Bibliometric Analysis of Digital Sustainability Marketing

Loso Judijanto[1], Rusdianto[2]
[1] IPOSS Jakarta, Indonesia
[2] Universitas Tamansiswa Palembang

Article Info	ABSTRACT
	This study aims to map and analyze the intellectual structure, thematic evolution, and collaboration patterns of Digital Sustainability Marketing research through a bibliometric approach. Using data extracted from the Scopus database, the analysis was conducted with VOSviewer to examine keyword co-occurrence, overlay visualization, density mapping, co-authorship networks, institutional collaboration, and country-level partnerships. The findings reveal that sustainability, marketing, and sustainable development serve as the central pillars of the research field, reflecting a strong integration between environmental discourse and digital marketing strategies. Overlay analysis indicates a temporal shift from technology- and innovation-driven discussions toward more applied themes such as digital tools, consumer behaviour, and strategic marketing implementation. Density visualization highlights the growing concentration of research around digital transformation and electronic commerce, while collaboration analysis shows that although the field is globally distributed, research networks remain relatively fragmented across authors, institutions, and countries. Overall, the study provides a comprehensive overview of the evolution and current landscape of Digital Sustainability Marketing, offering insights into emerging trends and future research directions, particularly in data-driven marketing, SME innovation, and sustainable digital ecosystems.

Corresponding Author:

Name: Loso Judijanto
Institution: IPOSS Jakarta, Indonesia
Email: losojudijantobumn@gmail.com

1. INTRODUCTION

The rapid advancement of digital technologies has fundamentally transformed the landscape of marketing practice and research over the past two decades. The proliferation of social media platforms, big data analytics, artificial intelligence, and mobile technologies has enabled firms to interact with consumers in increasingly personalized and dynamic ways. Digital marketing has evolved from a supplementary communication tool into a central strategic function that shapes brand identity, customer engagement, and value creation [1], [2]. At the same time, global awareness of environmental degradation, climate change, and social inequality has intensified, prompting businesses to reconsider their operational and marketing approaches. Sustainability has thus emerged as a strategic imperative rather than a peripheral corporate responsibility initiative [3], [4]. The intersection of these two

transformative forces—digitalization and sustainability—has given rise to what can be conceptualized as digital sustainability marketing.

Sustainability marketing extends beyond promoting "green" products; it involves integrating environmental, social, and economic considerations into the core of marketing strategy [5]. This approach aligns with the broader concept of sustainable development, which seeks to balance present needs with the ability of future generations to meet their own needs. Organizations are increasingly expected to demonstrate transparency, ethical sourcing, reduced carbon footprints, and social inclusivity. Consumers, particularly younger generations, show growing preference for brands that communicate authentic sustainability commitments [6]. Digital platforms amplify this expectation, as information spreads rapidly and stakeholders can easily scrutinize corporate claims. Consequently, digital channels are not merely tools for communication but arenas where sustainability narratives are constructed, contested, and validated.

Digital sustainability marketing can be understood as the strategic use of digital technologies to promote sustainable products, practices, and corporate values while minimizing environmental impact in marketing processes themselves. This includes leveraging data analytics to optimize resource efficiency, employing social media campaigns to raise environmental awareness, and utilizing digital platforms to foster co-creation and community engagement around sustainability initiatives [7], [8]. Furthermore, digitalization can reduce traditional marketing's ecological footprint by decreasing reliance on print materials and physical distribution channels. However, the digital economy also has its own environmental costs, including data center energy consumption and electronic waste, which complicate the sustainability narrative. Thus, digital sustainability marketing operates within a paradox: it offers tools for promoting sustainability while simultaneously contributing to environmental challenges.

The academic discourse surrounding digital sustainability marketing is fragmented across multiple disciplines, including marketing, information systems, sustainability management, and corporate communication. Studies have examined topics such as green digital advertising, sustainable brand storytelling on social media, consumer engagement in online sustainability communities, and the role of digital innovation in enabling circular economy models [9], [10]. While these contributions are valuable, they are dispersed and often adopt differing conceptual frameworks. Some scholars emphasize technological capabilities, others focus on consumer behavior, and still others examine organizational strategy. This diversity reflects the multidimensional nature of the field but also makes it challenging to identify dominant themes, emerging trends, and intellectual structures.

In recent years, bibliometric analysis has become a prominent method for mapping scientific knowledge and evaluating research development within specific domains. Bibliometric techniques enable researchers to analyze publication patterns, citation networks, keyword co-occurrences, and collaboration structures, thereby revealing the evolution and influence of scholarly work [11]. In emerging interdisciplinary fields such as digital sustainability marketing, bibliometric analysis can provide a systematic overview that complements traditional literature reviews. By quantitatively examining the body of knowledge, researchers can identify influential authors, leading journals, geographic contributions, and thematic clusters. Such analysis is particularly valuable in a rapidly evolving field shaped by technological innovation and shifting societal expectations.

Despite the growing scholarly attention to digital marketing and sustainability as separate domains, there remains limited integrative understanding of how these fields converge within academic research. Existing studies often focus on

specific aspects—such as social media campaigns for green products or digital tools supporting sustainable supply chains—without situating them within a broader intellectual structure. The absence of a comprehensive bibliometric assessment creates difficulties in identifying research gaps, dominant paradigms, methodological trends, and future directions. Furthermore, as the field expands across disciplines and geographic contexts, inconsistencies in terminology and conceptualization may hinder cumulative knowledge development. Therefore, there is a pressing need to systematically map and evaluate the scholarly landscape of digital sustainability marketing to clarify its evolution, thematic composition, and research trajectories. The objective of this study is to conduct a comprehensive bibliometric analysis of digital sustainability marketing literature to map its intellectual structure, thematic evolution, and collaborative networks.

2. METHODS

This study employs a quantitative bibliometric research design to systematically analyze the scientific literature on digital sustainability marketing. Bibliometric analysis is chosen because it enables objective, transparent, and replicable evaluation of large volumes of academic publications through statistical and network-based techniques. The study focuses on peer-reviewed journal articles to ensure the quality and academic rigor of the dataset. A comprehensive search was conducted using Scopus. The search string was developed by combining relevant keywords such as "digital marketing," "sustainability marketing," "green marketing," "sustainable digital," and related variants using Boolean operators. The search was limited to articles published in English to maintain consistency in analysis. No strict time restriction was imposed in the initial search in order to capture the historical development of the field, although the final dataset reflects the time span available in the database.

Following data retrieval, a systematic screening process was conducted to ensure relevance and accuracy. First, duplicate records were removed. Second, titles and abstracts were reviewed to exclude publications that did not explicitly address the intersection of digitalization and sustainability within a marketing context. Studies focusing solely on technical sustainability issues without marketing implications, or purely digital marketing studies without sustainability dimensions, were excluded. After refining the dataset, bibliographic information—including authors, titles, abstracts, keywords, publication year, journal source, citations, affiliations, and references—was exported in compatible formats (e.g., CSV or BibTeX) for analysis.

To examine the intellectual structure and thematic development of digital sustainability marketing, advanced bibliometric techniques were applied using VOSviewer. Citation analysis was conducted to determine the most influential publications and authors based on citation counts. Co-citation analysis was performed to identify clusters of foundational literature that shape the theoretical backbone of the field. Additionally, co-authorship analysis was used to map collaboration networks among researchers and countries, highlighting patterns of international cooperation. Keyword co-occurrence analysis was employed to detect major research themes and emerging topics, allowing visualization of thematic clusters and research evolution over time.

3. RESULTS AND DISCUSSION

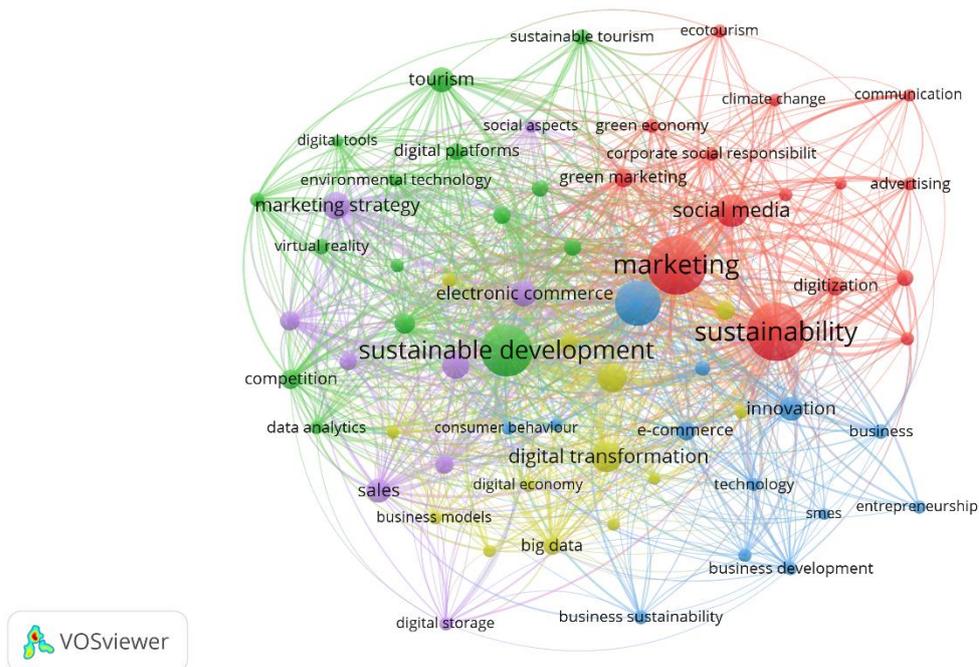### 3.1 Keyword Co-Occurrence Network

Figure 1. Network Visualization
Source: Data Analysis Result, 2026

Figure 1 reveals that the research landscape of Digital Sustainability Marketing is strongly structured around several dominant thematic hubs, with sustainability, marketing, and sustainable development appearing as the most central and highly connected keywords. Their large node sizes and dense linkages indicate that these concepts function as the intellectual core of the field, suggesting that scholars primarily frame digital sustainability discussions within broader sustainability and marketing paradigms rather than as an entirely separate discipline. The close proximity among these central nodes reflects the integration of environmental concerns into contemporary marketing strategies, highlighting the shift toward sustainability-oriented value creation.

The red cluster emphasizes the intersection between social media, digitization, advertising, and climate change, indicating a growing scholarly interest in how digital communication channels shape sustainability narratives. Keywords such as social media, communication, and advertising suggest that digital platforms are increasingly recognized as strategic tools for promoting sustainable practices and influencing consumer perceptions. This cluster implies that digital sustainability marketing research is evolving toward communication-driven approaches, where branding, storytelling, and online engagement play crucial roles in shaping sustainable consumption behavior.

Meanwhile, the green cluster reflects the strong linkage between sustainable development, tourism, electronic commerce, and digital platforms, illustrating how sustainability marketing extends into sectoral applications. The presence of terms like environmental technology, digital tools, and green marketing indicates that technological innovation is seen as a key enabler of sustainable development initiatives. This cluster also suggests that tourism and e-commerce sectors serve as important empirical contexts for studying sustainability transitions, highlighting the practical implementation of digital strategies within environmentally responsible business models.

The blue cluster introduces a business and innovation perspective, connecting technology, SMEs, entrepreneurship, and business sustainability. This pattern indicates that digital sustainability marketing research

is increasingly concerned with organizational transformation and innovation capabilities. The links between innovation, technology, and business development suggest that digitalization is viewed not only as a communication tool but also as a strategic mechanism for improving competitiveness and fostering sustainable entrepreneurial ecosystems. The inclusion of SMEs underscores the relevance of this topic for smaller firms navigating digital transformation and sustainability pressures simultaneously.

The yellow and purple clusters show emerging methodological and analytical themes, including big data, digital transformation, consumer behavior, and business models. These nodes indicate that researchers are progressively incorporating data-driven approaches to understand sustainability-oriented marketing outcomes. The connections between consumer behaviour, digital economy, and data analytics imply that future research may increasingly rely on advanced analytical tools to evaluate the effectiveness of sustainable marketing strategies.
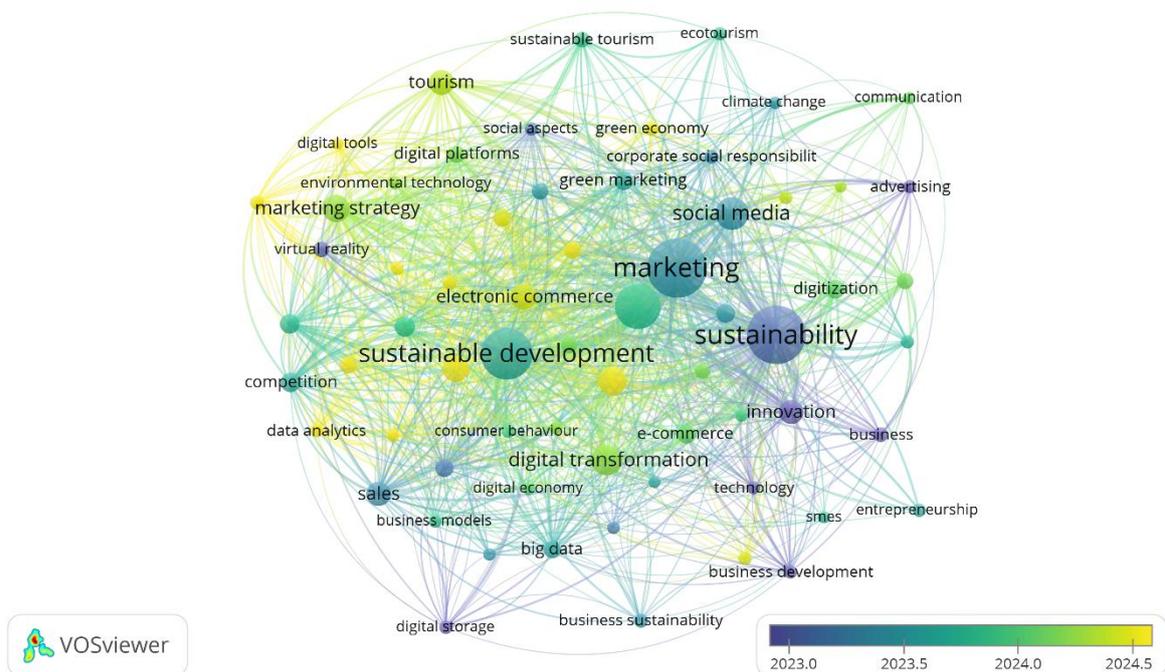

Figure 2. Overlay Visualization
Source: Data Analysis Result, 2026

Figure 2 illustrates the temporal evolution of research themes within Digital Sustainability Marketing, where color gradients represent the average publication year of keywords. Core concepts such as sustainability, marketing, and sustainable development appear in green to light-blue tones, indicating that they form the foundational body of literature that has remained consistently relevant from earlier periods into more recent years. Their central positions and dense connections confirm that these themes act as the conceptual backbone of the field, linking environmental discourse with digital marketing transformation.

More recent developments are reflected by yellow-colored nodes such as marketing strategy, digital tools, consumer behaviour, and digital transformation. These emerging themes suggest a shift toward practical and technology-driven applications of sustainability marketing. The increasing emphasis on analytics, digital platforms, and business models indicates that scholars are moving beyond conceptual discussions toward examining how digital infrastructures

and data-driven approaches can support sustainable value creation and market competitiveness.

Meanwhile, earlier or more established topics, shown in darker blue shades such as innovation, technology, and business development, demonstrate the historical roots of the field in digital innovation and entrepreneurship studies. The temporal gradient highlights an important transition: research initially focused on technological innovation and business sustainability, but has gradually evolved toward integrating marketing strategy, consumer engagement, and digital ecosystems.
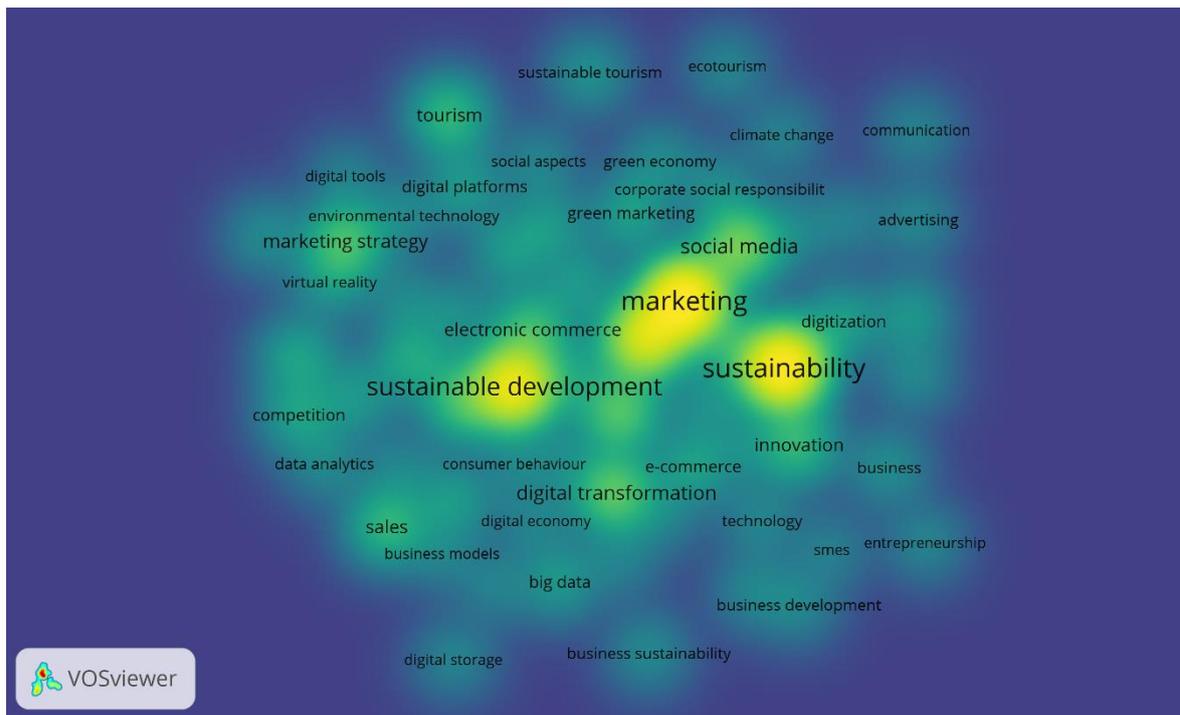

Figure 3. Density Visualization
Source: Data Analysis Result, 2026

Figure 3 highlights the most intensively studied themes within Digital Sustainability Marketing, where brighter yellow areas indicate higher research concentration. The strongest density appears around sustainability, marketing, and sustainable development, showing that these concepts form the intellectual core of the literature. Their overlapping density zones suggest a high level of scholarly integration between environmental sustainability discourse and digital marketing practices. Closely connected terms such as electronic commerce, digital transformation, and social media further indicate that researchers increasingly examine sustainability through the lens of digital platforms and evolving market ecosystems.

Beyond the central hotspots, moderate-density areas emerge around topics like innovation, technology, SMEs, and consumer behaviour, reflecting growing but still developing research streams. Meanwhile, peripheral keywords such as big data, virtual reality, and digital storage appear in lower-density zones, suggesting that these themes are emerging opportunities rather than dominant focuses.

3.2 Co-Authorship Network
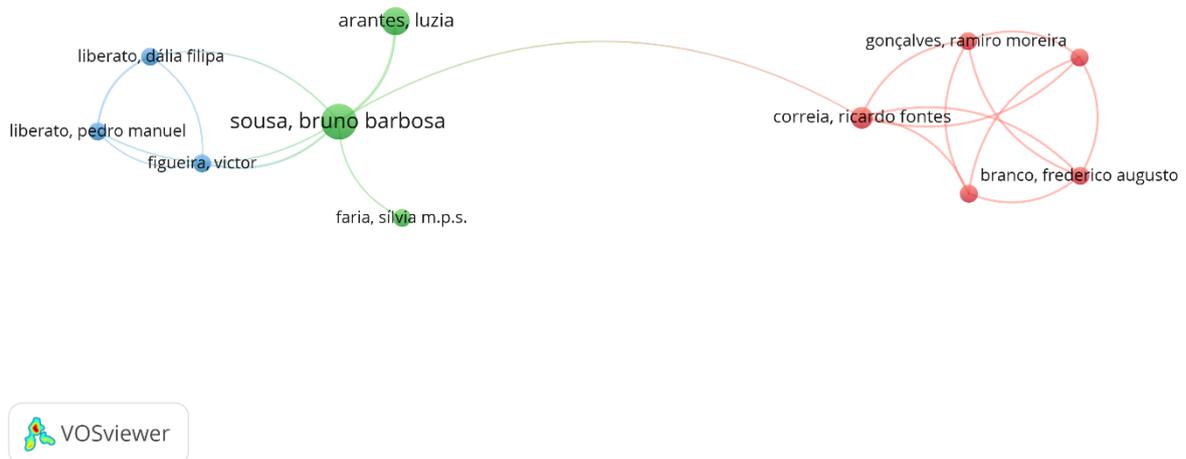
Figure 4. Author Collaboration Visualization
Source: Data Analysis Result, 2026

Figure 4 reveals a fragmented but identifiable collaboration structure within Digital Sustainability Marketing research. Two main clusters dominate the map: one centered around Sousa, Bruno Barbosa, who acts as a key connector linking several collaborators such as Arantes Luzia and Faria Silvia, indicating an active collaborative hub contributing to knowledge development in this field. Another distinct cluster on the right, involving authors like Gonçalves Ramiro Moreira, Correia Ricardo Fontes, and Branco Frederico Augusto, shows strong internal collaboration but limited connections with other groups, suggesting regional or institutional research partnerships. Meanwhile, the smaller blue cluster associated with the Liberato authors appears relatively isolated, highlighting that collaboration networks remain segmented rather than globally integrated.
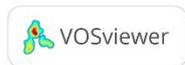
Figure 5. Affiliation Collaboration Visualization
Source: Data Analysis Result, 2026

Figure 5 collaboration network shows a relatively concentrated but interconnected academic structure, where Universidade de Aveiro appears to act as a bridging institution linking different research groups. On the left side, institutions such as ISCTE – Instituto Universitário demonstrate closer collaboration ties, suggesting shared research agendas or co-authored outputs within similar academic environments. Meanwhile, Instituto Politécnico do Cávado forms a separate node connected through longer links, indicating collaboration that exists but is less dense or more occasional. The map suggests that research on Digital Sustainability Marketing is currently driven by a limited number of institutional hubs, with collaboration patterns reflecting regional academic networks rather than a broad global institutional integration.

Figure 6. Country Collaboration Visualization
Source: Data Analysis Result, 2026

Figure 6 ighlights a highly interconnected global research landscape in Digital Sustainability Marketing, with India emerging as the central hub due to its large node size and extensive collaboration links with multiple regions. Strong connections between countries such as Malaysia, China, Saudi Arabia, and Australia indicate active knowledge exchange across Asia-Pacific and Middle Eastern research communities. European countries like Portugal, Spain, France, and Poland form another prominent cluster, suggesting regional collaboration patterns that contribute significantly to the field's development. Meanwhile, Indonesia appears as an important emerging contributor within a red cluster that includes Vietnam, Iraq, Morocco, and Peru, reflecting growing research activity from developing economies.

3.3 Citation Analysis

Table 1. Top Cited Research

Citations	Authors and year	Title
365	[12]	Universal health coverage in Indonesia: concept, progress, and challenges
290	[13]	How should we understand the digital economy in Asia? Critical assessment and research agenda
272	[14]	The 1% rule in four digital health social networks: An observational study
252	[15]	Customer relationship management: digital transformation and sustainable business model innovation
236	[16]	Role of big data and social media analytics for business to business sustainability: A participatory web context
198	[17]	Research streams on digital transformation from a holistic business perspective: a systematic literature review and citation network analysis

Citations	Authors and year	Title
175	[18]	Identification and analysis of barriers in implementation of solar energy in Indian rural sector using integrated ISM and fuzzy MICMAC approach
174	[19]	Artificial intelligence technologies and related urban planning and development concepts: How are they perceived and utilized in Australia?
171	[20]	Tourism, technology and ICT: a critical review of affordances and concessions
157	[21]	Marketing innovation and sustainable competitive advantage of manufacturing SMEs in Ghana

Source: Scopus, 2026

Discussion
Overview of Findings

The bibliometric analysis of Digital Sustainability Marketing reveals a multidimensional and rapidly evolving research landscape characterized by strong interdisciplinary integration between sustainability studies, digital transformation, and marketing strategy. The keyword co-occurrence network indicates that sustainability, marketing, and sustainable development function as the intellectual backbone of the field, reflecting how sustainability principles have increasingly become embedded within digital marketing discourse. The density visualization further confirms that these themes represent the most mature and highly concentrated research areas, suggesting that scholars have consistently explored sustainability-oriented marketing frameworks as a central research focus.

The overlay visualization demonstrates a clear temporal shift in the evolution of the field. Earlier research emphasized technological innovation, business development, and digital transformation as foundational components of sustainability-oriented marketing. More recent studies, however, show growing attention to practical applications such as digital tools, marketing strategy, consumer behaviour, and data analytics. This progression suggests that the field is transitioning from conceptual exploration toward applied research that integrates sustainability goals into real-world digital marketing practices. The increasing prominence of social media and electronic commerce also highlights the importance of digital platforms in shaping sustainable consumer engagement.

Collaboration analyses provide additional insight into the structural development of the research community. The co-authorship and institutional networks reveal that scholarly collaboration is still relatively fragmented, with several localized research clusters rather than a fully integrated global network. Key authors and institutions act as bridging nodes, but cross-cluster collaboration remains limited. Similarly, the country collaboration map shows that while India emerges as a dominant hub with extensive international links, research contributions are geographically diverse, involving Europe, Asia-Pacific, and emerging economies such as Indonesia. This pattern indicates growing global interest but also suggests the need for broader international collaboration to strengthen theoretical and empirical integration.

Theoretical Implications

From a theoretical perspective, the findings highlight how Digital Sustainability Marketing has evolved into an interdisciplinary domain that merges sustainability theory with digital marketing and innovation studies. The centrality of sustainability-related keywords suggests that researchers increasingly view digital marketing not merely as a promotional tool but as a mechanism for advancing sustainable development goals. The emergence of themes such as consumer behaviour, digital

economy, and big data indicates that future theoretical development may focus on integrating sustainability frameworks with data-driven marketing models and digital ecosystem theories.

Moreover, the presence of clusters related to SMEs, entrepreneurship, and innovation suggests that the literature is expanding beyond traditional corporate sustainability perspectives toward more inclusive business models. This evolution aligns with contemporary theoretical discussions on digital transformation and green innovation, where sustainability is embedded within organizational capabilities and strategic decision-making. The fragmented collaboration networks observed in the co-authorship analysis also imply that theoretical perspectives may still be developing in parallel across different regions, reinforcing the need for more integrative and comparative research frameworks.

Practical Implications

The findings offer important implications for practitioners and policymakers seeking to leverage digital marketing strategies to support sustainability initiatives. The strong linkage between social media, electronic commerce, and sustainability indicates that digital platforms play a crucial role in influencing consumer awareness and promoting responsible consumption behaviour. Organizations can utilize data analytics, digital tools, and marketing strategies to enhance transparency, communicate sustainability values, and build stronger relationships with environmentally conscious consumers.

Additionally, the growing presence of SMEs and entrepreneurial themes suggests that digital sustainability marketing is not limited to large corporations but is

increasingly relevant for smaller businesses navigating digital transformation. Policymakers may also benefit from these insights by encouraging cross-border research collaboration and supporting innovation ecosystems that integrate sustainability objectives with digital marketing capabilities. The global distribution of research activity highlighted in the country collaboration map further underscores the importance of international partnerships in accelerating knowledge exchange and fostering sustainable digital innovation.

4. CONCLUSION

This bibliometric analysis demonstrates that Digital Sustainability Marketing has evolved into an interdisciplinary research domain that integrates sustainability principles, digital transformation, and strategic marketing practices. The findings reveal that sustainability, marketing, and sustainable development remain the intellectual core of the field, while emerging themes such as digital tools, consumer behaviour, and data-driven marketing indicate a growing shift toward practical and technology-oriented applications. Collaboration analyses further show that although research activity is globally distributed, scholarly networks are still relatively fragmented, suggesting opportunities for stronger international partnerships and theoretical integration. Overall, the study highlights the increasing importance of digital platforms in advancing sustainable marketing strategies and provides a foundation for future research to explore innovative technologies, cross-sector collaboration, and context-specific applications that can strengthen both academic understanding and real-world sustainability outcomes.

REFERENCES

[1] H. Aldoy and B. Mcintosh, "Employee Engagement Concepts, Constructs and Strategies: A Systematic Review of Literature," *Artif. Intell. Transform. Digit. Mark.*, pp. 1159–1174, 2023.

[2] R. T. Sebastian, L. Sherly Steffi, and G. A. Mathew, "Examining the Impact of Mentoring on Personal Learning, Job Involvement and Career Satisfaction," in *Artificial Intelligence and Transforming Digital Marketing*, Springer, 2023, pp. 997–1006.

[3] F. K. Mubarok and M. K. Imam, "Halal industry in Indonesia; challenges and opportunities," *J. Digit. Mark. Halal Ind.*, vol. 2, no. 1, pp. 55–64, 2020.

[4] I. Okonkwo and H. A. Awad, "The role of social media in enhancing communication and collaboration in business," *J. Digit. Mark. Commun.*, vol. 3, no. 1, pp. 19–27, 2023.

[5] M. Amalia Putri, T. Hanida, I. Tarwisah, V. Wati, Z. Maulana, and I. Firmansyah, "The Influence of Digital Marketing, Access to Capital, and Financial Management on the Competitiveness of MSMEs Products in the Regency/City of Tasikmalaya," *Saudi J. Econ. Financ.*, vol. 7, pp. 300–306, 2023.

[6] A. Faisal, N. N. Fauziyah, I. Ekawanto, M. Sabur, and R. R. D. Asih, *DIGITAL MARKETING: Strategi dan Inovasi Pemasaran Digital Menembus Pasar Global*. PT. Sonpedia Publishing Indonesia, 2024.

[7] S. Li, Y. Shi, L. Wang, and E. Xia, "A bibliometric analysis of brand orientation strategy in digital marketing: Determinants, research perspectives and evolutions," *Sustainability*, vol. 15, no. 2, p. 1486, 2023.

[8] W. Ozuem and M. Willis, "Influencer marketing," in *Digital marketing strategies for value co-creation: Models and approaches for online brand communities*, Springer, 2022, pp. 209–242.

[9] S. Wahyuningsih, V. T. Nadya, and E. P. Melati, "DIGITAL MARKETING: KEGIATAN PEMASARAN ATAU PROMOSI BRAND PRODUK MELALUI INTERNET ATAU MEDIA SOSIAL," *J. DAYA-MAS*, vol. 8, no. 1, pp. 8–12, 2023.

[10] O. Y. Chygryn, T. V. Pimonenko, Y. V. Bilan, and L. V. Starchenko, "Digital marketing for green goods promotion: modern trends in entrepreneurship," 2019.

[11] N. Donthu, S. Kumar, N. Pandey, N. Pandey, and A. Mishra, "Mapping the electronic word-of-mouth (eWOM) research: A systematic review and bibliometric analysis," *J. Bus. Res.*, vol. 135, pp. 758–773, 2021.

[12] R. Agustina *et al.*, "Universal health coverage in Indonesia: concept, progress, and challenges," *Lancet*, vol. 393, no. 10166, pp. 75–102, 2019.

[13] K. Li, D. J. Kim, K. R. Lang, R. J. Kauffman, and M. Naldi, "How should we understand the digital economy in Asia? Critical assessment and research agenda," *Electron. Commer. Res. Appl.*, vol. 44, p. 101004, 2020.

[14] T. Van Mierlo, "The 1% rule in four digital health social networks: an observational study," *J. Med. Internet Res.*, vol. 16, no. 2, p. e2966, 2014.

[15] H. Gil-Gomez, V. Guerola-Navarro, R. Oltra-Badenes, and J. A. Lozano-Quilis, "Customer relationship management: digital transformation and sustainable business model innovation," *Econ. Res. istraživanja*, vol. 33, no. 1, pp. 2733–2750, 2020.

[16] U. Sivarajah, Z. Irani, S. Gupta, and K. Mahroof, "Role of big data and social media analytics for business to business sustainability: A participatory web context," *Ind. Mark. Manag.*, vol. 86, pp. 163–179, 2020.

[17] J. P. Hausberg, K. Liere-Netheler, S. Packmohr, S. Pakura, and K. Vogelsang, "Research streams on digital transformation from a holistic business perspective: a systematic literature review and citation network analysis," *J. Bus. Econ.*, vol. 89, no. 8, pp. 931–963, 2019.

[18] S. Sindhu, V. Nehra, and S. Luthra, "Identification and analysis of barriers in implementation of solar energy in Indian rural sector using integrated ISM and fuzzy MICMAC approach," *Renew. Sustain. Energy Rev.*, vol. 62, pp. 70–88, 2016.

[19] T. Yigitcanlar *et al.*, "Artificial intelligence technologies and related urban planning and development concepts: How are they perceived and utilized in Australia?," *J. Open Innov. Technol. Mark. Complex.*, vol. 6, no. 4, p. 187, 2020.

[20] S. Gössling, "Tourism, technology and ICT: a critical review of affordances and concessions," *J. Sustain. Tour.*, vol. 29, no. 5, pp. 733–750, 2021.

[21] D. Quaye and I. Mensah, "Marketing innovation and sustainable competitive advantage of manufacturing SMEs in Ghana," *Manag. Decis.*, vol. 57, no. 7, pp. 1535–1553, 2019.