Eco-Awareness and Marketing Strategy of Generation Z: A Bibliometric Study

Loso Judijanto[1], Hanif Hasan[2], Andri Ardhiyansyah[3]
[1] IPOSS Jakarta, Indonesia
[2] Politeknik Pariwisata Palembang
[3] Universitas Nusa Putra

Article Info

ABSTRACT

This study presents a bibliometric analysis of the academic literature at the intersection of eco-awareness and marketing strategies with a specific focus on Generation Z. Using data retrieved from the Scopus database and analyzed through VOSviewer, the study maps keyword co-occurrence patterns, author collaboration networks, temporal research trends, and country-level contributions. The findings reveal that research in this field is centered on core themes such as sustainability, green marketing, and consumer behavior, with increasing attention to emerging topics like sustainable consumption, eco-labeling, and environmental attitudes. Prominent contributors include authors from India, China, and the United States, while collaboration networks indicate strong intra-regional ties but limited cross-regional integration. The study identifies significant research gaps in underrepresented regions and calls for deeper interdisciplinary and intercultural engagement. The results provide valuable insights for academics and practitioners seeking to understand and engage the eco-conscious behavior of Generation Z through effective and authentic marketing strategies.

Corresponding Author:

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

1. INTRODUCTION

In recent decades, environmental issues have moved to the forefront of global discourse, prompted by alarming levels of pollution, resource depletion, and climate change. These environmental concerns have influenced not only policymaking and corporate responsibility but also the behavioral expectations of consumers. A significant shift is evident in how younger generations, particularly Generation Z (those born between 1997 and 2012), are shaping consumer markets through eco-conscious preferences and sustainable consumption patterns [1]. Their lifestyle choices, characterized by a strong digital presence and value-driven consumption, have spurred academic interest in how environmental awareness interacts with marketing strategies targeting this cohort [2], [3].

Generation Z, having grown up with easy access to information and in a digital-first environment, displays a higher sensitivity to global issues, including sustainability, biodiversity, climate justice, and ethical business practices [4]. Numerous studies suggest that Gen Z not only expresses concern for the planet but also acts on these values in their purchasing decisions, often supporting brands that align with their environmental ethics [5]. As a result, brands are increasingly incorporating eco-friendly practices in their business models, such as green packaging, carbon-neutral operations, and ethical sourcing. The effectiveness of these strategies in capturing the attention of Gen Z, however, remains a complex, evolving subject within marketing and consumer behavior research.

. Eco-awareness among Gen Z goes beyond mere preference—it embodies an identity that merges lifestyle, activism, and digital influence. Social media platforms, where this generation is highly active, amplify their capacity to voice environmental concerns and hold brands accountable. This cultural dynamic pushes marketers to reevaluate traditional advertising tactics in favor of authenticity, transparency, and engagement through sustainability narratives [6]. As environmentalism becomes a lens through which this generation interprets value, firms are challenged to develop marketing strategies that do not merely appear green but are substantively sustainable.

The intersection between eco-awareness and marketing strategy has thus become a fertile ground for scholarly inquiry. This area of research spans disciplines such as environmental psychology, consumer behavior, digital marketing, and brand management. Bibliometric studies are particularly useful in this context as they provide a quantitative overview of research trends, influential publications, co-citation networks, and thematic evolution in the field. Such analysis can uncover how academic discourse around eco-conscious marketing for Gen Z has developed over time, where the

gaps exist, and what future directions may be fruitful.

Although various individual studies have examined green marketing or Gen Z behavior separately, there has been limited integrative mapping of how the two are linked across the academic landscape. Given the rising importance of environmental sustainability in both policy and corporate agendas, it is timely to systematically review the research landscape connecting Generation Z, eco-awareness, and marketing strategy. A bibliometric approach allows researchers and practitioners to identify key themes, prominent scholars, journal outlets, and methodological patterns that define this emerging intersection.

Despite the growing relevance of Generation Z's eco-conscious behavior in shaping contemporary marketing strategies, existing research remains fragmented across disciplines and lacks a cohesive synthesis of knowledge. Scholars and practitioners alike lack a comprehensive bibliometric overview that identifies the thematic structure, intellectual foundations, and research frontiers in the nexus between eco-awareness and Gen Z marketing strategies. Without such synthesis, there is a risk of duplicated efforts, underexplored opportunities, and disconnected knowledge that hinders the advancement of impactful marketing approaches aligned with sustainability. This study aims to conduct a bibliometric analysis of the academic literature that explores the intersection between eco-awareness and marketing strategies targeting Generation Z.

2. METHODS

This study employed a **bibliometric analysis** approach to systematically explore and map the academic landscape surrounding eco-awareness and marketing strategies targeted at Generation Z. Bibliometric analysis is a quantitative method that enables researchers to evaluate large volumes of scholarly literature to identify patterns, structures, and trends within a specific research domain [7]. The method is

particularly useful in detecting co-authorship networks, keyword co-occurrence, citation patterns, and thematic clusters. For this study, bibliometric data were extracted from the Scopus database, chosen for its comprehensive indexing of peer-reviewed journals across disciplines relevant to environmental studies, marketing, consumer behavior, and youth studies.

The data collection process involved a strategic search using a combination of keywords such as "Generation Z", "eco-awareness", "green marketing", "sustainable marketing", "environmental behavior", and "youth consumer behavior". Boolean operators (AND, OR) were applied to refine the query and ensure relevance. The search was limited to the period from 2000 to 2024, reflecting the emergence and growing influence of Generation Z in both academic and marketing discourses. Inclusion criteria were set to only peer-reviewed articles, conference papers, and review articles published in English. After filtering and removing duplicates, the final dataset comprised n = [to be determined based on actual data collection] publications. Bibliographic data including titles, abstracts, authors, affiliations, citations, and keywords were exported in RIS and CSV formats for further processing.

After importing the dataset into VOSviewer, several analyses were conducted. First, a co-occurrence analysis of keywords was performed to identify the most frequently used terms and the thematic clusters they form. Second, a co-authorship analysis helped reveal collaborative networks among researchers and institutions contributing to this field. Third, a citation and co-citation analysis was carried out to determine the most influential articles and references in the literature. The visualization maps produced by VOSviewer allowed for the interpretation of cluster density, term proximity, and the evolution of topics over time

3. RESULTS AND DISCUSSION
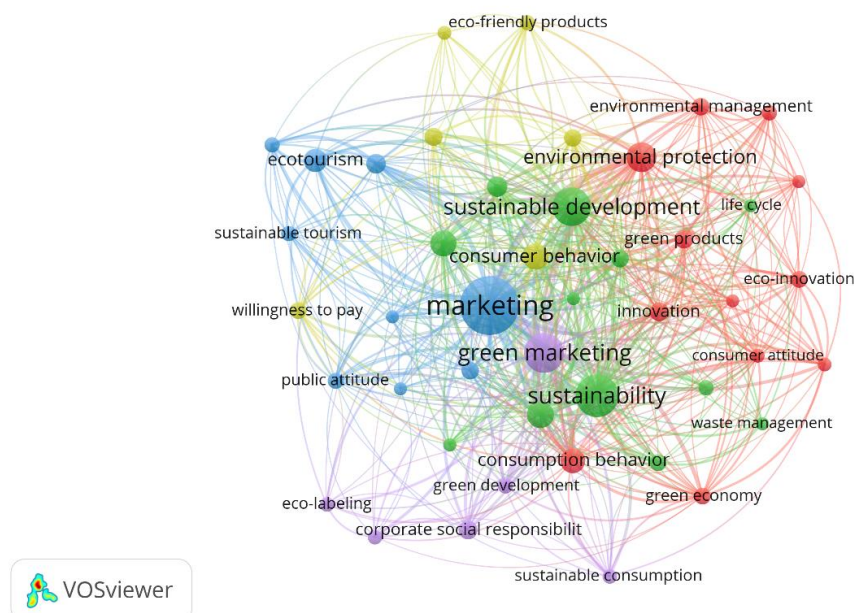
3.1 Keyword Co-Occurrence Network

Figure 1. Network Visualization
Source: Data Analysis Result, 2025

Figure 1 a keyword co-occurrence network in the field of eco-awareness and marketing strategy, particularly as it relates to Generation Z and broader sustainability themes. The size of each node represents the frequency of the keyword in the dataset, while the thickness of the connecting lines shows the strength of co-occurrence relationships. Different colors indicate distinct thematic clusters, suggesting core research themes and their interconnections within the literature.

At the center of the network, we observe dominant keywords such as "marketing", "green marketing", "sustainability", "sustainable development", and "consumer behavior". These serve as the intellectual backbone of the literature, indicating that most of the existing research focuses on integrating sustainability principles into marketing strategies and evaluating their influence on consumer decision-making. The frequent co-occurrence of these terms suggests a mature, interlinked body of literature that explores the transition of marketing from traditional approaches to eco-conscious frameworks.

To the right side of the map, the red cluster encompasses terms like "eco-innovation", "consumer attitude", "green economy", and "waste management". This group reflects an innovation-driven perspective in sustainable marketing research, emphasizing how consumer attitudes shape and are shaped by eco-innovation and environmental management practices. This cluster is essential for understanding how new product development, green technologies, and lifecycle considerations play a role in influencing Generation Z's purchasing behavior.

On the left side, the blue cluster includes terms such as "ecotourism", "sustainable tourism", "willingness to pay", and "public attitude". This suggests a secondary but significant research stream that deals with sustainability in the tourism sector, especially where eco-conscious consumers engage with travel and hospitality services. The presence of "willingness to pay" implies economic analyses of how much consumers, including Gen Z, are prepared to spend for environmentally friendly experiences or products, providing actionable insights for pricing strategies.

The bottom area, particularly the purple and green clusters, contain keywords such as "eco-labeling", "corporate social responsibility", "green development", and "sustainable consumption". These reflect institutional and policy-level frameworks where brands, governments, and civil society actors interact to promote responsible consumption. The linkage of CSR with consumer behavior and green marketing suggests a growing interest in how organizational ethics and brand responsibility resonate with younger consumers like Gen Z.
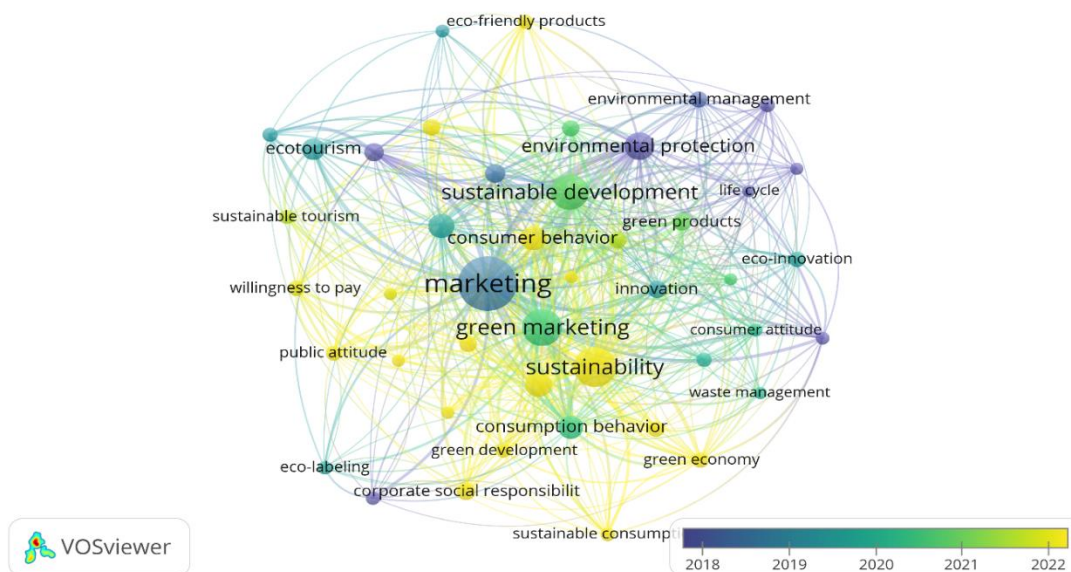
Figure 2. Overlay Visualization
Source: Data Analysis Result, 2025

Figure 2 maps the temporal evolution of keywords related to eco-awareness and marketing strategy, particularly concerning Generation Z. The color gradient (from dark blue to yellow) indicates the average publication year of each keyword, helping us understand the timeline of research development. Darker nodes represent older topics (around 2018–2019), while yellow nodes indicate newer, more recent topics (approaching 2022). Central keywords such as "marketing", "sustainability", and "green marketing" fall within the green-yellow spectrum, showing they have remained relevant and have experienced consistent scholarly attention over time.

Notably, the yellow-colored keywords such as "sustainable consumption", "green development", "consumption behavior", and "eco-labeling" reflect emerging trends in the most recent literature. Their appearance in brighter shades suggests that researchers have increasingly shifted their focus toward consumer decision-making behaviors and sustainability signaling mechanisms, which are particularly relevant for younger demographics like Generation Z. This evolution may reflect rising global interest in responsible consumption, circular economy models, and brand transparency in marketing.

In contrast, keywords like "environmental protection", "eco-innovation", and "environmental management" are shown in darker shades, indicating that they were focal points of earlier research phases. These themes laid the foundation for subsequent work but are now being supplemented or reoriented toward behavioral and attitudinal studies involving consumers.

Figure 3. Density Visualization
Source: Data Analysis, 2025

Figure 3 illustrates the intensity of keyword occurrences and co-occurrences within the scholarly literature related to eco-awareness and marketing. The central zone—marked in bright yellow—highlights the most frequently occurring terms, such as "marketing", "green marketing", "sustainability", and "sustainable development". These keywords represent the core themes around which much of the academic discourse is concentrated. Their prominence indicates that research on environmentally conscious consumer behavior and sustainable marketing strategies remains foundational and continues to attract strong scholarly interest.

In contrast, the outer areas of the map—marked in green to dark blue—contain less frequently discussed yet thematically significant terms, such as "eco-labeling", "public attitude", "willingness to pay", "eco-friendly products", and "corporate social responsibility". These peripheral topics, while not as dominant, suggest niche research areas that contribute to the broader understanding of sustainable consumption.
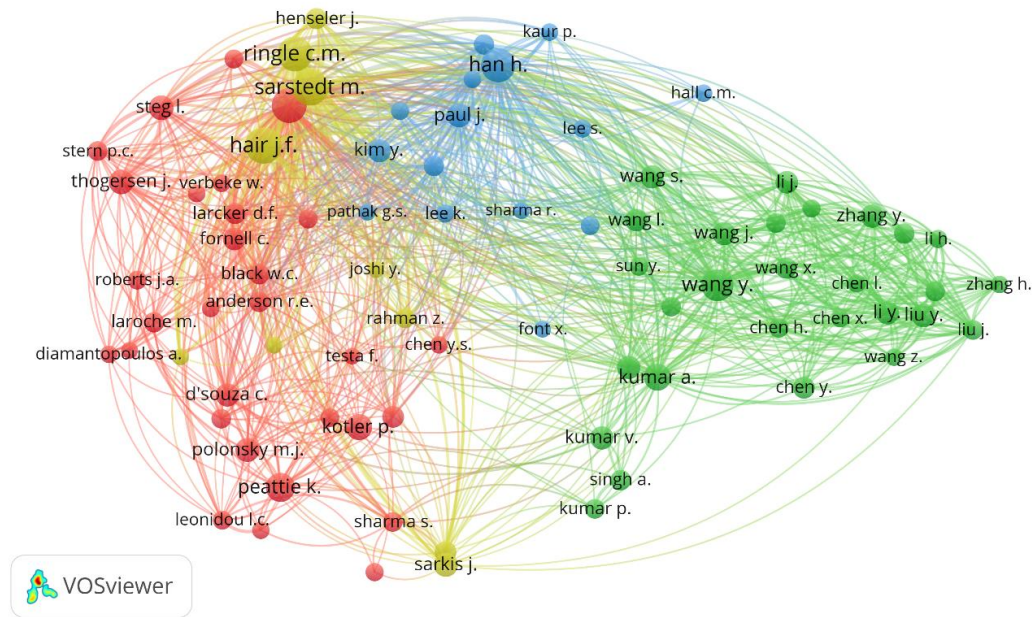
3.2 Co-Authorship Network

Figure 4. Author Collaboration Visualization
Source: Data Analysis, 2025

Figure 4 presents a co-authorship network among the most prolific and frequently cited authors in the domain of eco-awareness, sustainability, and marketing. The network is divided into three major clusters, each indicated by a different color: red, blue, and green. The red cluster, featuring key authors like *Hair J.F.*, *Sarstedt M.*, *Ringle C.M.*, and *Peattie K.*, appears to be centered on structural equation modeling, sustainable consumer behavior, and green marketing frameworks. The blue cluster, with central nodes like *Han H.*, *Paul J.*, and *Hall C.M.*, reflects a focus on eco-tourism, pro-environmental behavior, and service marketing. Meanwhile, the green cluster, dominated by various authors with the surname *Wang*, *Li*, and *Chen*, signifies a strong research concentration from East Asia—likely China—focusing on sustainability practices, green innovation, and corporate environmental performance
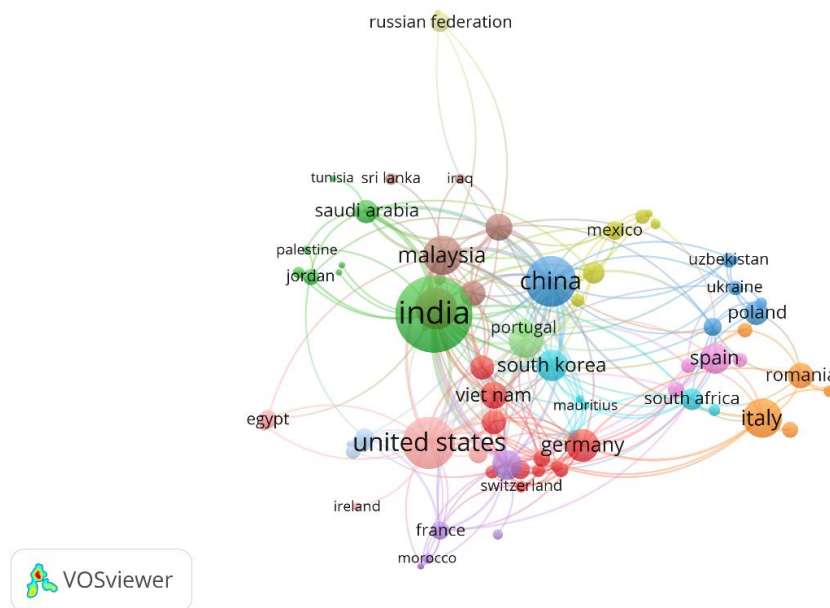
Figure 5. Country Collaboration Visualization
Source: Data Analysis, 2025

Figure 5 shows a co-authorship network by country in the field of eco-awareness and marketing strategy, revealing international collaboration patterns. The node size represents the number of publications or contributions from each country, while the link thickness indicates the strength of co-authorship ties. India, China, and the United States emerge as the most prolific contributors, with India showing the largest node, suggesting its dominant role in this research domain. Regional clusters are apparent: for instance, European countries such as Germany, France, and Italy form a tightly connected network, while Asian nations like India, Malaysia, China, and South Korea demonstrate strong collaborative links. The map also highlights emerging contributions from countries like Saudi Arabia, Vietnam, and South Africa, suggesting a growing global interest in sustainability and green marketing research.

3.3 Citation Analysis

Table 1. Top Cited Research

Citations	Authors and year	Title
409	[8]	Examining green consumerism motivational drivers: Does premium price and demographics matter to green purchasing?
405	[9]	Towards better embedding sustainability into companies' systems: An analysis of voluntary corporate initiatives
362	[10]	Anticipated emotion in consumers' intentions to select eco-friendly restaurants: Augmenting the theory of planned behavior
250	[11]	Consumer eco-innovation adoption: Assessing attitudinal factors and perceived product characteristics
226	[12]	Why eco-labels can be effective marketing tools: Evidence from a study on italian consumers
219	[13]	Developing sustainable new products in the textile and upholstered furniture industries: Role of external integrative capabilities

Citations	Authors and year	Title
211	[14]	Consumer attitudes towards biobased packaging – A cross-cultural comparative study
198	[15]	The influence of eco-label knowledge and trust on pro-environmental consumer behaviour in an emerging market
197	[16]	Mining brand perceptions from twitter social networks
190	[17]	U.S. sustainable food market generation Z consumer segments

Source: Scopus, 2025

Discussion

1) Central Themes: Marketing, Sustainability, and Consumer Behavior

The keyword co-occurrence network (Figure 1) places terms like "marketing", "green marketing", "sustainability", and "consumer behavior" at the core of scholarly discussion. These clusters confirm the existence of a coherent and well-developed research domain that integrates environmental consciousness into marketing strategies. The prominence of these keywords suggests that the academic community has established a strong foundation linking environmental values with consumer preferences—particularly relevant to Generation Z, who are known for demanding greater corporate accountability and environmental stewardship [18]–[20].

Sub-clusters within the map reveal diverse yet interconnected sub-themes. For instance, the red cluster comprises "eco-innovation", "green products", and "consumer attitude", highlighting studies that focus on product design, innovation, and sustainable branding. Meanwhile, the blue cluster emphasizes "ecotourism" and "public attitude", reflecting niche applications of eco-consciousness in service industries. This variety confirms that marketing research in sustainability is not limited to fast-moving consumer goods but spans industries including tourism, technology, and digital platforms—spaces where Generation Z operates as a powerful force for change.

2) Temporal Evolution of Research

The overlay visualization (Figure 2) provides critical insight into the temporal evolution of topics within the field. It reveals a clear trend: early research (2018–2019) centered on macro-level themes such as "environmental management" and "eco-innovation", while recent years (2021–2022) show a shift toward micro-level behavioral concepts like "sustainable consumption", "eco-labeling", and "consumption behavior". This shift is in line with growing scholarly interest in the role of individual consumers, particularly younger demographics like Gen Z, in shaping the sustainability agenda [21].

The increasing attention to individual-level variables indicates a movement from corporate-level sustainability toward consumer-driven market change. As Generation Z becomes a dominant market segment, their behavior—shaped by environmental values, social media influence, and digital literacy—has become a focal point of marketing research. Concepts like "willingness to pay," "green product perception," and "ethical consumption" are gaining traction as researchers and practitioners seek to understand how to align green marketing with Gen Z expectations.

3) Research Hotspots and Gaps

The heatmap visualization (Figure 3) further reinforces the density of research around marketing-centric sustainability. The brightest hotspots "marketing," "green marketing," "sustainability," and "consumer behavior"—are where the highest number of studies converge, confirming the maturity of this thematic core. However, the map also reveals less illuminated areas, such as "corporate social responsibility", "eco-labeling", and "green development", which, while relevant, appear underexplored in direct relation to Generation Z.

This imbalance suggests opportunities for future research. First, while CSR is widely practiced by brands, there is limited research on how Gen Z perceives CSR initiatives in shaping their loyalty and trust. Second, although eco-labels play a critical role in guiding sustainable purchasing decisions, their effectiveness among digital-native Gen Z consumers remains under-studied. Third, intersectional studies that incorporate digital marketing tools (e.g., influencer marketing, gamification) with sustainability messaging tailored for Gen Z could enrich the literature with more practical relevance and innovation.

4) Influential Authors and Collaboration Patterns

The co-authorship network (Figure 4) identifies Hair J.F., Sarstedt M., Ringle C.M., and Han H. as highly influential authors in this field. These scholars are known for their contributions to structural equation modeling, green marketing frameworks, and sustainable tourism—foundations critical to building the methodological and conceptual strength of the domain. The clustering of authors also reveals geographic and thematic concentrations: red clusters focus on theory-building and modeling, while green clusters (with authors like Wang Y. and Chen Y.) emphasize empirical applications, particularly in East Asia.

A key observation from the author map is the limited inter-cluster collaboration. While intra-group co-authorship is strong, cross-group collaboration—especially between Western and Asian scholars—is less developed. This represents both a limitation and an opportunity. Bridging methodological rigor from Western academia with large-scale empirical insights from Asia (especially China and India, where sustainability challenges and youth populations are significant) could result in richer, more globally applicable findings.

5) Global Contributions and Regional Leadership

The co-authorship by country visualization (Figure 5) highlights the global

spread of sustainability marketing research, with India, China, and the United States emerging as top contributors. India's prominence is especially notable, likely driven by its large Gen Z population and pressing environmental challenges. China's extensive research output aligns with its government's emphasis on green economy and innovation. The United States, though a mature contributor, is increasingly positioned as a collaborator with European and Asian nations.

European countries like Germany, Italy, and Spain form distinct clusters with moderate linkage, while emerging economies—including Malaysia, Saudi Arabia, and Vietnam—are becoming active participants in eco-awareness research. However, Africa and Latin America remain underrepresented, highlighting a regional gap that should be addressed to ensure global equity in sustainability discourse. Future research should aim to include voices from the Global South, particularly as climate vulnerability and youth activism rise in those regions.

6) Practical Implications and Future Directions

From a managerial perspective, the results emphasize that authentic sustainability marketing must be deeply integrated into brand identity rather than used as a superficial tactic. Generation Z consumers are highly discerning, with strong radar for greenwashing and performative branding (Fromm & Read, 2018). Brands aiming to connect with Gen Z must leverage eco-innovation, support transparent CSR practices, and engage in story-driven digital marketing that reflects genuine commitment to sustainability goals.

For researchers, several directions emerge. First, behavioral experiments and longitudinal studies could help measure the long-term impact of green marketing on Gen Z loyalty and advocacy. Second, comparative cross-cultural studies could explore how eco-awareness differs across Gen Z populations in the East and West. Third, the integration of

artificial intelligence and big data analytics into sustainable marketing campaigns provides fertile ground for investigating how Gen Z responds to personalized eco-messages at scale.

4. CONCLUSION

This bibliometric study provides a comprehensive overview of the academic landscape at the intersection of eco-awareness, marketing strategy, and Generation Z, revealing a robust and evolving body of literature. Central themes such as sustainability, green marketing, and consumer behavior dominate the discourse, while recent trends show a growing focus on individual consumption patterns and digital engagement strategies. The analysis highlights influential authors, regional research strengths—particularly in India, China, and the United States—and emerging topics like sustainable consumption and eco-labeling. However, gaps remain in cross-regional collaboration and research from underrepresented regions such as Africa and Latin America. As Generation Z continues to reshape market expectations through their environmental values, this study underscores the need for deeper, interdisciplinary inquiry and strategic innovations in marketing that authentically align with sustainability principles.

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