APTISI Transactions on Technopreneurship (ATT)
Vol. 8, No. 3, November 2026, pp. 1065−1076
E-ISSN: 2656-8888 | P-ISSN: 2655-8807, DOI:10.34306

Green Marketing Orientation and Ambidextrous Innovation for Sustainable Competitive Advantage a Systematic Literature Review

Abdullah Tasalisa[1*], Tantri Yanuar Rahmat Syah[2], Triyono Arief Wahyudi[3], Regina Deka Sofia[4]
[1,2,3,4]Faculty of Economics and Business, Universitas Esa Unggul, Indonesia
[1]abdullahtasalisa@student.esaunggul.ac.id, [2]tantri.yanuar@esaunggul.ac.id, [3]triyono.arief@esaunggul.ac.id,
[3]regina.deka@esaunggul.ac.id
***Corresponding Author**

Article Info

Article history:

Submission December 2, 2025
Revised June 12, 2026
Accepted September 17, 2026
Published September 29, 2026

Keywords:

Green Innovation
EGI
Green Marketing Orientation
SLR
Sustainable

ABSTRACT

This study conducts a PRISMA 2020 guided Systematic Literature Review (SLR) to map the Exploitation Green Innovation (EGI) domain and consolidate evidence on definitions/operationalizations (RQ1) and antecedents-outcomes-boundary conditions (RQ2). **A Scopus only** search 2021–2026 was restricted to English-language journal articles and reviews using a TITLE-ABS-KEY query covering core EGI terms , incremental/exploitative green innovation and ambidextrous green innovation, within a green/environmental/eco/sustainability context. **The search yielded 342 records**, filtering retained 296 for screening, deduplication produced 284 unique records, and full-text assessment resulted in 50 included studies for thematic synthesis. Descriptive mapping of screened records (n = 296) indicates rapid publication growth in 2021–2025, concentration in sustainability and strategy oriented outlets, and geographically skewed contributions. VOSviewer based co-occurrence author keyword analysis highlights the centrality of exploitative–exploratory discourse and ambidexterity. **Thematic synthesis shows** EGI is consistently framed as exploitative/incremental green innovation, yet indicator operationalizations remain heterogeneous, EGI is most often shaped by internal capabilities and external pressures/instruments and is primarily linked to green performance and, in some contexts, competitive advantage. **The review provides** an EGI operationalization framework and an evidence map to support measurement standardization, mechanism testing, and cross-context boundary condition research.

DOI:https://doi.org/10.34306/att.v8i3.944

1. INTRODUCTION

Over the past few decades, sustainability has become a key strategic factor influencing organizational competitiveness. Growing pressure from governments, investors, consumers, and other stakeholders has encouraged firms to integrate environmental considerations into their business strategies alongside economic objectives [1, 2]. This shift has promoted the adoption of Green Marketing Orientation (GMO), a strategic approach that embeds environmental responsibility into value creation through sustainable innovation, business processes, and resource management, thereby strengthening long-term competitiveness [3–7]. Research on Green Innovation (GI) has also expanded, recognizing it as a key mechanism for translating environmental

orientation into innovative products, processes, and organizational practices. Based on Ambidexterity Theory, GI consists of Exploratory Green Innovation (XGI) and Exploitation Green Innovation (EGI). While XGI emphasizes radical innovation, EGI focuses on incremental improvements using existing organizational resources and capabilities, making it more feasible for most firms [2, 8–11].

Previous studies suggest that EGI enhances green innovation performance, organizational performance, and competitive advantage through greater resource efficiency and process optimization [12–14]. However, empirical findings remain inconsistent, as these benefits often depend on complementary capabilities such as organizational learning, digital transformation, governance, and resource orchestration, as well as industrial and geographical contexts [15, 16]. The EGI literature also faces conceptual inconsistencies. Terms such as Exploitation Green Innovation, Exploitative Green Innovation, and Incremental Green Innovation are frequently used interchangeably, while measurement approaches vary considerably. Existing studies primarily examine empirical relationships, whereas comprehensive syntheses of EGI definitions, operationalizations, antecedents, consequences, and boundary conditions remain limited. Likewise, previous review studies have focused on green innovation broadly without systematically clarifying the conceptualization, mechanisms, and contextual conditions of EGI, leaving an important research gap. To address this gap, this study conducts a Systematic Literature Review (SLR) following the PRISMA 2020 guidelines [17]. The review examines how EGI has been defined and operationalized while synthesizing its antecedents, consequences, underlying mechanisms, and boundary conditions. By integrating fragmented evidence, this study develops an evidence-based conceptual framework that advances sustainability, innovation, and strategic management research and provides directions for future empirical studies.

2. RESEARCH METHOD

This study employed a SLR following the PRISMA 2020 guidelines to synthesize evidence on the relationships among Green Marketing Orientation (GMO), Exploratory Green Innovation (ExGI), Exploitation Green Innovation (EGI), Green Innovation Performance (GIP), Organizational Performance (OP), and Competitive Advantage (CA) [18]. The SLR approach was adopted for its systematic, transparent, and reproducible process, while thematic synthesis was used to identify recurring relationships, boundary conditions, inconsistencies, and future research directions [19]. The literature search was conducted in the Scopus database and limited to Q1 and Q2 English-language journal articles and reviews published between 2021 and 2026. Using the TITLE-ABS-KEY query on exploitative/incremental green innovation, the search identified 342 records. After database filtering and duplicate removal, 284 articles were screened, resulting in 70 full-text assessments. Following eligibility evaluation, 50 studies met all inclusion criteria and were included in the final thematic synthesis Figure 1.

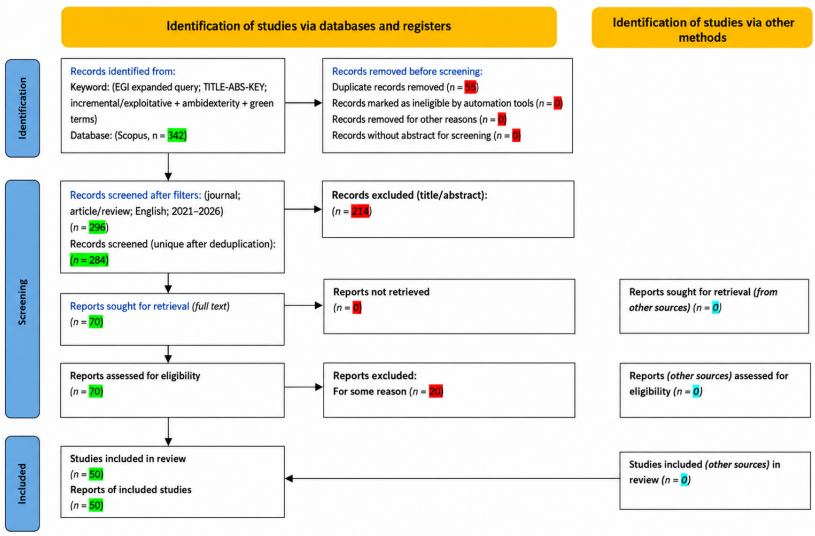

Figure 1. PRISMA Flow Diagram

Data were extracted using a structured form covering bibliographic information, EGI definitions and operationalizations (RQ1), and antecedents, outcomes, and boundary conditions (RQ2). Thematic synthesis combined deductive and inductive coding through open, axial, and selective coding to develop an integrated conceptual framework. Review rigor was ensured through a predefined coding protocol, audit trail, and iterative coding refinement to improve consistency and minimize researcher bias.

3. RESULT AND DISCUSSION

A Scopus TITLE-ABS-KEY search identified 342 records (Figure 1) [18]. After applying the inclusion criteria and removing duplicates, 284 records were screened, with 214 excluded for not addressing organizational-level EGI or the exploitative/incremental innovation perspective [20]. Following full-text assessment, 50 articles were retained for the thematic synthesis addressing RQ1 and RQ2.

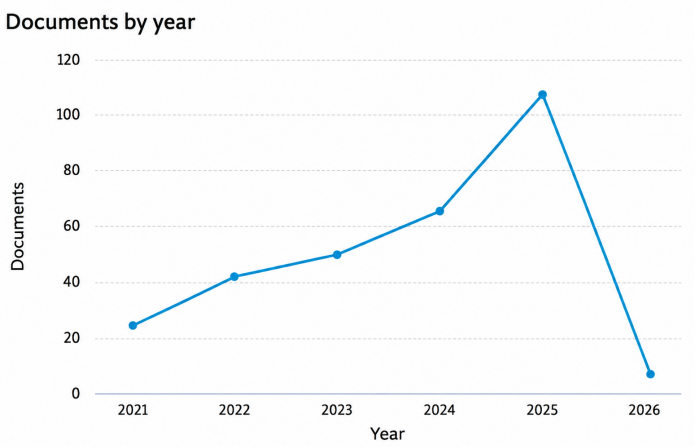

Figure 2. Annual publication distribution
Source: Scopus, Analyze results

Descriptive bibliometric mapping of the screened dataset (n = 296) was conducted using Scopus Analyze Results to examine publication trends, source titles, countries/territories, and author keywords. VOSviewer was used for author-keyword co-occurrence analysis, revealing thematic clusters and conceptual relationships in Figure 2. Publications increased markedly from 24 in 2021 to 107 in 2025 before declining to 7 in 2026, with annual counts summarized in Table 1.

Table 1. Document Distribution by Year

Year	Number of documents
2021	24
2022	42
2023	50
2024	66
2025	107
2026	7

Table 1 shows a steady increase in EGI-related publications between 2021 and 2025, followed by a decline in 2026, indicating the rapid growth of scholarly interest in exploitative green innovation over recent years. As illustrated in Figure 4, the literature is concentrated in a relatively small group of high-impact journals, particularly Sustainability (Switzerland), Business Strategy and the Environment, Journal of Cleaner Production, Technology Analysis and Strategic Management, and Technological Forecasting and Social Change. This publication pattern demonstrates that EGI research is firmly rooted in the fields of sustainability and strategic management, where organizational capabilities, innovation strategies, and environmental performance constitute the dominant research themes. The concentration of publications in these journals also reflects the increasing recognition of EGI as a strategic capability for achieving both competitive advantage and sustainability

objectives. A detailed overview of the leading publication outlets is presented in Table 2.

Table 2. Top Journal Outlets by Publication Volume

No	Journal outlet	Number of documents	Percentage of 296
1	Sustainability (Switzerland)	39	13.2%
2	Business Strategy and the Environment	13	4.4%
3	Journal of Cleaner Production	13	4.4%
4	Technological Forecasting and Social Change	7	2.4%
5	Technology Analysis and Strategic Management	7	2.4%
6	Business Process Management Journal	5	1.7%
7	IEEE Transactions on Engineering Management	5	1.7%
8	Corporate Social Responsibility and Environmental Management	4	1.4%
9	Finance Research Letters	4	1.4%
10	Journal of Business Research	4	1.4%

Table 2 shows that EGI publications are concentrated in sustainability, strategy, and innovation journals, while author keywords highlight sustainability and the exploitative–exploratory distinction, reflecting a conceptual foundation rooted in the ambidexterity perspective Figure 3 [10].

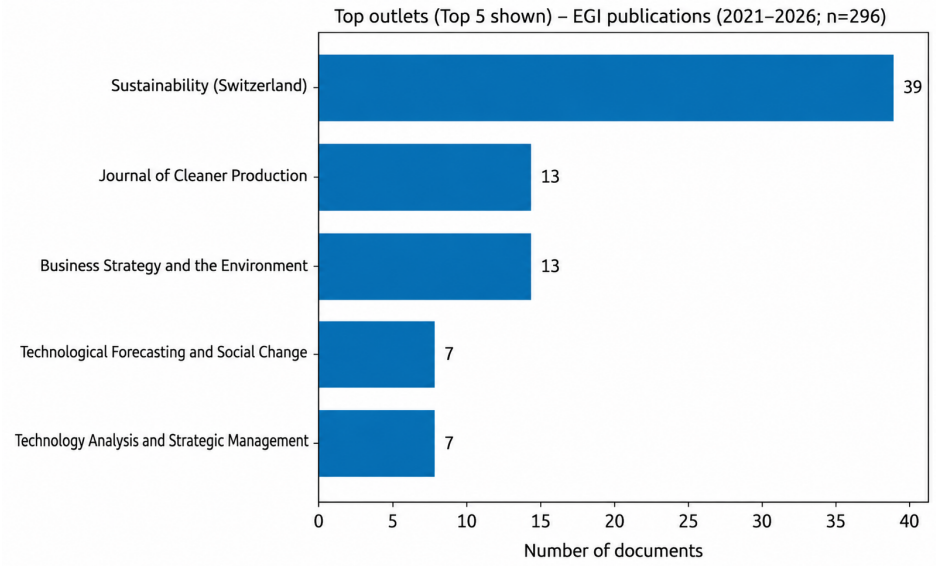

Figure 3. Annual Document Trends Across the Top 5 Outlets

Figure 4 shows that EGI publications (2021–2026, n = 296) are concentrated in Business, Management and Accounting, followed by Social Sciences and Environmental Science, with additional contributions from Computer Science, Energy, and Engineering, highlighting the interdisciplinary nature of the field. This distribution suggests that EGI has evolved beyond a purely environmental topic into a multidisciplinary research area that integrates management, sustainability, and technological perspectives. The dominance of managerial disciplines indicates that current studies primarily examine how organizations develop capabilities, implement innovation strategies, and enhance competitive advantage through incremental green innovation. At the same time, contributions from technology- and engineering-related fields demonstrate the growing importance of digital technologies, energy systems, and process innovation in supporting environmental and organizational performance [21].

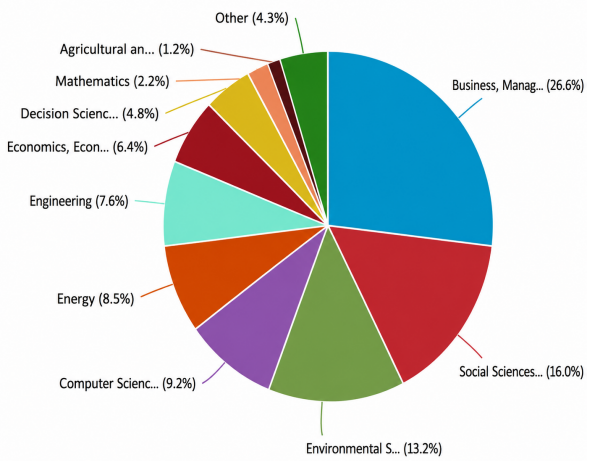

Figure 4. Subject-Area Distribution of EGI Publications

The country/territory distribution shows that EGI research is dominated by publications from China, followed by the United Kingdom and Spain. Additional contributions originate from India, Italy, the United States, Pakistan, Australia, and Germany, indicating broad international participation while highlighting a concentration of research output in a limited number of leading countries/territories in Figure 5.

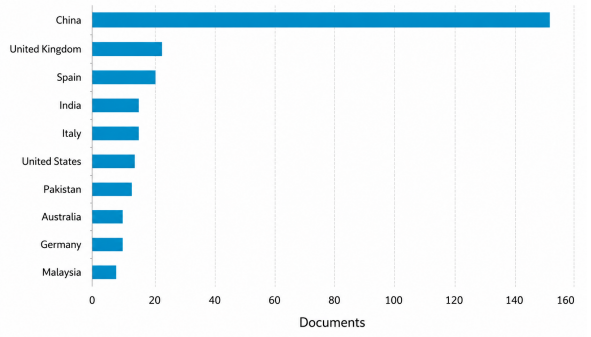

Figure 5. Country/Territory Distribution

To complement the descriptive mapping, author-keyword co-occurrence analysis was conducted using VOSviewer based on Scopus data from 2021–2026. The resulting map visualizes dominant thematic clusters and inter-topic connections within the EGI domain, helping to identify frequently discussed areas and the relational structure among key concepts in the literature see in Figure 6.

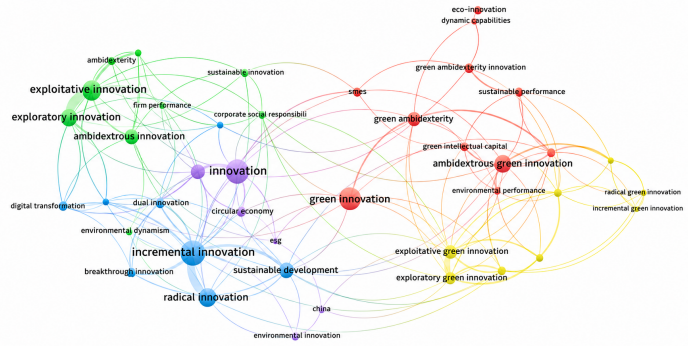

Figure 6. VOSviewer Keyword Map

Table 3 highlights a clear concentration of EGI publications in a relatively small number of leading

countries/territories, with one country contributing substantially more studies than the others. This pattern indicates that the development of the EGI literature has been driven primarily by a limited group of research-intensive regions, while contributions from other countries remain comparatively modest. Such a geographic distribution suggests that institutional environments, economic conditions, sustainability policies, and research priorities may shape the direction and emphasis of EGI research. Consequently, the applicability and generalizability of existing findings should be interpreted with caution, particularly when extending conclusions across countries with different regulatory frameworks, industrial structures, and levels of sustainable innovation development [22].

Table 3. Top 9 Countries/Territories

Country/Territory	Number of documents
China	152
UK	22
Spain	20
India	15
Italy	15
USA	14
Pakistan	13
Australia	10
Germany	10

Table 4 shows that author keywords combine broad sustainability and innovation concepts with exploitative–exploratory innovation and green ambidexterity, indicating that EGI is conceptually rooted in the ambidexterity perspective [23]. These relationships are further illustrated through the VOSviewer co-occurrence analysis in Figure 6.

Table 4. Top 20 Author Keywords

No	Author keyword	Frequency
1	Incremental innovation	29
2	Innovation	27
3	Exploitative innovation	24
4	Green innovation	23
5	Ambidextrous green innovation	21
6	Exploratory innovation	20
7	Radical innovation	18
8	Ambidextrous innovation	14
9	Sustainable development	14
10	Sustainability	13
11	Green ambidexterity	12
12	Exploitative green innovation	12
13	Exploratory green innovation	11
14	Circular economy	8
15	Green ambidexterity innovation	8
16	Green competitive advantage	8
17	Green intellectual capital	7
18	Sustainable performance	7
19	Environmental performance	7
20	Digital transformation	7

The co-occurrence map shows that the EGI literature is centered on green innovation, ambidextrous green innovation, incremental innovation, and the paired concepts of exploitative and exploratory innovation [24]. Their strong interconnections indicate that EGI is predominantly studied through an ambidexterity perspective, while links with sustainable performance, environmental performance, dynamic capabilities, SMEs, and eco-innovation demonstrate that the literature primarily focuses on organizational capabilities and performance outcomes.

Following the PRISMA screening process, 50 studies were included for thematic synthesis addressing RQ1 (EGI definitions and operationalizations) and RQ2 (antecedents, outcomes, and boundary conditions). A summary of EGI operationalizations is presented in Table 5.

Table 5. Operationalization of EGI in the Included Studies

EGI indicator category	**Operational definition**	**Standardized term**	**Reference**
Incremental green improvement	Stepwise improvements to practices, processes, and products using existing capabilities to enhance environmental performance.	exploitative green innovation ≈ incremental green innovation	[13, 25, 26].
Exploitative–exploratory pairing	EGI is treated as the exploitative (incremental) dimension, distinct from the exploratory (radical) dimension	exploitative vs exploratory green innovation	[26–29].
Ambidexterity umbrella	Studies position EGI as a component within an ambidexterity umbrella construct and test the umbrella's effects on outcomes.	use a single umbrella term: green ambidexterity (including EGI and XGI)	[8, 30, 31].
Strategy/policy-related green innovation	EGI appears as a green innovation strategy choice shaped by policies/incentives or firm strategy, often discussed alongside the exploratory dimension.	Use exploitative green innovation when explicit; otherwise, treat it as a two-dimensional exploitative–exploratory green innovation strategy	[14, 32]

Across the reviewed studies, EGI is consistently conceptualized as incremental green innovation, emphasizing continuous improvements in products, processes, and organizational practices by leveraging existing capabilities to enhance environmental performance [24]. Nevertheless, its operationalization differs across studies. Some scholars conceptualize EGI as an independent organizational capability, whereas others define it as the exploitative dimension of green ambidexterity, often using the terms exploitative and incremental green innovation interchangeably [8, 13, 30, 31]. These conceptual differences are also reflected across industries. Manufacturing studies primarily emphasize cleaner production, resource efficiency, and process optimization, while service-oriented research highlights organizational routines, knowledge integration, and capability development. Despite these variations in conceptualization and context, the evidence consistently shows that EGI contributes to improved environmental and organizational performance. However, the magnitude and mechanisms of these effects depend on contextual conditions, complementary organizational capabilities, and the theoretical perspectives adopted by individual studies [33–35].

Figure 7 summarizes the core attributes of EGI, capturing the character of exploitative/incremental green innovation as stepwise refinements in organizational processes, products, and routines aimed at improving resource and energy efficiency. This framework serves as a reference for interpreting variation in EGI operationalizations across the included studies and for distinguishing EGI from generic measures of green innovation, thereby supporting more consistent cross-context interpretation of findings [36].

Figure 7. Core Attributes of EGI

Across the reviewed studies, EGI is consistently associated with improved green and environmental performance, indicating that incremental improvements in products, processes, organizational routines, and resource efficiency are the primary mechanisms through which firms enhance environmental outcomes [19, 30, 37]. Several studies, particularly those adopting a green ambidexterity perspective, further demonstrate that EGI contributes to sustainable, organizational, and financial performance, as well as competitive advantage, by enabling firms to transform environmental initiatives into long-term organizational and market value across both manufacturing and service sectors [13, 25, 38–41]. These outcomes are achieved through incremental mechanisms that improve resource and energy efficiency, optimize operational processes, strengthen organizational consistency, and reduce waste. Such mechanisms are reinforced by organizational learning, knowledge integration, and resource coordination, while digital transformation and analytics capabilities further accelerate continuous improvement and amplify the contribution of EGI to organizational performance [14, 16, 42–45].

The effectiveness of EGI, however, depends on a range of organizational and environmental boundary conditions. Internal factors, including resource orchestration capability, governance, and top-management support, determine firms' ability to implement exploitative green innovation effectively, whereas external factors such as environmental dynamism, regulatory pressure, stakeholder expectations, and green finance shape the extent to which EGI generates superior organizational outcomes [9, 28, 32, 46, 47]. These findings collectively support the complementary perspectives of Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and Ambidexterity Theory by positioning EGI as a strategic organizational capability that leverages existing resources, adapts to environmental change, and balances exploitative and exploratory innovation. Consistent with this perspective, the reviewed studies identify Green Marketing Orientation, organizational learning, knowledge integration, and green strategic orientation as the dominant antecedents of EGI, while environmental regulations, stakeholder pressure, and green finance represent the principal external drivers. Although EGI is consistently linked to environmental performance, organizational performance, competitive advantage, and financial performance, the strength of these relationships varies across industries and organizational contexts, reinforcing the context-dependent nature of exploitative green innovation.

Overall, the review confirms that EGI is consistently conceptualized as exploitative or incremental green innovation, although considerable variation remains in its operationalization and measurement. Strengthening measurement standardization, improving transparency in indicator reporting, and validating EGI across different industrial and national contexts are therefore essential to enhance cumulative knowledge and comparability. Maintaining a clear distinction between exploitative and exploratory green innovation also remains critical to avoid conceptual overlap with broader green innovation constructs [7, 9]. The synthesized evidence positions EGI at the intersection of internal organizational capabilities, external institutional pressures, and

organizational performance, with green performance and competitive advantage emerging as the most consistently reported outcomes. Future research should integrate RBV, DCT, and Ambidexterity Theory into unified conceptual models, adopt standardized EGI measures, and employ longitudinal, mixed-methods, and cross-country research designs. Greater attention should also be directed toward underexplored contexts, including service industries, SMEs, and technology-intensive organizations, while examining the moderating roles of environmental regulations, ESG practices, and digital transformation. Collectively, this review advances the EGI literature by synthesizing fragmented evidence into an integrated conceptual framework that clarifies dominant relationships, explanatory mechanisms, boundary conditions, and future research directions, thereby providing a stronger foundation for both empirical investigation and sustainability-oriented business strategies.

4. MANAGERIAL IMPLICATIONS

The findings of this review provide practical implications for organizations seeking to strengthen sustainability through Exploitation Green Innovation (EGI). Managers should view EGI as a strategic capability that creates value through continuous improvements in existing products, processes, operational routines, and resource utilization rather than relying solely on radical green innovations. This approach enables firms to achieve environmental and business benefits with lower implementation costs and risks. Successful EGI implementation depends on strong internal organizational capabilities. Organizational learning, green knowledge management, employee competencies, cross-functional collaboration, standardized operating procedures, and systematic performance monitoring support continuous improvement and the institutionalization of sustainable practices. The integration of digital technologies, including data analytics, artificial intelligence, and digital monitoring systems, further enhances resource efficiency, process optimization, waste reduction, and environmental decision-making. The review also demonstrates that governance mechanisms, leadership commitment, resource orchestration capability, and stakeholder engagement strengthen the relationship between EGI and organizational performance. Managers should therefore align EGI initiatives with organizational resources, strategic priorities, and external regulatory requirements while maintaining a clear distinction between exploitative and exploratory green innovation. Balancing these complementary innovation approaches can improve organizational resilience, sustainable competitiveness, and long-term business performance.

5. CONCLUSION

Based on a Systematic Literature Review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020, descriptive mapping of Scopus metadata at the screening stage (n = 296) and thematic synthesis of 50 included studies confirm that Exploitation Green Innovation (EGI) is generally conceptualized as exploitative/incremental green innovation. In practice, this refers to stepwise improvements leveraging existing organizational capabilities through process refinement, product refinement, the strengthening of operational routines, the standardization of green activities, and enhanced resource and energy efficiency. While conceptual agreement is relatively strong, indicator operationalizations remain heterogeneous, limiting cross-study comparability and the accumulation of evidence across contexts. In the dominant variable-relational patterns, EGI is most frequently situated at the intersection of internal organizational capabilities (e.g., green knowledge/learning and green strategic orientation) and external pressures or instruments (e.g., policies, regulation, and green finance support), with primary outcomes in green performance (green performance/environmental performance) and, in some contexts, competitive advantage and broader organizational performance. These conclusions are supported by VOSviewer-based author-keyword co-occurrence mapping, which highlights dense linkages among exploitative, exploratory, and ambidexterity as anchoring concepts, indicating that the EGI domain has been shaped by debates on the separation of exploitative and exploratory dimensions and their performance implications.

The findings of this study also contribute to the sustainability literature by demonstrating that Green Marketing Orientation and Green Innovation not only enhance corporate competitiveness but also support the achievement of sustainable development goals. The implementation of green innovation contributes to increased resource efficiency, waste reduction, and the development of more environmentally friendly business processes, thus aligning with Sustainable Development Goal (SDG) 9 on Industry, Innovation, and Infrastructure, SDG 12 on Responsible Consumption and Production, and SDG 13 on Climate Action.

6. DECLARATIONS

6.1. About Authors

Abdullah Tasalisa (AT) https://0009-0005-1862-5943
Tantri Yanuar Rahmat Syah (TY) https://orcid.org/00000-0003-2127-7036
Triyono Arief Wahyudi (TA) https://orcid.org/0000-0001-8483-6793
Regina Deka Sofia (RD) https://orcid.org/0009-0006-1387-8703

6.2. Author Contributions

Conceptualization: AT, TY, TA and RD; Methodology: AT, TY and TA; Software: TA, and RD Formal Analysis: AT, TY, TA and RD; Investigation: TY and TA; Resources: TA and RD; Data Curation: TY, RD and TY; Writing Original Draft Preparation: TY and TA; Writing Review and Editing: TA and RD; Visualization: TY and TA; All authors, AT, TY, TA and RD have read and agreed to the published version of the manuscript.

6.3. Data Availability Statement

The datasets used to support the findings of this study are available from the direct link in the dataset citation.

6.4. Funding

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

6.5. 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.

REFERENCES

[1] G. García-Piqueres and R. García-Ramos, "Complementarity between csr dimensions and innovation: behaviour, objective or both?" *European Management Journal*, vol. 40, no. 4, pp. 475–489, 2022.
[2] C. Yu, M. Liu, H. Yang, and B. Wu, "Effects of tourism resource search on folk sports project development fuzzy front-end performance: The moderating role of environmental dynamics change," *Plos one*, vol. 19, no. 5, p. e0304161, 2024.
[3] M. I. Tanveer, M. Y. Yusliza, O. Fawehinmi, and A. H. Ngah, "Examining the strategic and operation hr competencies as enablers of green human resource management practices: mediating role of perceived environmental orientation," *The InTernaTIonal Journal of human resource managemenT*, vol. 35, no. 19, pp. 3305–3339, 2024.
[4] L. Hui, Z. Luo, K. Liu *et al.*, "Impact of pollution prevention practices and green environmental practices on sustainable performance: Empirical evidence from chinese smes," *Environmental Research*, vol. 255, p. 118991, 2024.
[5] R. Aprianto, E. P. Lestari, E. Fletcher *et al.*, "Harnessing artificial intelligence in higher education: Balancing innovation and ethical challenges," *International Transactions on Education Technology (ITEE)*, vol. 3, no. 1, pp. 84–93, 2024.
[6] Y. Tang, D. Zhan, Y. Han, F. Tao, and Y. Qi, "The impact of river chief system diffusion modes on corporate green innovation," *Sustainability*, vol. 17, no. 21, p. 9647, 2025.
[7] T. Y. R. Syah, U. Kustiawan, A. H. Muhmin, M. Stevelyne, L. Lianti, and E. Suyitno, "Empowering talent: how talent management, thriving at work, and employee voice shape turnover intentions," *Cogent Business & Management*, vol. 12, no. 1, p. 2596429, 2025.
[8] M. W. Kamran, Y. Zhu, F. G. Gilal, A. H. Waseel, and H. Jiang, "Leveraging corporate social responsibility: the mediating role of ambidextrous green innovation in enhancing green performance," *Corporate Social Responsibility and Environmental Management*, vol. 32, no. 5, pp. 6712–6731, 2025.
[9] A. TASALISA and P. EDASTAMA, "The role of marketing logistics in improving customer satisfaction," *TPM–Testing, Psychometrics, Methodology in Applied Psychology*, vol. 32, no. 3, pp. 1214–1223, 2025.
[10] T. Zhu and H. Peng, "Research on the impact of ambidextrous innovation on sustainable entrepreneurial performance from a policy-oriented perspective," *Sustainability*, vol. 14, no. 18, p. 11247, 2022.

[11] C. Song, S. Y. Teh, A. Alnoor, and M. Shao, "Trends of the digital transformation and green innovation using prisma and bibliometric analysis review," *Discover Sustainability*, vol. 6, no. 1, p. 1010, 2025.
[12] H. Henry, K. Lutfiyah, H. Agustian, and N. Lachlan, "Assessing the environmental and economic impact of smart grid integration in renewable energy management," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 7, no. 1, pp. 38–50, 2025.
[13] Q.-H. Ngo, "The adoption of green market orientation in logistic industries—empirical evidence from vietnamese smes," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 8, no. 4, p. 199, 2022.
[14] H. LIU, J. LONG, and Z. SHEN, "The effect of digital transformation on corporate green innovation," *Frontiers of Business Research in China*, vol. 18, no. 3, p. 276, 2024.
[15] H. Zhou and S. Zhao, "Green supply chain integration on firm's green innovation: the moderating role of resource orchestration capability," *Operations Management Research*, pp. 1–17, 2024.
[16] K. Mehmood, P. Kautish, M. Rashid, Y. Joshi, and Y. Iftikhar, "Digitalization in the circular economy: synergistic impact of big data analytics, green internet of things, and ambidextrous green innovation," *Journal of Cleaner Production*, vol. 509, p. 145610, 2025.
[17] E. Susetyono, D. S. Priyarsono, A. Sukmawati, and P. Nurhayati, "Improving risk management maturity in ultra micro soe holding companies," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 8, no. 1, pp. 310–324, 2026, https://doi.org/10.34306/att.v8i1.675.
[18] M. J. Page, J. E. McKenzie, P. M. Bossuyt, I. Boutron, T. C. Hoffmann, C. D. Mulrow, L. Shamseer, J. M. Tetzlaff, E. A. Akl, S. E. Brennan *et al.*, "The prisma 2020 statement: an updated guideline for reporting systematic reviews," *bmj*, vol. 372, 2021.
[19] K. Kim and S. J. Lee, "Integrating esg and innovation: the path to ambidextrous and profitable corporate strategies," *Applied Economics*, pp. 1–15, 2025.
[20] A. Alexander, D. Pontan, E. A. Nabila, and L. Sanbella, "Evaluating cost performance and unit rate optimization in surface maintenance operation (smo) earthwork service contracts," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 7, no. 1, pp. 51–60, 2025.
[21] H. Nguyen-Van, A. H. Le, C. Van Nguyen, L. D. Ho, and Q. T. T. Nguyen, "Green ambidextrous innovation and sustainable performance in vietnam's low-carbon transition: The role of green intellectual capital, green ambidextrous leadership, and green entrepreneurial orientation," *Journal of Open Innovation: Technology, Market, and Complexity*, p. 100655, 2025.
[22] R. G. Munthe, M. Abbas, R. Fernandez, and N. Ulita, "The impact of educational information systems on learning accessibility in higher education," *International Transactions on Education Technology (ITEE)*, vol. 3, no. 1, pp. 94–103, 2024.
[23] Y. D. Anna, H. Djajadikerta, and A. Setiawan, "Strengthening the foundations of socialpreneurship through integrated reporting a systematic bibliometric perspective," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 8, no. 1, pp. 296–309, 2026, https://doi.org/10.34306/att.v8i1.666.
[24] E. Erika, R. T. H. Safariningsih, D. Cahyono, and N. Rangi, "Strategic integration of cloud cybersecurity for resilient digital business transformation," *ADI Journal on Recent Innovation*, vol. 7, no. 1, pp. 112–124, 2025.
[25] Z. Ali, Z. Qin, T. Raza-Ullah, A. Ali, and M. Sherwani, "Leading the way to greening: Aligning leadership styles and market learning for radical and incremental green innovation," *Business Strategy and the Environment*, vol. 34, no. 7, pp. 8571–8589, 2025.
[26] V.-H. Lee, Y. K. Dwivedi, G. W.-H. Tan, K.-B. Ooi, and L.-W. Wong, "How does information technology capabilities affect business sustainability? the roles of ambidextrous innovation and data-driven culture," *R&D Management*, vol. 54, no. 4, pp. 750–774, 2024.
[27] Q. Zhang, J. Pan, and T. Feng, "Green supplier integration and environmental performance: do environmental innovation and ambidextrous governance matter?" *International Journal of Physical Distribution & Logistics Management*, vol. 50, no. 7-8, pp. 693–719, 2020.
[28] Y. Liu, K. Song, L. Xu, and Z. Song, "Esg and firms' exploitative versus exploratory innovation: Evidence from a large language model approach," *Research in International Business and Finance*, p. 103305, 2026.
[29] S. Singh and S. K. Yadav, "Corporate social responsibility," in *Clinical Laboratory Management*. Springer, 2024, pp. 263–267.
[30] M. U. Shehzad, J. Zhang, K. F. Latif, K. Jamil, and A. H. Waseel, "Do green entrepreneurial orientation and green knowledge management matter in the pursuit of ambidextrous green innovation: a moderated

mediation model," *Journal of Cleaner Production*, vol. 388, p. 135971, 2023.
[31] Y.-Y. Chang, C. Aruncharean, and A. Jansom, "Exploration or exploitation? rethinking innovation strategies through the lens of corporate entrepreneurship in thailand," *Asia Pacific Business Review*, pp. 1–25, 2025.
[32] Y. Huang, W. Wei, and F. A. Ferreira, "How to make urban renewal sustainable? pathway analysis based on fuzzy-set qualitative comparative analysis (fsqca)," *International journal of strategic property management*, vol. 27, no. 3, pp. 146–158, 2023.
[33] E. T. Rusmiati, L. Febrina, Y. Sari, and E. M. S. Sakti, "Adoption of ai driven ecological preaching systems using sem pls analysis," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 8, no. 1, pp. 284–295, 2026, https://doi.org/10.34306/att.v8i1.838.
[34] R. A. Sunarjo, A. Andika, N. Lutfiani, and R. Evans, "Ai enabled cybersecurity framework for multi cloud business environments," *ADI Journal on Recent Innovation*, vol. 7, no. 1, pp. 100–111, 2025.
[35] A. Pambudi, N. Lutfiani, M. Hardini, A. R. A. Zahra, and U. Rahardja, "The digital revolution of startup matchmaking: Ai and computer science synergies," in *2023 Eighth International Conference on Informatics and Computing (ICIC)*. IEEE, 2023, pp. 1–6.
[36] M. Wahyudi, T. A. A. Sandi, W. Bismi, U. Rahardja, L. Pujiastuti *et al.*, "Performance analysis of open shortest path first multiarea using virtual link method," in *2023 11th International Conference on Cyber and IT Service Management (CITSM)*. IEEE, 2023, pp. 1–5.
[37] A. Sijabat, F. Festiyed, A. Razak, S. Diliarosta, L. Lufri, and N. Leonie, "Development of ulos learning model with ar to foster cultural appreciation," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 1, pp. 72–83, 2025, https://doi.org/10.34306/att.v7i1.471.
[38] P. Madan, S. Srivastava, E. A. Alzeiby, and D. Cao, "Proliferating green innovative work behavior through green organizational culture: Mediating role of green ambidexterity and values in the hospitality context," *International Journal of Hospitality Management*, vol. 125, p. 104006, 2025.
[39] C. Cao, X. Tong, Y. Chen, and Y. Zhang, "How top management's environmental awareness affect corporate green competitive advantage: evidence from china," *Kybernetes*, vol. 51, no. 3, pp. 1250–1279, 2022.
[40] A. Baquero, "Leveraging green dynamic capabilities and institutional support for green technological innovation and performance: Evidence from spanish manufacturing firms," *Corporate Social Responsibility and Environmental Management*, vol. 32, no. 6, pp. 8481–8498, 2025.
[41] A. Ruangkanjanases, S.-C. Chen, O. Sivarak, and A. Khan, "Achieving green competitive advantage through generative ai: the mediating roles of organisational creativity and green innovation ambidexterity in manufacturing," *International Journal of Logistics Research and Applications*, pp. 1–21, 2025.
[42] A. Javed, A. Basit, M. A. Shahzad, and M. K. Khan, "Green supply chain integration and knowledge dynamics: a pathway to incremental and radical green innovation," *Journal of Knowledge Management*, pp. 1–22, 2026.
[43] M. Khayyam, J. Yushi, Q. Liu, H. Idrees, S. Qin, and A. Nurlegul, "Leveraging technological readiness and knowledge sources for green innovation: a resource orchestration perspective," *Business Process Management Journal*, vol. 31, no. 3, pp. 848–877, 2025.
[44] K. M. Kura and L. Raimi, "Linking green entrepreneurial orientation and green market orientation to firm sustainability performance: a three-level meta-analysis," *Discover Sustainability*, vol. 6, no. 1, p. 1088, 2025.
[45] X. Wan, S. Chun, S. Xue, and M. U. Shehzad, "The causal and interactive approach to drive sustainability: role of green dynamic capabilities, ambidextrous green innovation strategy and resource orchestration capability," *Business Process Management Journal*, vol. 32, no. 3, pp. 1085–1112, 2026.
[46] M. Zhou, Y. Wang, H. Jiang, M. Li, and G. Li, "How leadership influences open government data (ogd)-driven innovation: The mediating role of organizational commitment," *Sustainability*, vol. 15, no. 2, p. 1219, 2023.
[47] H. Zhong, Z. Zheng, M. Chu, and X. Gao, "Digitalization, managerial preference, and corporate innovation in transition economies: Long-term evidence from chinese 4,001 listed companies," *SAGE Open*, vol. 15, no. 3, p. 21582440251360505, 2025.