field continues to renew itself.

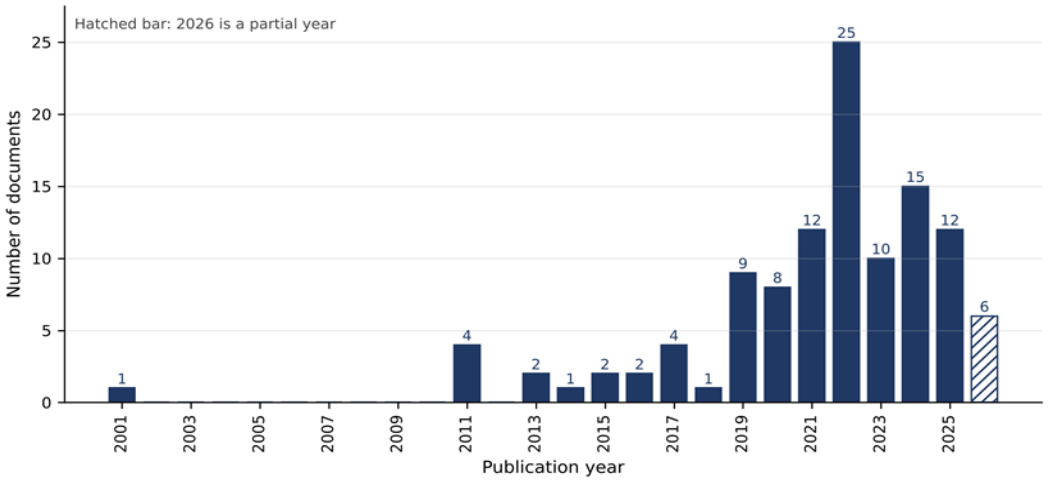


Figure 1. Annual scientific production, 2001–2026 (2026 is a partial year). Source: Authors' analysis of Web of Science records using Biblioshiny.

Leading Sources

Table 2 lists the ten most relevant sources. Publication activity is led by Sustainability (12 documents), the Journal of Cleaner Production (11), and Business Strategy and the Environment (10), which together account for roughly 29% of the corpus. The prominence of these three outlets reflects the dual identity of the field: Sustainability and the Journal of Cleaner Production host a large share of the empirical work on green innovation drivers and outcomes (Weng *et al*., 2015; Li *et al*., 2017; Cai & Li, 2018; Zhang *et al*., 2020b; Roh *et al*., 2021; Dai & Xue, 2022; Du & Wang, 2022; Li *et al*., 2022; Wang *et al*., 2022a; Zhang *et al*., 2026), while Business Strategy and the Environment concentrates theory-driven studies linking regulation, stakeholders and capabilities to green innovation (Qiu *et al*., 2020; Shao *et al*., 2020; Zhang *et al*., 2020a; Singh *et al*., 2022; Sahoo *et al*., 2023; Wang *et al*., 2023a; Shehzad *et al*., 2026). Specialist outlets such as Corporate Social Responsibility and Environmental Management, Environmental Science and Pollution Research, and the Journal of Innovation & Knowledge form a second tier, and the presence of conference series on wireless communication reflects the engineering-driven branch of green business model innovation research (Ek *et al*., 2022; Lindgren, 2022).

Table 2. Top 10 most relevant sources.

Source	Articles
Sustainability	12
Journal of Cleaner Production	11
Business Strategy and the Environment	10
Corporate Social Responsibility and Environmental Management	4
Environmental Science and Pollution Research	4
Journal of Innovation & Knowledge	4
Cogent Business & Management	3
Journal of Environmental Management	3
2022 25th International Symposium on Wireless Personal Multimedia Communications (WPMC)	2
Business Process Management Journal	2

Authors, Affiliations and Countries

Lindgren is the most prolific contributor with 6 documents (3.87 fractionalised articles), all devoted to conceptualising and measuring green business models and green business model innovation, including green multi business models (Lindgren *et al*., 2021), technology competences for green business model innovation (Lindgren, 2022) and green

symbiosis business value networks (Ek *et al*., 2022). A second group of authors with three documents each—Li, Roh, Wang and Zou—anchors the performance-oriented core: Roh and colleagues examine open innovation, intellectual property rights and institutional pressure as drivers of green innovation (Yang & Roh, 2019; Roh *et al*., 2021; Lee *et al*., 2024), while the Wang–Li–Wang team develops survey-based structural models of green process and product innovation and economic performance (Wang *et al*., 2021; Wang *et al*., 2023a, 2023b). The Sánchez-Sellero–Bataineh collaboration contributes firm-level evidence on research and development (R&D)-related and organisational determinants of green innovation in Spanish firms (Sánchez-Sellero & Bataineh, 2022; Bataineh *et al*., 2024).

At the institutional level, the Chinese Academy of Sciences and the Harbin Institute of Technology lead with 7 documents each, followed by Aarhus University and the University of Zaragoza with 6 each—a pattern consistent with the authorship concentration around Chinese empirical research, the Danish green business model programme and the Spanish eco-innovation stream. **Table 3** presents corresponding-author countries. China dominates with 64 documents (56.1% of the corpus; 51 single-country and 13 multi-country publications), far ahead of Denmark (5), Spain (4) and a group of countries with three documents each (Czech Republic, Indonesia, Italy, Korea and Pakistan). Counting all author appearances, China accounts for 136 country occurrences, followed by Spain (12) and Pakistan (10), while Vietnam records 4 occurrences and 2 corresponding-author documents. International collaboration is moderate overall (29.82% of documents), and the densest collaboration links radiate from China—most frequently with Pakistan, the United Kingdom and the United States—whereas the corresponding-author output of Ireland and Malaysia is entirely internationally co-authored.

The geography of the field has clear substantive implications. The empirical core is dominated by Chinese firm-level data on regulation, finance and green innovation (Wang *et al*., 2022a; Zeng *et al*., 2023; Zhang *et al*., 2023; Ma & Lin, 2024; Zhou *et al*., 2024; Lu *et al*., 2025; Wang & Liu, 2025; Zhao *et al*., 2025), which raises questions about the generalisability of findings. A growing set of studies from other emerging and developed economies—including SME evidence linking stakeholder pressure and green dynamic capabilities to performance (Singh *et al*., 2022), manufacturing evidence on green business strategies and competencies (Yahya *et al*., 2022), green orientation and culture effects on green innovation performance (Bhatti *et al*., 2023), technological-turbulence contingencies in SMEs (Ta'amnha *et al*., 2024), European firm-level and country-level analyses (Kunapatarawong & Martínez-Ros, 2016; Takyi *et al*., 2024; Perotti *et al*., 2025; Maistrenko *et al*., 2026), Latin American perspectives (Marcelino-Aranda *et al*., 2024; Cassânego *et al*., 2025) and Vietnamese case evidence on green innovation practices (Thuyen & Bich, 2024)—is beginning to redress this imbalance, but comparative multi-country designs remain rare.

Table 3. Top 10 corresponding-author countries (SCP = single-country publications; MCP = multi-country publications).

Country	Articles	Articles (%)	SCP	MCP	MCP (%)
China	64	56.1	51	13	20.3
Denmark	5	4.4	5	0	0.0
Spain	4	3.5	3	1	25.0
Czech Republic	3	2.6	1	2	66.7
Indonesia	3	2.6	3	0	0.0
Italy	3	2.6	1	2	66.7
Korea	3	2.6	3	0	0.0
Pakistan	3	2.6	1	2	66.7
Ireland	2	1.8	0	2	100.0
Malaysia	2	1.8	0	2	100.0

Conceptual Structure: Keywords and Thematic Clusters

The most frequent keywords confirm the performance orientation of the field: green innovation (43 occurrences), performance (38), eco-innovation (36), management (31), product innovation (31), impact (28) and determinants (27) head the distribution, followed by empirical evidence (21), firm performance (19), sustainability (16), green process innovation (15), green product innovation (15) and financial performance (15). Green business model innovation

appears with 10 occurrences, marking it as an established but still minor term in the vocabulary of the field (Karami, 2024; Johar *et al*., 2025; Shen & Bao, 2025).

Figure 2 displays the keyword co-occurrence network, in which three interlocking clusters emerge (Kumbhar *et al*., 2024; Nagdalian *et al*., 2024; Sowbaraniya & Syam, 2024; De la Garza-Ramos *et al*., 2025). The first cluster centres on green innovation, performance and competitive advantage, together with sustainable development, strategy, antecedents and supply chain management; it captures the dominant research question of whether and how green innovation improves firm outcomes (Huang & Li, 2017; Soewarno *et al*., 2019; Wang, 2019; Zhou *et al*., 2019; Xie *et al*., 2022; Takyi *et al*., 2024; Xin *et al*., 2024; Wagan *et al*., 2025; Widyantoro *et al*., 2025; Maistrenko *et al*., 2026; Mei, 2026). The second cluster links product innovation, management, firm performance, empirical-evidence, financial performance and green process/green product innovation, reflecting the large body of survey- and archival-based studies that decompose green innovation into product and process dimensions and test their performance consequences (Xie *et al*., 2019; Qiu *et al*., 2020; Wang *et al*., 2021; Mehraj & Kaur, 2022; Yuan & Cao, 2022; Ta'amnha *et al*., 2024; Borah *et al*., 2025; Begum *et al*., 2026). The third cluster gathers eco-innovation, impact, determinants, technology and research-and-development, corresponding to the economics-oriented stream on the drivers of eco-innovation and its typologies (Kunapatarawong & Martínez-Ros, 2016; Calza *et al*., 2017; Cai & Li, 2018; Mady *et al*., 2022; Sánchez-Sellero & Bataineh, 2022; Shang *et al*., 2022; Bataineh *et al*., 2024). Notably, green business model innovation occupies a peripheral position attached to the product-innovation cluster, confirming its weak integration with the mainstream performance literature (Taylor *et al*., 2024; Bello *et al*., 2025; Dupont & Janssens, 2025).

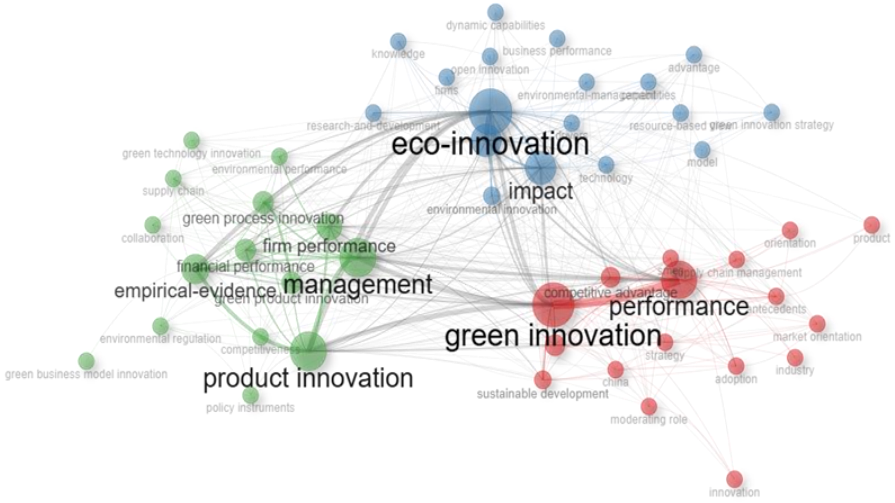


Figure 2. Keyword co-occurrence network (node size reflects occurrences; colours indicate clusters).

Figure 3 positions keyword clusters on the strategic thematic map. The motor quadrant (high centrality, high density) is occupied by the green innovation–performance–antecedents theme, confirming that explaining the performance consequences and antecedents of green innovation is both the best-developed and the most connective research programme (Singh *et al*., 2022; Lestari & Sunyoto, 2023; Zhu *et al*., 2023; Wu *et al*., 2024b; Ma & Chen, 2025). A strategy–technology–green business model innovation theme sits high on the density axis near the motor–niche boundary: it is internally well developed but only moderately connected to the rest of the field, which is characteristic of the specialised green business model stream built around business models for sustainable innovation (Boons & Lüdeke-Freund, 2013), sustainable business model anatomy (Shakeel *et al*., 2020), green technology business model archetypes (Trapp & Kanbach, 2021), measurement frameworks for green business models (Lindgren *et al*., 2021; Ek *et al*., 2022; Lindgren, 2022), digital-economy pathways of green business model innovation (Han & Zhang, 2022;

Yin *et al*., 2024), institutional drivers in SMEs (Lee *et al*., 2024), ecosystem-oriented business models (Du *et al*., 2025) and strategic-orientation dynamics (Shehzad *et al*., 2026).

Two basic themes (high centrality, lower density) underpin the field: product innovation–management–empirical evidence and eco-innovation–impact–determinants, which supply the transversal concepts and evidence on which other themes draw. A niche theme around advantage, green innovation strategy and green innovation performance reflects a smaller strategy-focused conversation on how top management and organisational context translate green strategy into competitive advantage (Chang, 2011; Cao *et al*., 2022; Wang *et al*., 2022b; Zhang *et al*., 2022). In the emerging/declining quadrant, a green technology innovation–investment–financing constraints theme signals the recent arrival of green finance questions—how green credit, policy uncertainty, and information environments shape firms' green technology innovation (Wang *et al*., 2023c; Zhang *et al*., 2023; Zeng *et al*., 2023; Ma & Lin, 2024; Zhou *et al*., 2024). Finally, a sustainability–sustainable development–capabilities theme lies near the centre of the map, bridging clusters through capability- and SDG-oriented studies (Dai & Xue, 2022; Liao *et al*., 2022; Wang *et al*., 2022c; Song *et al*., 2023).

Trend-topic analysis **(Table 4)** corroborates this reading. Terms with early median years, such as product development (2019) and determinants (2020), correspond to the foundational agenda, whereas green innovation, performance and eco-innovation all have median years of 2022, and green technology innovation and adoption only became salient around 2023—consistent with the field's recent turn toward technology- and finance-related questions.

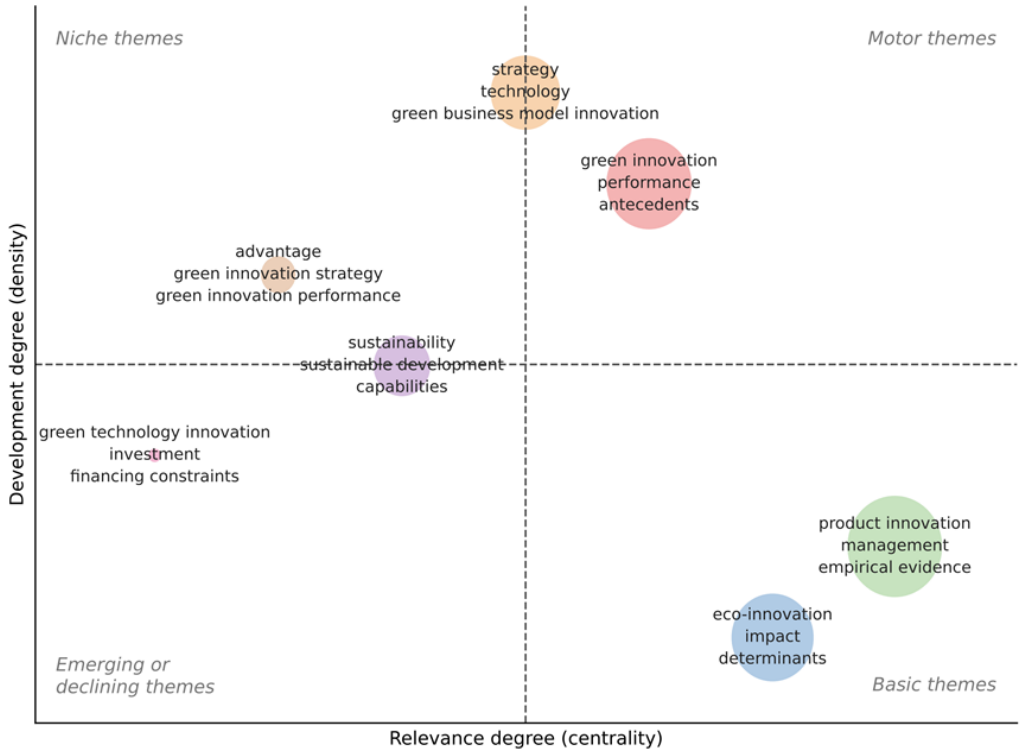


Figure 3. Strategic thematic map of author-keyword clusters (centrality = relevance; density = development). Source: Authors' analysis using Biblioshiny; theme positions as estimated by Biblioshiny.

Table 4. Trend topics (first quartile, median and third quartile of the term's temporal distribution).

Term	Frequency	Year (Q1)	Year (Median)	Year (Q3)
Green innovation	43	2020	2022	2024
Performance	38	2020	2022	2024
Eco-innovation	36	2019	2022	2023

Management	31	2020	2021	2023
Determinants	27	2018	2020	2022
Empirical-evidence	21	2020	2021	2023
Green process innovation	15	2020	2021	2023
Research-and-development	9	2019	2020	2023
Green technology innovation	8	2022	2023	2023
Adoption	7	2022	2023	2024
Environmental regulation	7	2020	2020	2022
Product development	5	2015	2019	2022

Intellectual Structure: The Citation Backbone of the Field

The historiograph—a chronological direct-citation network of the most locally cited documents generated in Biblioshiny—shows that the backbone of the field originates in the study of corporate environmental ethics, green innovation and competitive advantage (Chang, 2011), which is taken up by work on stakeholder influences on green innovation strategy in Chinese manufacturing (Qi *et al*., 2013) and on stakeholder-based evidence that green innovation improves environmental and corporate performance (Weng *et al*., 2015). A capability turn follows, with organisational capability and social reciprocity explanations of the green innovation–performance link (Huang & Li, 2017) and legitimacy- and profitability-based accounts of green innovation in large Chinese firms (Li *et al*., 2017), alongside the eco-innovation drivers-and-impacts stream (Cai & Li, 2018).

The most connective node in the network is the content-analysis study of green process innovation, green product innovation and corporate financial performance (Xie *et al*., 2019), which channels the earlier ethics-, stakeholder- and capability-based insights into the contemporary performance agenda. From this hub, the path branches into organisational green culture and competitive advantage (Wang, 2019), green organisational identity and legitimacy (Soewarno *et al*., 2019), open and consumer-oriented green innovation (Yang & Roh, 2019), absorptive-capacity responses to environmental regulation (Zhang *et al*., 2020a), readiness-based success factors (Zhang *et al*., 2020b) and regulation–market turbulence contingencies (Qiu *et al*., 2020), before consolidating in the 2021–2022 generation on economic performance paths of green process and product innovation (Wang *et al*., 2021), intellectual property rights, government support and open innovation (Roh *et al*., 2021), stakeholder pressure and green dynamic capabilities in SMEs (Singh *et al*., 2022) and corporate social responsibility as a driver of green innovation through green dynamic capability (Yuan & Cao, 2022). A parallel, more weakly connected chain runs from business models for sustainable innovation (Boons & Lüdeke-Freund, 2013) through sustainable business model anatomy (Shakeel *et al*., 2020) and green technology business model archetypes (Trapp & Kanbach, 2021) to the measurement-oriented green business model programme (Lindgren *et al*., 2021; Ek *et al*., 2022; Lindgren, 2022), confirming that the business-model branch has its own intellectual lineage that is only beginning to merge with the performance mainstream (Lee *et al*., 2024; Shehzad *et al*., 2026).

Future Research Agenda

Four directions follow from the mapping. First, integrating green business model innovation with the performance mainstream. The thematic map **(Figure 3)** and the historiograph show a well-developed but insular business-model theme; future work should test whether green business model innovation mediates or moderates the green innovation–performance relationship, extending early evidence on institutional drivers in SMEs (Lee *et al*., 2024), strategic orientation dynamics (Shehzad *et al*., 2026) and ecosystem-oriented business models and innovation willingness (Du *et al*., 2025), and addressing dark-side phenomena such as greenwashing effects on green business model innovation (Anh *et al*., 2026; Nguyen & Nguyen, 2026).

Second, digital–green convergence. Recent studies connect digital transformation, intelligent transformation, artificial intelligence, and open innovation to green innovation outcomes (Wu *et al*., 2024b; Cassânego *et al*., 2025; Perotti *et al*., 2025; Wang & Liu, 2025) and propose digital green business model innovation as a distinct construct (Han & Zhang, 2022; Yin *et al*., 2024; Anh *et al*., 2025). Clarifying the mechanisms—data-enabled capabilities, platform

ecosystems, digital knowledge flows—through which digitalisation amplifies or substitutes for green innovation is a priority, together with human-resource micro-foundations such as green training (Begum *et al*., 2026).

Third, green finance and governance. The emerging theme on green technology innovation, investment, and financing constraints invites research on how green finance instruments, environmental, social and governance (ESG) performance, policy uncertainty and firm viability shape green innovation (Wang *et al*., 2023c; Zeng *et al*., 2023; Wu *et al*., 2024a; Zhou *et al*., 2024; Zhao *et al*., 2025), including nonlinearities between environmental and economic performance under market-based regulation (Wang *et al*., 2023a; Lu *et al*., 2025).

Fourth, contextual and methodological broadening. Given the concentration of evidence in single-country—predominantly Chinese—samples, comparative designs spanning emerging economies (Yahya *et al*., 2022; Bhatti *et al*., 2023; Ta'amnha *et al*., 2024; Thuyen & Bich, 2024; Xin *et al*., 2024; Widyantoro *et al*., 2025) and European settings (Takyi *et al*., 2024; Maistrenko *et al*., 2026), multi-method combinations such as partial least squares structural equation modelling (PLS-SEM) with fuzzy-set qualitative comparative analysis (fsQCA) (Lutfi *et al*., 2024), scale-development work on the dimensionality of green innovation (Li *et al*., 2022; Shang *et al*., 2022) and network- and ecosystem-level analyses (Melander & Arvidsson, 2022; Song *et al*., 2023; Li *et al*., 2024; Zhang *et al*., 2024) would strengthen the causal and external validity of the field, as would attention to standard-setting and knowledge integration in dual green innovation (Zhang *et al*., 2026) and to peer and spillover effects (Wang *et al*., 2022a).

Conclusion

This review used bibliometric performance analysis and science mapping to synthesise 114 documents on green innovation and green business model innovation published between 2001 and 2026. The field is young in its current form: although the first document dates from 2001, more than three-quarters of the corpus appeared after 2018, with a peak of 25 documents in 2022 and an annual growth rate of 7.43%. Its publication infrastructure is concentrated in Sustainability, the Journal of Cleaner Production and Business Strategy and the Environment; its production is dominated by China (56.1% of corresponding-author documents), with Denmark and Spain hosting distinctive specialist programmes on green business models and eco-innovation, respectively.

Conceptually, the field is organised around a motor theme linking green innovation, performance and antecedents; basic themes on product/process innovation and on eco-innovation determinants; a niche strategy–advantage theme; an emerging green technology innovation–finance theme; and a well-developed but weakly integrated strategy–technology–green business model innovation theme. The citation backbone runs from corporate environmental ethics and stakeholder pressure through capability-based explanations to today's agenda on green dynamic capabilities, knowledge management and business-model redesign, with a parallel lineage for the business-model branch.

For researchers, the review identifies where marginal contributions are most likely: connecting green business model innovation to performance outcomes, unpacking digital–green convergence, examining green finance and governance mechanisms, and diversifying empirical contexts and methods. For managers and policymakers, the accumulated evidence indicates that green innovation pays off most reliably when it is embedded in supportive capabilities, knowledge flows and business-model logics rather than pursued as an isolated compliance response. As with any bibliometric study, the conclusions are conditional on the database coverage, search strategy and the metadata quality of the underlying records.

Limitations and Dimensions for Future Research

Three limitations qualify the findings. First, the corpus was retrieved from a single database, and documents indexed elsewhere—or published in languages other than English—may be under-represented; replications using complementary databases would test the robustness of the maps. Second, bibliometric indicators describe the structure of the literature but not the quality or effect sizes of individual studies; meta-analytic follow-ups on the green innovation–performance relationship would complement this review. Third, citation-based measures disadvantage recent work, so the emerging themes identified here—green finance, digital green business model innovation and greenwashing—should be revisited as the 2024–2026 cohorts mature. Future reviews may also combine bibliometric

mapping with systematic content analysis of the green business model innovation stream, whose integration with the performance mainstream this study identifies as the field's most promising frontier.

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Conflict of Interest: None

Financial Support: None

Ethics Statement: This study is a bibliometric review of published bibliographic records retrieved from the Web of Science Core Collection. It did not involve human participants, personal data, or animals; therefore, ethics committee approval and informed consent were not required.

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