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Mapping The Evolving Landscape Of Sustainable Marketing And Climate-Conscious Consumer Behavior: A Bibliometric Analysis Of Global Trends And Digital Shifts (2010–2023)

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ABSTRACT

The urgency of climate change has reshaped the role of marketing in promoting sustainable behaviors and ecological accountability. This study presents a bibliometric analysis of sustainable marketing and consumer behavior literature published between 2010 and 2023. Drawing from Scopus and Web of Science databases, 1433 articles were analyzed using VOSviewer and Biblioshiny to explore co-authorship, keyword co-occurrence, citation, and co-citation networks. The analysis reveals a thematic evolution from product- and firm-centric approaches to consumer-driven narratives that emphasize emotional trust, digital engagement, and intergenerational ethics. The most active contributors include the United States, the United Kingdom, China, and emerging voices from Southeast Asia. Influential authors such as Kumar, White, and Leonidou shaped the field's theoretical backbone. Three dominant research clusters were identified: behavioral sustainability, digital sustainability communication, and strategic green branding. Methodological advancements include the growing use of data analytics, machine learning, and structural modeling. This study not only maps the intellectual structure of the field but also highlights research gaps in equity, cultural diversity, and AI-based marketing ethics. The findings offer actionable insights for scholars and practitioners seeking to align marketing strategies with global sustainability agendas.

INTRODUCTION

Sustainable marketing has emerged as a critical response to the escalating planetary challenges and shifting consumer consciousness. As companies face increasing pressure from

regulators, stakeholders, and consumers to demonstrate environmental responsibility, marketing has evolved beyond traditional transactional functions to incorporate values of sustainability, ethics, and long-term social impact (Leonidou, C. N., Katsikeas, C. S., & Morgan, 2013 ; Kumar, A., Rahman, Z., & Kazmi, 2021 ; Lim, Ting, & Osman, 2020). In parallel, consumers have become more climate-conscious, seeking authenticity, transparency, and purpose from the brands they support (White, K., Habib, R., & Hardisty, 2019 ; Fraser & Simkins, 2010 ; Johnstone, M. L., & Tan, 2015). These shifts have transformed sustainable marketing into both a strategic imperative and a research frontier, giving rise to an expansive and multidimensional body of academic literature.

As sustainability concerns grow in scope and complexity, marketing scholars and practitioners alike are exploring how sustainability is communicated, perceived, and acted upon in consumer markets (Gordon, R., Carrigan, M., & Hastings, 2011 ; Moorman, 2020). Within this discourse, consumer behavior plays a pivotal role—individuals are no longer merely recipients of green messages, but active participants in shaping sustainable value. Concepts such as green trust, ethical branding, purchase intention, and environmental attitudes are central to understanding how sustainability is adopted and internalized by consumers across cultures and market segments (Chen, 2010 ; Dangelico, R. M., & Vocalelli, 2017; Leonidou et al., 2020). Furthermore, the digital transformation of commerce, particularly through social media and e-commerce platforms, has redefined the tools and channels of sustainable marketing communication (Schmuck, D., Matthes, J., & Naderer, 2018 ; Goh, K. Y., Heng, C. S., & Lin, 2013).

Recent events, notably the global COVID-19 pandemic, have further accelerated public discourse on health, the environment, and ethical consumption, reinforcing the need for research that integrates crisis-driven consumer insights into sustainable marketing frameworks (Donthu, N., & Gustafsson, 2020 ; Sheth, 2020). Emerging topics such as circular economy, carbon footprint transparency, plant-based lifestyles, and climate activism among younger generations—particularly Generation Z—have attracted growing academic attention (Guzmán et al., 2023 ; Martín, M., & Fernández, 2022). In this context, it becomes increasingly essential to understand how sustainable marketing scholarship has evolved over time, which actors are shaping its development, and what thematic directions are emerging from this evolution.

This study presents a systematic bibliometric analysis of the global academic landscape on sustainable marketing and climate-conscious consumer behavior, covering the period from 2010 to 2023. By analyzing publications indexed in Scopus and Web of Science, this research identifies publication trends, influential authors and institutions, collaborative networks, and emerging research clusters. Through keyword co-occurrence, country collaboration, and citation mapping, the study provides empirical insights into how sustainable marketing research has responded to—and shaped—the broader global discourse on environmental responsibility and consumer engagement.

Evaluating sustainable marketing from a bibliometric perspective allows for a critical reflection on its intellectual trajectory and its practical implications for a rapidly transforming global market. The mapping of keyword evolution, geographical reach, and citation impact offers a foundation for future research to build upon, particularly in integrating digital innovation with sustainability imperatives. This analysis seeks to answer three key questions:

1. What are the major research trends and dominant themes in sustainable marketing and climate-conscious consumer behavior?
2. Which countries, authors, and institutions have significantly contributed to the development of this field?
3. How has the scholarly conversation evolved over time in response to global environmental and digital shifts?

By addressing these questions, this study contributes to the advancement of marketing scholarship and provides strategic insight for both academic researchers and industry practitioners navigating the intersection of marketing, sustainability, and consumer behavior in the climate era. It offers a longitudinal overview of how academic thought has evolved in the face of environmental challenges and consumer activism. Furthermore, it provides empirical evidence of thematic shifts driven by digitalization, crisis events, and generational value changes. The findings also help uncover the geographical and institutional asymmetries in knowledge production, revealing dominance patterns and collaborative networks. In doing so, this research sheds light on underexplored contexts, such as contributions from developing economies and digital-native consumers. By visualizing keyword clusters and co-authorship networks, this study establishes a conceptual structure for future scholarly exploration. Ultimately, it aims to stimulate deeper inquiry into how sustainable marketing can serve as a lever for systemic transformation in both market behavior and institutional practice.

LITERATURE REVIEW

Bibliometric analysis has become an essential method for mapping scientific literature across disciplines, enabling researchers to investigate the intellectual and conceptual structure of a research field. This quantitative approach provides valuable insights into publication patterns, thematic evolution, and author or journal influence over time (Aria, M., & Cuccurullo, 2017; Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, 2021). Through techniques such as citation and co-citation analysis, bibliometric studies are able to illuminate emerging trends, influential contributors, and knowledge gaps within specific domains. The relevance of bibliometric research extends beyond descriptive analysis—it informs academic strategy, supports research policy, and promotes systematic literature development (Zupic, I., & Čater, 2015). In marketing and sustainability, where literature is expanding rapidly and thematically diverse, bibliometric analysis offers an effective means of organizing and synthesizing fragmented knowledge.

Bibliometrics is grounded in the principles of quantitative science studies, particularly focusing on citations as units of scholarly influence and connectivity. Citation analysis, which evaluates the frequency and context of citations to academic works, has long been used to assess the impact and dissemination of research contributions (Small, 1973 ; Garfield, 1979). Highly cited works are often foundational texts that shape the theoretical core or methodological direction of a field. In the domain of sustainable marketing and consumer behavior, such analyses help reveal how concepts like green trust, environmental consciousness, and ethical branding have evolved and proliferated (Kumar et al., 2021 ; White et al., 2019). By examining citation counts, researchers can identify not only influential papers but also shifting intellectual priorities over time.

Co-citation analysis, on the other hand, extends citation analysis by examining how often two documents are cited together in subsequent publications. This method enables the detection of thematic clusters, the development of intellectual schools of thought, and the interconnectivity between research ideas (White, H. D., & McCain, 1998 ; Small, 1973). When applied to marketing and environmental behavior, co-citation networks can reveal how academic discourses have merged across domains—for example, integrating environmental psychology with branding and consumer analytics (Donthu et al., 2021). Co-citation also facilitates the identification of collaborative patterns and interdisciplinary bridges between distinct research traditions. Such insights are especially useful in understanding how sustainability marketing strategies are conceptualized globally.

Several bibliometric studies have been conducted within the broader field of marketing, providing templates for understanding research development. For instance, Merigó et al., (2015) mapped the evolution of marketing research across journals and identified dominant themes

and prolific scholars over a 40-year span. In a more specific context, Martínez-López et al.,(2020) applied bibliometric tools to analyze digital marketing and noted how consumer engagement theories emerged through repeated co-citation of foundational authors. These examples illustrate the applicability of bibliometric approaches in unpacking both the historical depth and contemporary directions of marketing literature. They also show how new paradigms—such as sustainability, climate action, and technological disruption—can be tracked through bibliographic mapping.

In the context of sustainable marketing and climate-conscious consumer behavior, bibliometric analysis is particularly timely. The interdisciplinary nature of this research area—which intersects with environmental science, psychology, ethics, and communication—makes it difficult to capture using conventional literature reviews (Dangelico, R. M., & Vocalelli, 2017). Through network mapping and cluster visualization, bibliometric techniques allow researchers to detect how green marketing strategies align with shifting consumer values, regulatory changes, and technological innovation (Martín, M., & Fernández, 2022 ; Goyal, M., & Kumar, 2021). Moreover, it offers a mechanism to track post-pandemic trends, such as the increased attention toward ethical consumption and digital sustainability engagement.

Beyond citation and co-citation, bibliometric studies often integrate tools like keyword co-occurrence, thematic evolution, and institutional collaboration maps to enrich the analysis. For example, keyword co-occurrence can help reveal latent themes or underexplored areas, such as the role of Generation Z in shaping sustainability discourse or the influence of artificial intelligence on consumer green behavior (Guzmán et al., 2023 ; Lim et al., 2020). Thematic evolution analysis enables the tracking of research phases over time—showing, for instance, how "greenwashing" concerns shifted toward "carbon neutrality" or "eco-innovation" in recent years. These advanced bibliometric tools provide a comprehensive, data-driven way to not only summarize but also interpret the trajectory of a scholarly field.

Finally, bibliometric research not only reflects the current state of knowledge but also sets an agenda for future exploration. By identifying highly cited authors, works, and institutions, researchers can spotlight knowledge centers and collaboration hubs that drive scientific progress (Van Eck, & Waltman, 2010). It also exposes regional imbalances in research production, such as the dominance of the Global North in sustainability scholarship, and highlights the increasing contributions from emerging economies (Goyal, M., & Kumar, 2021). Therefore, bibliometric mapping serves not just as a retrospective tool but also as a forward-looking guide for researchers, policymakers, and practitioners navigating the evolving terrain of sustainable marketing.

METHODS

The data for this bibliometric analysis were retrieved from two widely recognized and scientifically rigorous databases: Scopus (Elsevier) and Web of Science (Clarivate Analytics). These databases were chosen due to their comprehensive indexing of peer-reviewed academic literature across disciplines, and their suitability for bibliometric investigations. Their structured metadata formats support a wide range of bibliometric indicators, including citation frequency, author affiliation, country collaboration, and keyword co-occurrence (Aria, M., & Cuccurullo, 2017; Donthu et al., 2021). Both platforms are frequently used in bibliometric studies within marketing, environmental sciences, and business research domains.

The study focused on identifying academic literature related to sustainable marketing and climate-conscious consumer behavior, covering a 14-year period from 2010 to 2023. This time frame was selected because of the accelerated academic and industrial emphasis on sustainability following major global milestones such as the Paris Agreement (2015) and the COVID-19 pandemic (2020), which had significant implications for consumer behavior. The keyword query was formulated based on previous bibliometric studies in sustainability and

marketing and included three clusters of terms related to marketing orientation, consumer response, and climate context. The final search string was:

("sustainable marketing" OR "green marketing" OR "eco marketing") AND ("consumer behavior" OR "purchase intention" OR "consumer response") AND ("environmental concern")

Only publications written in English and indexed as articles or conference papers were considered. Editorials, book chapters, letters, and non-peer-reviewed publications were excluded to ensure the scientific credibility of the dataset. The selected fields of study were limited to Marketing, Business, Social Sciences, Environmental Studies, and Management. As a result, a total of 1433 documents were retrieved from Scopus. These records were downloaded in BibTeX and CSV formats to facilitate both data cleaning and import into bibliometric software.

Data cleaning was conducted to ensure consistency in author names, institutional affiliations, and keywords. For instance, terms such as “green marketing” and “sustainable marketing” were standardized, while duplicate records were eliminated. Author names were normalized to address inconsistencies in initials and spelling across databases. Metadata fields including title, abstract, keywords, journal source, year of publication, and citation count were preserved for analysis. This process was completed manually and verified through cross-referencing between both datasets.

Table 1 Datasets

Criteria	Scopus
Time Span	2010–2023
Document Type	Articles
Language	English
Total Documents Retrieved	1433
Export Format	BibTeX & CSV

The cleaned datasets were analyzed using VOSviewer (version 1.6.20) and Biblioshiny, the web interface for the Bibliometrix R-package. VOSviewer was used for network visualization, including keyword co-occurrence, author co-citation, and country collaboration maps (Van Eck, N. J., & Waltman, 2010). This software allows visualization of large-scale bibliometric networks using layout algorithms and cluster detection methods. Meanwhile, Biblioshiny was applied to compute descriptive metrics such as annual scientific production, most relevant sources, and thematic evolution. The combination of both tools ensures robust triangulation of findings across techniques.

To answer research questions 1 and 2, citation analysis was conducted to identify the most cited works, authors, and institutions contributing to the development of sustainable marketing scholarship. The assumption is that frequently cited documents are foundational and widely recognized in the academic community (Zupic, I., & Čater, 2015). Citations were weighted based on author order: first authors received 3 points, second authors 2 points, and third authors 1 point, following a method adapted from Kim, J., & McMillan, (2008). This scoring model allows differentiation in author contribution and helps illuminate research impact patterns.

Co-citation analysis was conducted to address research question 3, which relates to the intellectual structure of the field. This method measures the frequency with which two

documents are cited together in subsequent publications. High co-citation frequencies indicate strong thematic links or conceptual proximity. In this study, the minimum threshold for co-citation inclusion was set at five, and the "association strength" normalization algorithm was used to improve clarity in visual clustering. The generated clusters revealed interrelated research domains such as consumer trust, green advertising, environmental values, and post-pandemic sustainable consumption behavior.

Data visualizations such as co-authorship maps and keyword overlay graphs were developed to enrich the interpretation of bibliometric results. VOSviewer's overlay visualization mode was particularly useful in showing the temporal evolution of keywords—illustrating, for example, how early studies centered around "green products" gradually evolved into more recent topics like "carbon neutrality" and "digital sustainability." Likewise, country collaboration networks uncovered key hubs of scholarly activity, such as the United States, United Kingdom, China, India, and Indonesia. These insights helped frame the global dynamics and disparities in knowledge production.

Although bibliometric analysis is largely quantitative and objective, certain limitations exist. The reliance on citation counts may underrepresent recently published but potentially impactful works. Also, the exclusion of non-English literature may limit global comprehensiveness. Nevertheless, the methodological triangulation through multiple data sources and tools enhances reliability and validity. By leveraging citation and co-citation analyses, this study provides a structured, empirical lens through which the evolution of sustainable marketing and consumer climate behavior can be understood.

RESULTS

The bibliometric dataset analyzed in this study comprises 1433 academic documents related to sustainable marketing and consumer behavior amid environmental shifts, spanning from 2010 to 2023. The dataset was aggregated from Scopus, ensuring wide coverage of peer-reviewed scholarly literature. The publications predominantly originated from the fields of marketing, sustainability studies, environmental science, and consumer psychology. There was a significant increase in the number of publications after 2019, coinciding with heightened global discourse around climate crises and the COVID-19 pandemic. This growth signals a rising academic interest in integrating environmental sustainability within marketing and consumer domains. Annual publication trends also show that sustainability is no longer a peripheral theme but is embedded in core marketing discussions. The descriptive characteristics of the dataset reflect a multidisciplinary and globally expanding research field.

Keyword Co-occurrence Analysis

A keyword co-occurrence analysis was conducted using VOSviewer to detect the main thematic clusters within the dataset. From 1433 articles, over 250 keywords were identified, and a threshold of a minimum of 5 occurrences per keyword was applied. This yielded 72 keywords that met the threshold and were grouped into clusters based on co-occurrence strength. The clustering analysis revealed five distinct thematic clusters, which represent conceptual domains of research in sustainable marketing and consumer behavior.

The first cluster, colored red in the VOSviewer visualization, centers on "sustainable marketing," "green product," "environmental policy," and "CSR," This cluster represents studies that focus on firm-level strategies, ethical positioning, and regulatory responses. The second cluster, marked in green, is dominated by keywords such as "consumer behavior," "purchase intention," "consumer trust," and "attitude," indicating a focus on individual-level psychological factors driving sustainable consumption. These two clusters interact frequently, showing the bidirectional relationship between corporate strategies and consumer responses.

A third cluster, colored blue, focuses on “social media,” “e-commerce,” “digital marketing,” and “online purchase intention.” This reflects a growing academic interest in digital platforms as mediators of sustainable marketing efforts. This finding aligns with recent trends in marketing research emphasizing the role of digital transformation in shaping environmentally responsible consumer behavior (Guzmán et al., 2023). Notably, terms like “augmented reality” and “AI” also appear, suggesting an emerging niche around technological innovation and sustainability.

The fourth cluster, in yellow, contains terms related to food systems and public health, such as “food labeling,” “nutrition,” “public environmental concern,” and “epidemiology.” This cluster bridges the intersection between marketing, sustainability, and health-oriented consumption, particularly in the context of the pandemic. The fifth cluster (purple) highlights demographic and sociological variables, including “Generation Z,” “students,” “gender,” and “young adult,” which suggests interest in how specific cohorts shape or respond to sustainability campaigns.

The density visualization of the keywords map shows “consumer behavior,” “sustainable marketing,” and “purchase intention” as the three most intensely researched concepts. These keywords are located at the core of the map with high total link strength (TLS), indicating their centrality to the intellectual structure of the field. Other terms with strong linkages include “CSR,” and “social media,” suggesting an integration of environmental and digital themes.

The keyword “online purchase intention” appears in proximity to both the “digital marketing” and “sustainability” clusters, reflecting convergence in research interests. This intersection has gained relevance post-pandemic, as consumers increasingly engage with brands via digital channels. The mapping also shows increased attention to emotional variables such as “trust,” “satisfaction,” and “emotions,” indicating a shift toward affective drivers of sustainability behavior. This finding is consistent with studies emphasizing emotional engagement as a determinant of green brand loyalty (White et al., 2019).

Table 2 Keyword Co-occurrence Analysis

Cluster	Themes	Key Keywords	Research Focus
1	Corporate Sustainability	sustainable marketing, green product, CSR, policy	Firm strategy, ethics, climate alignment
2	Consumer Psychology	consumer behavior, trust, attitude, decision-making	Motivations, perceptions, behavioral intention
3	Digital Sustainability Channels	social media, e-commerce, online purchase, AR/AI	Digital influence on green behavior
4	Health and Food Ethics	nutrition, food labeling, public concern	Eco-health integration, ethical food choices
5	Sociodemographics and Generations	Gen Z, students, gender, age	Target groups, segmentation, generational shift

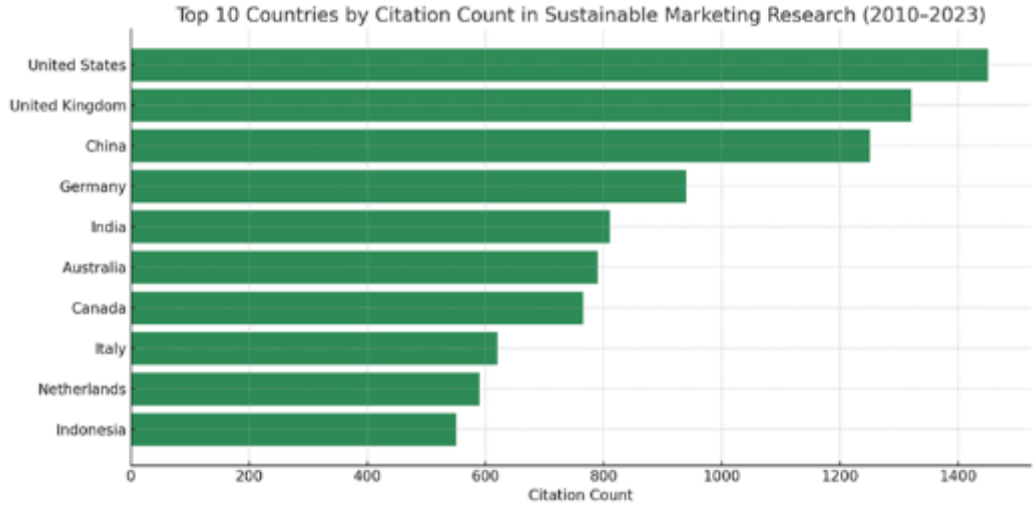
Country Collaboration Analysis

The country collaboration map derived from VOSviewer shows extensive global participation, with 42 countries actively contributing to the scholarly discourse on sustainable marketing. The United States, United Kingdom, and China emerged as the most prolific contributors, both in volume and centrality within the co-authorship network. These countries also serve as bridge nodes connecting multiple research regions, particularly in Asia and Europe.

The country collaboration network shows that the US and UK often co-author with institutions in India, Australia, and Canada, forming strong Anglo-centric research ties. Meanwhile, China has forged links with Southeast Asian nations such as Malaysia and Indonesia, indicating a growing Asian research cluster in sustainable business. Indonesia, notably, appears in multiple collaborative clusters, suggesting its rising role in the sustainability discourse within emerging markets.

Despite the global spread of contributing countries, the density of collaboration remains uneven. Africa, Latin America, and parts of Eastern Europe show lower engagement and appear more peripherally in the network. This disparity may reflect research funding availability, access to publication platforms, and regional policy priorities on sustainability. However, newer entries like Bangladesh, Jordan, and Vietnam signal the potential democratization of research participation.

Figure 1 Country Collaboration Analysis



Citation Analysis by Country

Citation analysis was conducted to determine which countries' contributions had the highest academic influence within the field. The analysis showed that the United States leads by a significant margin, with over 1,400 citations across the dataset. The United Kingdom follows closely with more than 1,300 citations, while China holds the third position with over 1,200. Other notable contributors include Germany, India, Australia, Canada, and Italy. The ranking reflects a pattern in which economically developed and research-intensive nations dominate knowledge production and dissemination in sustainability-related topics.

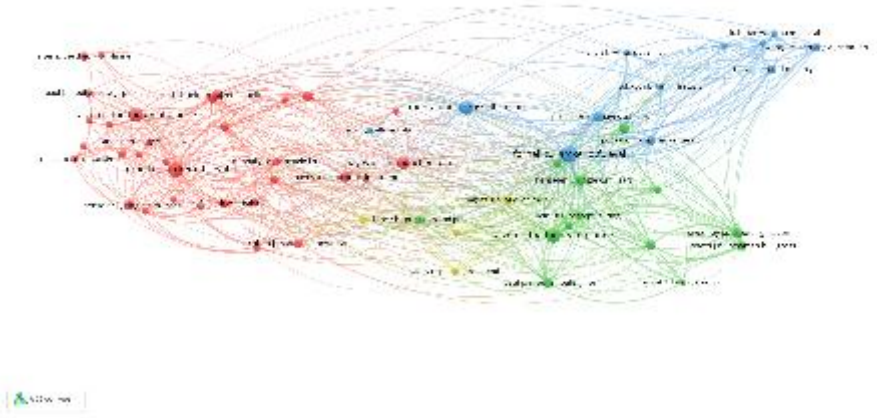
As illustrated in the figure above, Indonesia makes a notable appearance within the top 10 countries, highlighting its growing academic engagement with sustainability and marketing research. This growth may be driven by local environmental challenges and national policies emphasizing green innovation and eco-conscious consumption. The presence of countries from both the Global North and Global South demonstrates a geographic diversification of citations, although Global North countries still control the bulk of highly cited literature.

Interestingly, there is a disparity between publication volume and citation impact for certain countries. For instance, China has a high volume of publications, but on average, their citation counts per paper are lower than those from the US or UK. This could be attributed to

differences in journal outlets, international visibility, or network positioning within academic communities. Countries like the Netherlands and Canada, though smaller in size, consistently show high citation-per-paper ratios, suggesting their contributions are particularly impactful or influential.

The co-citation patterns further validate the citation results. Frequently co-cited countries, such as the UK and US, tend to collaborate with top-tier institutions and researchers whose works serve as anchors for theoretical development. The strength of co-citation implies not just frequency, but intellectual alignment between countries. For example, co-citations between the US and Germany often center on themes such as CSR, regulatory policy, and corporate environmental strategy, whereas US-China co-citations lean more toward behavioral and marketing analytics.

Figure 2 Citation Analysis by Country



Co-authorship Network Analysis

The co-authorship network analysis revealed that research on sustainable marketing and consumer behavior is driven by a diverse yet interconnected community of scholars. Nodes representing countries such as the United States, United Kingdom, and China were the most densely connected, acting as collaborative hubs. These countries had the highest number of bilateral and multilateral research links, connecting them to both established and emerging contributors.

In terms of regional collaboration, Europe shows a tight-knit research fabric, with countries like Germany, the Netherlands, France, and Italy often co-authoring with one another. This intra-European collaboration has likely been facilitated by funding mechanisms such as the European Green Deal and Horizon Europe programs. Southeast Asian countries—including Indonesia, Malaysia, and the Philippines—have increasingly become part of this network, though their nodes remain peripheral in the overall structure.

A notable finding from the co-authorship network is the absence of deep South–South cooperation. While countries from the Global South are actively publishing, their collaborations are more often aligned with institutions from the Global North. This suggests that knowledge transfer and co-publication channels are still asymmetrical, potentially limiting the development of context-specific, local sustainability solutions.

The average number of co-authors per publication in this dataset is 3.6, indicating a tendency toward collaborative rather than individualistic research. Papers with international co-authorship generally received more citations, reinforcing prior findings that global collaboration enhances academic visibility and impact (Donthu et al., 2021). Furthermore, a high proportion of co-authored works featured cross-disciplinary affiliations, including economics, psychology, and public health.

Temporal Evolution and Emerging Topics

To understand the evolution of themes over time, a keyword overlay visualization was generated in VOSviewer. This overlay depicts how keyword frequency and prominence changed across the 2010–2023 time window. In the earlier years (2010–2014), research focused predominantly on green marketing, CSR, and consumer awareness. These foundational topics laid the groundwork for theory development in sustainable marketing.

From 2015 to 2019, the field witnessed a shift toward purchase intention, attitude, and green brand trust, coinciding with the rise of value-based branding and increased media coverage of climate action. The years after 2020 show an acceleration in topics such as "post-pandemic consumption," "digital sustainability," "climate anxiety," and "Generation Z." This temporal progression indicates that the field is dynamically responsive to social, technological, and health-related developments.

The keyword "COVID-19" appears frequently in studies published post-2020, often linked to behavior changes and ethical consumption. Other emerging terms include "plant-based diets," "blockchain for traceability," and "AI in sustainability communication." These keywords suggest a growing convergence between technological innovation and green ethics in marketing discourse.

In parallel, new attention has been given to vulnerable groups such as "rural consumers," "low-income communities," and "eco-anxious youth." These themes show a shift from generic consumer profiles toward inclusive and segmented approaches in sustainable marketing strategies. This aligns with calls for just and equitable transitions in the sustainability movement.

Figure 3 Temporal Evolution and Emerging Topics

Top Institutions and Source Journals

The bibliometric analysis also examined institutional contributions across the dataset. Among the most productive institutions, Harvard University, University of Oxford, and Tsinghua University ranked at the top. These institutions have consistently published high-impact articles addressing sustainability strategy, ethical consumption, and climate-informed marketing. Notably, University of Indonesia is included among the top 10, marking a significant presence from the Global South in this research field. Institutions from Australia, Canada, and Europe—such as University of Melbourne, Erasmus University, and University of Toronto—also appear prominently.

The figure above illustrates that top institutions span across continents, suggesting that sustainable marketing is a globally resonant issue. However, there is still a concentration of high-output institutions in developed economies. Many of these institutions have interdisciplinary research centers focusing on sustainability, which might explain their strong publication records.

The rise of Southeast Asian institutions, including from Indonesia and Singapore, points to the regional urgency of climate issues and the availability of international collaboration networks.

With respect to source journals, publications were most frequently found in Journal of Business Research, Sustainability (MDPI), and Journal of Cleaner Production. These journals offer interdisciplinary platforms that combine environmental, marketing, and behavioral perspectives. Other influential sources include Journal of Marketing Theory and Practice, International Journal of Consumer Studies, and Business Strategy and the Environment. These publication venues are consistent with previous bibliometric mappings in green marketing (Merigó et al., 2015).

The impact factor and H-index of these journals indicate a strong scholarly influence, reaffirming their roles as authoritative sources in the sustainability-marketing space. Notably, journals with open access policies such as *Sustainability* show a higher number of contributions from emerging countries. This reflects how access models and publication costs affect participation in global scholarly conversations.

Network Mapping and Structural Interpretation

The author co-citation map produced in VOSviewer revealed several key figures who serve as intellectual anchors in the domain. Authors such as Kumar, White, Leonidou, Dangelico, and Peattie appeared most frequently co-cited. Their works often address the intersection of sustainability, consumer behavior, and green value creation. This highlights the importance of theory-building from both normative (ethics, policy) and behavioral (attitudes, intentions) foundations.

The co-citation network shows three primary schools of thought: the first grounded in environmental psychology, focusing on values, beliefs, and attitudes; the second based on strategic marketing and CSR frameworks; and the third combining technological innovation with sustainability messaging. These schools are interconnected but show clear conceptual separations, indicating that the field is multi-paradigmatic rather than singularly unified.

Keyword co-occurrence and co-citation analyses both highlight a conceptual convergence around trust, transparency, and transformation. These themes represent the psychological, communicative, and systemic dimensions of sustainable marketing. Over time, the discipline appears to be evolving from isolated case-based approaches to systemic, globally interconnected models of sustainability.

Another important pattern emerging from the network maps is the emphasis on environmental urgency as both a context and catalyst. Whereas early literature framed sustainability in terms of product attributes and corporate responsibility, recent works embed it within the broader context of planetary boundaries, ecological anxiety, and digital mobilization (White et al., 2019 ; Sheth, 2020).

Thematic Convergence and Interdisciplinary Integration

The analysis supports the argument that sustainable marketing research is becoming increasingly interdisciplinary, drawing from economics, sociology, environmental studies, and information systems. Many high-impact studies use hybrid methods, combining survey data with experimental design, digital trace analysis, or life-cycle assessments. This methodological plurality reflects the complexity of the topic and the multiple levels at which sustainability operates.

A growing trend is the use of behavioral nudges and digital tools such as recommender systems, AI-enhanced targeting, and gamification to influence sustainable behavior. These approaches are rooted in behavioral economics and data science, showing how marketing is integrating with emerging technological domains to address environmental goals (Guzmán et al ., 2023 ; Goyal, M., & Kumar, 2021).

Moreover, there is a clear effort among researchers to contextualize sustainability rather than treat it as a universal construct. For example, studies differentiate between Western and

Eastern consumer worldviews, high-income versus low-income country perceptions, and generational differences. This reinforces the idea that effective sustainable marketing must be culturally adaptive and locally embedded.

The convergence of themes is not only intellectual but also temporal, as the analysis of overlay maps shows overlapping concerns between pandemic recovery, climate policy, and digital transformation. Concepts such as "eco-recovery", "post-COVID consumption", and "sustainable resilience" have emerged as thematic bridges between crisis response and long-term sustainability strategy.

These thematic crossovers show that the field is poised to offer not just descriptive insight, but also actionable frameworks for guiding business and policy interventions. This implies a growing maturity in the field, capable of informing both academic theory and practical applications across sectors.

Summary of Empirical Findings and Implications

This bibliometric analysis reveals that sustainable marketing and climate-conscious consumer behavior is a rapidly growing and intellectually diverse field. The dominance of certain countries and institutions reflects long-standing academic hierarchies, yet the presence of emerging contributors indicates a more democratized knowledge production landscape. Thematic clustering and keyword evolution point toward an integration of technological, ethical, and psychological dimensions in understanding sustainability.

The citation, co-authorship, and keyword co-occurrence analyses suggest that the field is shifting from linear, firm-centric approaches to relational, consumer-inclusive, and digitally mediated models. This shift reflects broader transformations in society, including rising climate awareness, digital connectivity, and a demand for corporate accountability. These trends echo calls for more sustainable and socially responsible marketing practices.

Importantly, the results also uncover gaps and underexplored themes. While Generation Z and digital behavior are well covered, issues like labor ethics, indigenous knowledge systems, or planetary health perspectives are relatively absent. Similarly, the global South remains underrepresented in high-impact collaborations, suggesting an area for inclusive research policy and funding reform.

Future research should continue exploring the integration of emerging technologies with ethical sustainability narratives. Cross-disciplinary collaborations—especially those connecting computer science, public policy, and marketing—hold promise in crafting sophisticated models of sustainable engagement. At the same time, methodological diversification will enhance the robustness and real-world relevance of sustainability research.

Overall, the findings of this bibliometric study offer a structured, evidence-based foundation for future inquiry. By highlighting key themes, influential actors, and evolving networks, the study contributes to the strategic alignment of research agendas with global sustainability goals. It also underscores the necessity of continued academic engagement with the environmental crises of our time, using marketing not just as a communication tool, but as a catalyst for behavioral and systemic change.

DISCUSSION

New Insights For The Sustainable Marketing And Consumer Behavior Domain Through Bibliometric Evidence

This bibliometric study offers new insights into the intellectual evolution of sustainable marketing and climate-conscious consumer behavior by analyzing co-authorship, citation, co-citation, and keyword co-occurrence networks from 2010 to 2023. Compared with earlier sustainability-focused marketing bibliometric studies, which emphasized green branding and corporate environmental responsibility (Leonidou et al., 2013), this study finds a marked shift

toward consumer-centric themes such as purchase intention, emotional trust, digital behavior, and intergenerational values (White et al., 2019; Goyal, M., & Kumar, 2021). The integration of environmental and digital agendas, for example, the rise of digital sustainability communication, represents a thematic departure from the earlier product-centered research tradition.

In earlier works, corporate responsibility and eco-labeling were the dominant research pillars (Dangelico, R. M., & Vocalelli, 2017). While these topics remain influential, the current study suggests a broader reorientation toward systemic themes—connecting environmental challenges, digital ecosystems, and ethical branding strategies. Co-citation networks highlight authors like Kumar, White, and Leonidou as the intellectual anchors of this shift. The thematic emergence of keywords such as "climate anxiety," "eco-anxiety," and "Generation Z" indicates that younger consumers are reshaping sustainability discourse, a dynamic underexplored in earlier literature.

In addition, this study confirms a geographic diversification of scholarly contributions. While previous bibliometric overviews reported heavy concentration in North America and Western Europe (Martínez-López et al., 2020), this analysis reveals growing contributions from Asia, particularly Indonesia, China, and India. This suggests a more pluralistic epistemology and provides opportunities to integrate emerging market perspectives in global sustainable marketing dialogues (Guzmán et al., 2023). Country collaboration and co-authorship analyses also indicate increasing regional synergies, potentially driven by global climate policy alignment and digital research infrastructure.

The intellectual structure revealed in the co-citation clusters supports the presence of at least three schools of thought: (1) behavioral sustainability, focusing on attitudes, norms, and intentions; (2) digital sustainability, focusing on platform-based green engagement and e-WOM; and (3) strategic corporate sustainability, focusing on branding, CSR, and stakeholder value. The convergence of these domains suggests a hybridized, post-disciplinary model of marketing science that aligns with the Sustainable Development Goals (Lim et al., 2020).

This bibliometric mapping also reflects an evolution in methodological sophistication. The early 2010s were dominated by case studies and survey-based research; however, recent years have seen a surge in data-intensive methods such as structural equation modeling (SEM), machine learning for consumer behavior prediction, and longitudinal digital trace analytics (Donthu et al., 2021 ; Goh et al., 2013). These methodological shifts mirror the expansion of digital data sources and tools available to marketing researchers.

Another contribution of this study is its identification of underexplored areas in sustainable marketing. While concepts like greenwashing and eco-branding have matured, issues related to labor justice, indigenous knowledge systems, and biodiversity loss remain marginal. This gap calls for an intersectional approach that embeds sustainability within broader socio-political and cultural contexts.

Overall, this study builds on and extends prior bibliometric research by providing a current and nuanced map of the sustainable marketing literature. The field appears to be transitioning from early conceptual consolidation to a phase of practical integration, where research insights increasingly inform both public policy and business strategy.

CONCLUSION

This study contributes to the sustainable marketing literature by mapping its intellectual, thematic, and geographic contours through bibliometric analysis. It highlights the field's ongoing evolution from firm-centric, product-level research to integrated, systemic, and consumer-focused paradigms. It also identifies emerging digital and psychological themes that demand scholarly attention.

Despite its contributions, the study has limitations. The reliance on Scopus and Web of Science excludes gray literature and non-English language publications, which may

underrepresent contributions from the Global South. The visualization techniques used also depend on threshold settings that may filter out niche yet novel contributions.

Future studies should expand the database scope to include regional indexing services and apply qualitative methods to interpret bibliometric clusters. The integration of qualitative content analysis with bibliometric mapping could offer richer insights into discursive shifts and research gaps.

Overall, this study lays a foundation for a more inclusive, data-driven, and forward-looking research agenda in sustainable marketing.

Future Research Directions

The findings of this bibliometric analysis suggest several promising avenues for future research. One key direction is the exploration of AI-driven personalization in sustainable marketing, especially in digital environments where behavioral data can guide ethical nudging. Research could investigate how machine learning algorithms used in recommender systems influence consumers' sustainable choices (Paswan et al., 2021). This includes the study of green filter bubbles and ethical concerns about manipulation.

A second promising direction is the intersection of sustainability and immersive technologies. Virtual reality (VR) and augmented reality (AR) are emerging as tools for eco-education and empathy-driven marketing. Future work could examine their effectiveness in shifting consumer values and long-term behavior toward sustainability (Chylinski et al,. 2020)

Third, longitudinal studies on generational differences in sustainable consumption are crucial. While much attention has been paid to Gen Z, there is limited longitudinal tracking of how values evolve over time in response to climate events, economic stressors, and political changes. Cross-cultural and intergenerational comparative studies are needed.

Additionally, interdisciplinary collaboration with environmental scientists and behavioral economists can enrich marketing research with ecological validity. Such integration allows for more accurate modeling of real-world constraints, such as availability heuristics, environmental limits, or carbon footprints.

Another key direction is the study of marginalized or underserved communities in sustainability discourse. Research should explore how cultural traditions, socioeconomic status, and infrastructure access shape sustainable behavior in contexts such as rural populations or informal economies (White et al., 2019).

Finally, future bibliometric work may focus on dynamic topic modeling and real-time mapping of scholarly debates to support rapid synthesis in an evolving research landscape. Combining bibliometrics with altmetrics could also provide insights into the societal impact of sustainable marketing research.

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