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Bibliometric Behavior of Green Consumers

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ABSTRACT

The growing global emphasis on sustainability has intensified scholarly interest in understanding green consumer behavior and its role in promoting environmentally responsible consumption. This study aims to map the intellectual structure, thematic evolution, and collaborative landscape of research on green consumer behavior through a bibliometric analysis. Using data retrieved from the Scopus database, the study applies VOSviewer to analyze keyword co-occurrence, overlay visualization, density mapping, co-authorship networks, institutional collaboration, and country collaboration patterns. The results reveal that the literature is strongly centered around core themes such as sustainability, sustainable development, and consumer behavior, indicating a mature research foundation that integrates environmental awareness with marketing and economic perspectives. Temporal analysis shows a shift from early studies focusing on attitudes and perceptions toward emerging topics related to energy efficiency, green computing, and technological innovation, reflecting the growing influence of digital transformation within sustainability discourse. Collaboration analysis highlights the dominant role of Asian countries, particularly China and India, alongside contributions from the United States and European nations, suggesting an increasingly global research landscape. Despite its growth, the field remains somewhat fragmented, emphasizing the need for stronger interdisciplinary and international collaboration. Overall, this study provides a comprehensive overview of the evolution and future trajectory of green consumer behavior research, offering theoretical insights and practical implications for researchers, policymakers, and industry practitioners seeking to advance sustainable consumption practices.

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1. INTRODUCTION

The growing global concern over environmental degradation, climate change, and resource depletion has significantly influenced consumer behavior and business practices over the past few decades [1]. As societies become more aware of ecological crises, individuals increasingly recognize the environmental consequences of their consumption patterns. This awareness has led to the emergence of "green consumers," individuals who consider environmental impacts in their purchasing decisions and

prefer products that are environmentally friendly, energy-efficient, recyclable, or sustainably produced [2]. The rise of green consumption reflects a broader shift toward sustainable development, which seeks to balance economic growth, social well-being, and environmental protection [3]. In this context, understanding the behavioral patterns and academic discourse surrounding green consumers has become a central concern in marketing, environmental studies, and sustainability research [4].

Green consumer behavior is generally defined as the practice of purchasing products and services that minimize negative environmental impacts while supporting ethical and sustainable production processes [5]. This behavior is influenced by a complex interplay of psychological, social, cultural, and economic factors. The Theory of Planned Behavior suggests that attitudes, subjective norms, and perceived behavioral control significantly shape individuals' intentions and actions, including environmentally responsible purchasing [6]. Additionally, personal values such as environmental concern, altruism, and moral obligation play crucial roles in motivating green consumption [7]. Over time, researchers have examined various determinants of green consumer behavior, including environmental knowledge, trust in eco-labels, price sensitivity, and brand image [8]. As a result, the academic literature on green consumers has expanded rapidly, spanning multiple disciplines and methodological approaches.

The expansion of green markets has also encouraged companies to adopt sustainable marketing strategies, develop eco-friendly products, and communicate environmental commitments to consumers. Green marketing practices have evolved from simple environmental claims to more comprehensive sustainability initiatives integrated into corporate strategy [9]. However, the growing popularity of green marketing has raised concerns about greenwashing, where companies exaggerate or misrepresent environmental benefits. This phenomenon affects consumer trust and complicates the interpretation of green consumer behavior. Consequently, scholars have increasingly focused on issues such as consumer skepticism, credibility of environmental claims, and the gap between environmental attitudes and actual purchasing behavior [10]. These diverse research themes indicate that the study of green consumers is multifaceted and continuously evolving.

In parallel with the growth of green consumerism, academic publications on the topic have increased substantially. The proliferation of journals, conferences, and interdisciplinary collaborations has contributed to a rich but fragmented body of knowledge. Researchers from marketing, psychology, economics, environmental science, and sociology have approached the subject from different theoretical and methodological perspectives. Such diversity has produced valuable insights but has also made it challenging to identify dominant research themes, influential authors, collaborative networks, and emerging trends. Bibliometric analysis offers a systematic and quantitative approach to examining the structure and development of scientific literature by analyzing publication patterns, citation networks, keywords, and institutional contributions [11]. Through bibliometric techniques, scholars can map intellectual structures, detect research clusters, and evaluate the evolution of knowledge within a specific field.

Despite the growing volume of research on green consumer behavior, there remains a need for a comprehensive bibliometric examination that synthesizes existing studies and identifies the trajectory of scholarly attention. Previous reviews have often focused on narrative or systematic approaches, summarizing theoretical frameworks and empirical findings. While valuable, these approaches may not fully capture the structural dynamics of the field, such as co-authorship networks, country-level contributions, citation impact, and thematic evolution over time. A bibliometric perspective can complement traditional literature reviews by providing objective indicators of research performance and

collaboration patterns. Such an analysis is particularly relevant in the context of green consumer research, where rapid expansion and interdisciplinary integration may obscure underlying intellectual structures and research gaps.

Although the literature on green consumers has grown extensively, it remains fragmented across disciplines, regions, and theoretical perspectives, making it difficult to obtain a clear and integrated understanding of its intellectual development and research trends. There is limited comprehensive bibliometric evidence that systematically maps publication outputs, influential authors and institutions, collaboration networks, thematic clusters, and emerging topics in the field of green consumer behavior. Without such an analysis, scholars and practitioners may struggle to identify research gaps, evaluate the maturity of the field, and determine future research directions. Therefore, a structured bibliometric study is necessary to clarify the evolution, patterns, and dynamics of scholarly work related to green consumers. The objective of this study is to analyze the bibliometric behavior of green consumer research by systematically examining publication trends, citation patterns, authorship structures, institutional and country contributions, and thematic developments within the field.

2. METHODS

This study employs a bibliometric research design to systematically analyze the scientific literature on green consumer behavior. Bibliometric analysis is a quantitative method used to evaluate and map the structure, patterns, and trends of academic publications within a specific field. The study focuses on peer-reviewed journal articles to ensure the quality and reliability of the dataset. Relevant publications were retrieved from Scopus, chosen for its broad coverage of high-impact journals across disciplines. The search was conducted using keywords including “green consumer,” “green consumer behavior,” “sustainable consumption,” and related terms, applied to titles, abstracts, and author keywords. To ensure relevance, inclusion criteria were established, limiting the dataset to articles published in English and within a specified time frame. Duplicate records and unrelated documents were excluded through a screening process to refine the final sample for analysis.

After data collection, bibliographic information such as authors, titles, publication years, journals, affiliations, abstracts, keywords, and citation counts was exported in compatible formats for bibliometric analysis. The data were cleaned and standardized to address inconsistencies in author names, institutional affiliations, and keyword variations. The analysis was conducted using VOSviewer which enable visualization and network mapping of scientific literature. Citation analysis was used to measure the academic impact and influence of publications, while co-authorship analysis examined collaboration patterns among researchers and countries.

Furthermore, co-word (keyword co-occurrence) analysis and thematic mapping were conducted to explore the intellectual structure and conceptual evolution of green consumer research. By analyzing the frequency and co-occurrence of keywords, clusters of related themes were identified, revealing dominant research areas and emerging topics. Network visualization techniques were applied to illustrate relationships among authors, institutions, and research themes, enabling a clearer understanding of the field’s development.

3. RESULTS AND DISCUSSION

3.1 Keyword Co-Occurrence Network

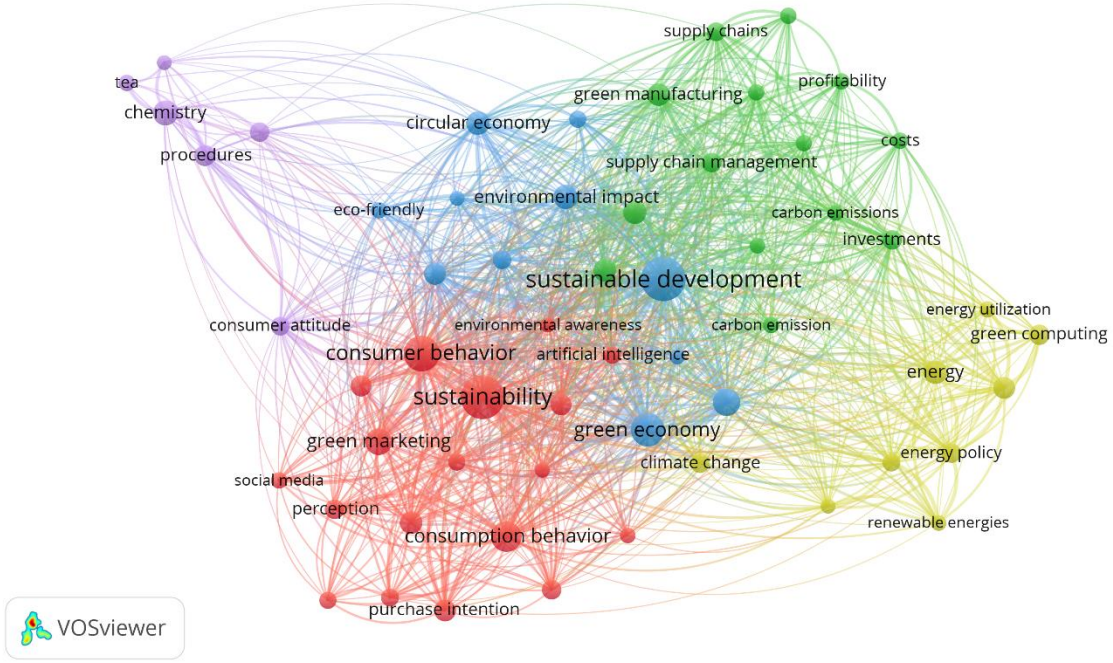

Figure 1. Network Visualization
Source: Data Analysis Result, 2026

Figure 1 illustrates the intellectual structure of research on Green Consumer Behavior by revealing several interconnected thematic clusters centered around sustainability discourse. The largest and most dominant node, sustainable development, appears as a central hub linking environmental, economic, and behavioral dimensions. Its strong connections with terms such as green economy, climate change, and environmental impact indicate that studies of green consumer behavior are increasingly framed within broader sustainability transitions rather than isolated marketing perspectives. This suggests that contemporary research views consumer actions as part of systemic environmental change and global development agendas.

The red cluster represents the core consumer-oriented perspective, emphasizing behavioral constructs such as consumer behavior, sustainability, green marketing, consumption behavior, purchase intention, and perception. The density of links within this cluster reflects a strong theoretical grounding in consumer psychology and marketing science. Scholars appear to focus heavily on attitudinal factors, awareness, and decision-making processes that shape environmentally responsible consumption. The proximity between consumer behavior and sustainability highlights how purchasing patterns are increasingly analyzed through ethical and ecological lenses, reinforcing the growing importance of green branding and behavioral nudges in influencing markets.

Another prominent theme emerges in the green cluster, which connects industrial sustainability and supply chain perspectives. Keywords such as supply chain management, green manufacturing, carbon emissions, profitability, and costs indicate that consumer behavior research is expanding toward production-side considerations. This integration suggests that green consumption cannot be separated from organizational practices and environmental performance metrics. The linkage between profitability and carbon emissions implies that researchers are exploring the tension between economic outcomes and ecological responsibility, reflecting a shift toward holistic value-chain sustainability.

The yellow cluster highlights energy and technological dimensions, including renewable energies, green computing, energy

policy, and energy utilization. Its position at the edge of the network suggests a growing but still somewhat specialized research frontier. The connection of this cluster to climate change and green economy indicates that energy-related innovations are becoming increasingly relevant to consumer sustainability narratives, particularly as digital technologies and smart energy systems influence consumption patterns. This may reflect emerging studies examining how technology adoption and policy frameworks shape environmentally conscious consumer choices. Smaller clusters, such as the purple one, introduce niche or interdisciplinary themes linking chemistry, procedures, and specific product contexts (e.g., tea), demonstrating that green consumer behavior research also extends into sector-specific applications.

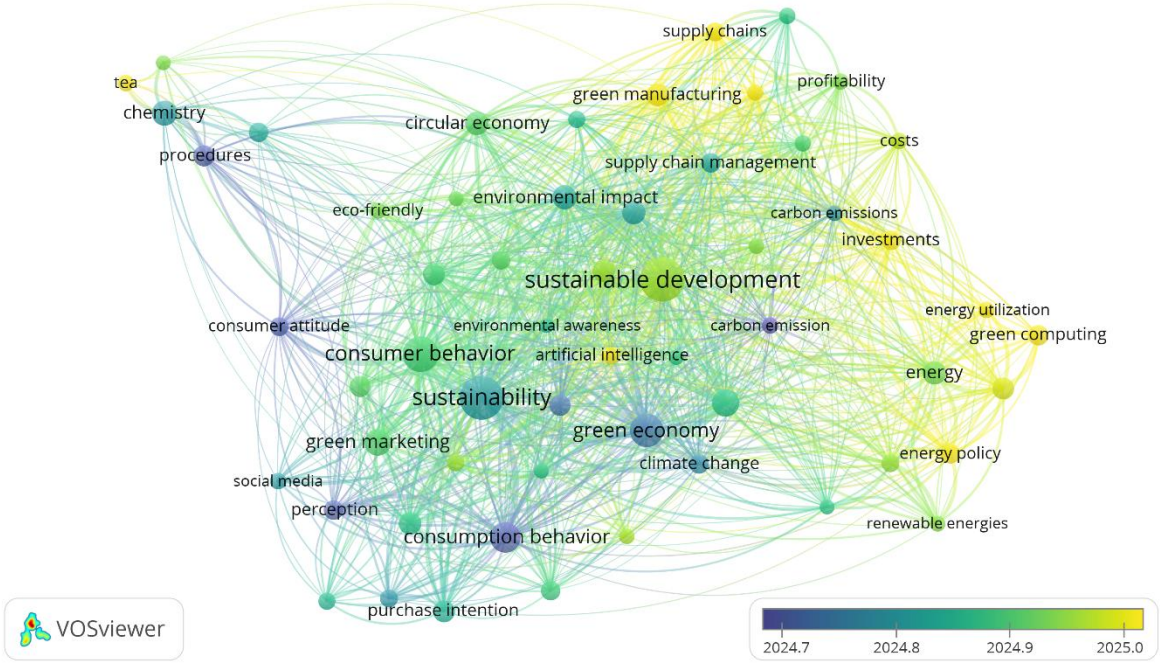

Figure 2. Overlay Visualization

Source: Data Analysis Result, 2026

Figure 2 presents the temporal evolution of research themes in the bibliometric landscape of green consumer behavior, where color gradients indicate the average publication year of keywords. Central concepts such as sustainable development, consumer behavior, sustainability, and green economy appear in green tones, suggesting that they represent stable and continuously discussed foundations within the literature. Their central position in the network confirms that these themes function as conceptual bridges linking environmental awareness, marketing, and economic sustainability, reflecting a mature and well-established research core.

Earlier-stage or foundational topics are shown in cooler blue tones, including consumer attitude, perception, procedures, and certain product-specific themes like chemistry or tea. These keywords indicate earlier research streams that focused more on individual psychological factors or sector-specific environmental practices. Over time, the field appears to have shifted from examining isolated consumer attitudes toward broader systemic discussions involving sustainability transitions and integrated environmental frameworks. The movement from blue to green nodes highlights the evolution from micro-level behavioral studies toward multidisciplinary sustainability discourse.

More recent and emerging research directions are visible in warmer yellow tones, particularly around energy, green computing, energy utilization, costs, and investments. The prominence of these keywords suggests a growing integration of technology, policy, and economic considerations into the study of green consumers. This trend indicates that current scholarship is increasingly concerned with how digital transformation, renewable energy adoption, and financial implications shape environmentally responsible consumption.

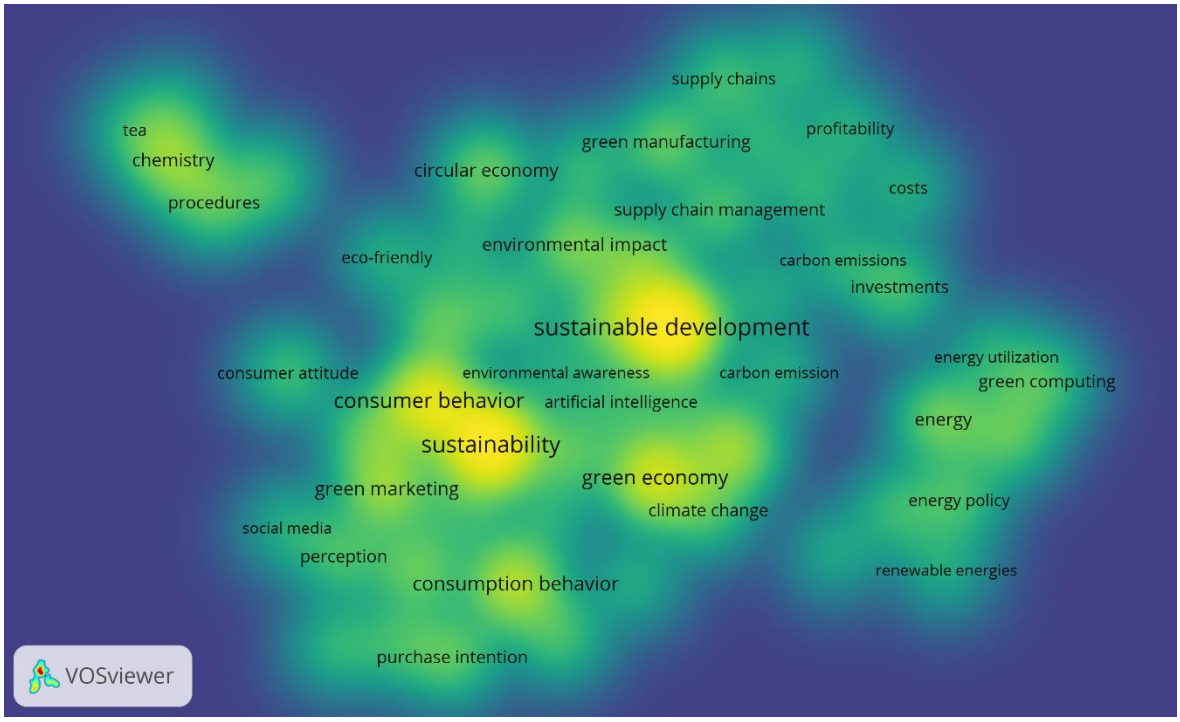

Figure 3. Density Visualization
Source: Data Analysis Result, 2026

Figure 3 highlights the most concentrated and influential research themes within the green consumer behavior literature. Areas shown in bright yellow, particularly around sustainability, sustainable development, and consumer behavior, indicate the highest research intensity and frequency of co-occurrence. This suggests that the field is strongly anchored in discussions linking individual consumption patterns with broader sustainability goals. The close proximity between green economy, environmental awareness, and consumption behavior further reflects how researchers increasingly frame consumer decisions as part of global environmental and economic transformation narratives rather than isolated marketing phenomena.

Meanwhile, surrounding green and blue areas represent themes with moderate to emerging attention, such as energy, green computing, supply chain management, and green manufacturing, which signal expanding interdisciplinary engagement. Peripheral zones with lower density, including product-specific or technical topics like chemistry and procedures, indicate niche research streams that contribute to the field but are not yet central to mainstream discourse.

3.2 Co-Authorship Network

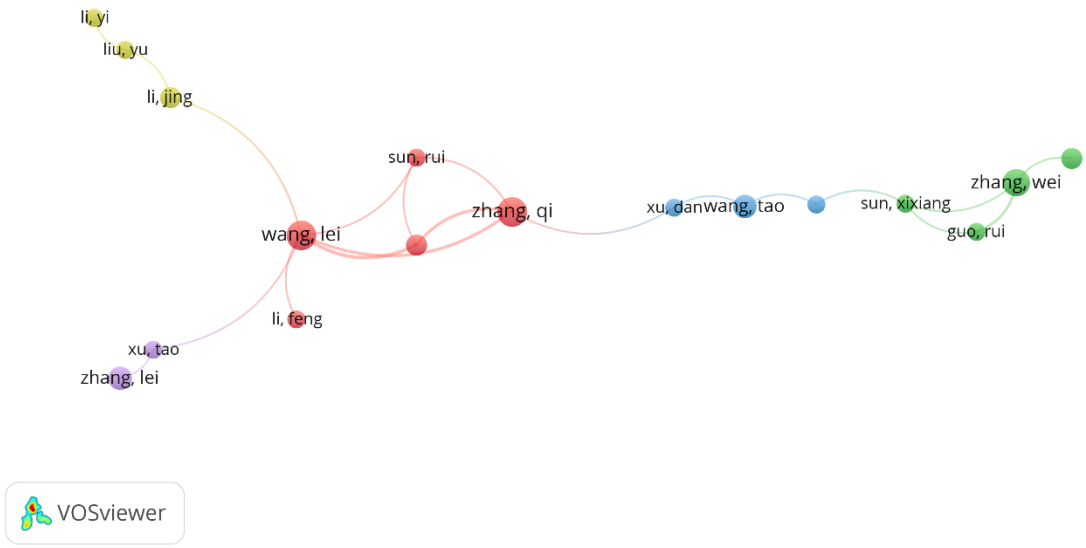

Figure 4. Author Collaboration Visualization
Source: Data Analysis Result, 2026

Figure 4 illustrates the collaboration structure among researchers within the green consumer behavior literature, revealing several small but interconnected author clusters. The central red cluster, dominated by Wang Lei and Zhang Qi, appears to function as a key bridge connecting different research groups, indicating their influential role in fostering scholarly collaboration and knowledge exchange. Adjacent nodes such as Sun Rui and Li Feng suggest close collaborative ties, forming a core research network that likely contributes significantly to the thematic development of the field. On the right side, a green cluster centered around Zhang Wei and collaborators such as Sun Xixiang and Guo Rui reflects another active research group, highlighting regional or institutional collaboration patterns. Meanwhile, smaller peripheral clusters indicate more isolated or emerging collaborations, suggesting that the author network is still relatively fragmented rather than fully consolidated.

Figure 5. Affiliation Collaboration Visualization
Source: Data Analysis Result, 2026

Figure 5 shows that research on green consumer behavior is driven by a limited number of interconnected academic institutions, with Chandigarh University, Mohali appearing as a central hub that links multiple affiliations. Its position at the center of the network suggests a strong role in facilitating collaborative research and contributing significantly to publication output in this field. On the right side, institutions such as Jiangsu University, Zhenjiang and the School of Economics & Management form another collaborative cluster, indicating regional cooperation and shared research interests. Meanwhile, smaller peripheral nodes, including the Department of Hospitality and …, reflect more isolated or emerging institutional contributors with fewer collaboration links.

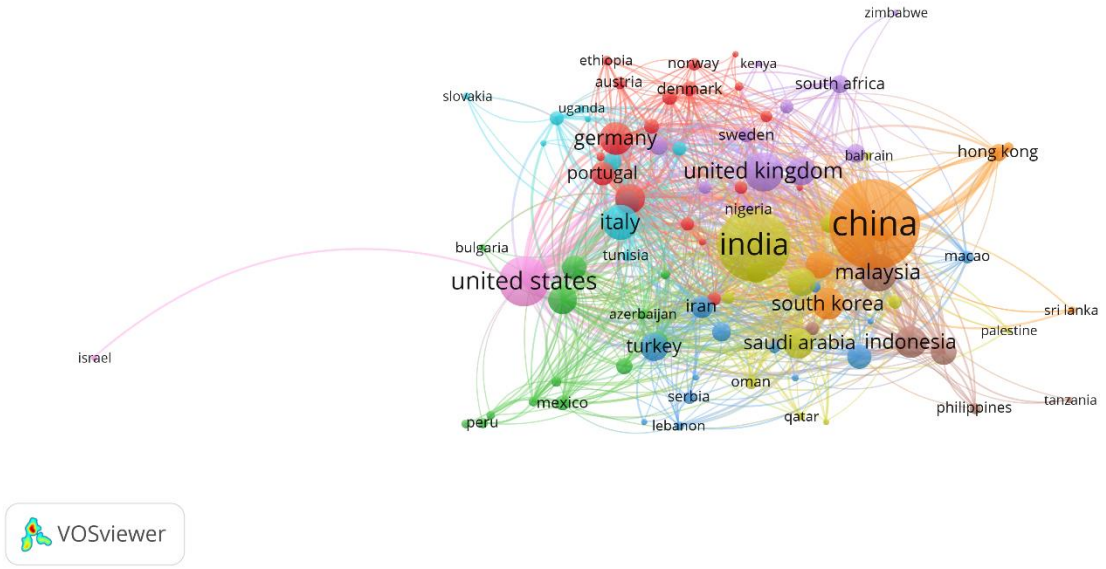

Figure 6. Country Collaboration Visualization
Source: Data Analysis Result, 2026

Figure 6 illustrates the global distribution of research on green consumer behavior, highlighting China as the most dominant and central contributor, indicated by its large node size and extensive connections with multiple countries. Strong collaborative ties are also evident among India, the United States, the United Kingdom, and several European nations such as Germany and Italy, suggesting that the field is driven by a combination of Asian and Western research hubs. The dense interconnections between Asian countries—including Malaysia, Indonesia, South Korea, and Saudi Arabia—reflect the growing importance of emerging economies in sustainability and green consumption studies. Meanwhile, peripheral countries with fewer links, such as Israel or Zimbabwe, indicate limited participation or more isolated research outputs.

3.3 Citation Analysis

Table 1. Top Cited Research

Citations	Authors and year	Title
3206	[12]	An overview of polylactides as packaging materials
2435	[13]	Energy-aware resource allocation heuristics for efficient management of data centers for Cloud computing
2111	[14]	Targeting consumers who are willing to pay more for environmentally friendly products
2071	[15]	Recycling of rare earths: A critical review
1928	[16]	The drivers of greenwashing
1913	[17]	The water footprint of humanity
1735	[18]	Predicting green product consumption using theory of planned behavior and reasoned action
1697	[19]	Going Green to Be Seen: Status, Reputation, and Conspicuous Conservation
1691	[20]	Assessing the impact of the Green Revolution, 1960 to 2000

Citations	Authors and year	Title
1582	[21]	Green Grabbing: A new appropriation of nature?

Source: Scopus, 2026

Discussion

Overview of Findings

This bibliometric study provides a comprehensive overview of the intellectual structure and evolution of research on green consumer behavior within the sustainability domain. The keyword co-occurrence analysis reveals that the field is strongly anchored around core themes such as sustainability, consumer behavior, and sustainable development, which act as conceptual hubs connecting marketing, environmental science, and economic transformation. The prominence of these central nodes indicates that green consumer research has matured into an interdisciplinary area that extends beyond traditional consumer psychology and incorporates broader sustainability narratives. The density visualization further confirms that behavioral sustainability remains the most intensively studied topic, suggesting a stable theoretical foundation centered on environmentally responsible consumption patterns.

The overlay visualization demonstrates a clear temporal progression in the literature. Earlier studies primarily emphasized consumer attitudes, perceptions, and eco-friendly behaviors, reflecting a micro-level psychological perspective. However, more recent research trends have shifted toward technological and policy-oriented themes such as energy utilization, green computing, investments, and cost-related sustainability considerations. This transition indicates that the field is moving toward a more systemic understanding of green consumption, where digital transformation, renewable energy adoption, and economic feasibility play increasingly significant roles in shaping environmentally responsible markets.

From a collaboration perspective, the co-authorship and institutional networks show that the research landscape is still relatively fragmented, with several small clusters connected through key bridging scholars and institutions. Authors such as those positioned at the center of collaboration clusters appear to facilitate knowledge exchange across otherwise separate research groups. Similarly, institutional collaboration is concentrated around a limited number of universities that function as hubs, suggesting that green consumer behavior research may benefit from stronger international and interdisciplinary partnerships to enhance knowledge integration.

At the country level, the results highlight a geographically diverse but Asia-centered research structure. China emerges as the most influential contributor, supported by strong collaborations with India, the United States, the United Kingdom, and several European countries. The growing participation of emerging economies, including Indonesia, Malaysia, and Saudi Arabia, reflects the increasing relevance of sustainability issues in developing markets. This shift toward Asian research leadership suggests that green consumer behavior is increasingly shaped by regions experiencing rapid economic growth and environmental challenges, thereby influencing both academic discourse and policy priorities.

Theoretical Implications

The findings contribute to the theoretical development of green consumer behavior by demonstrating how the field has evolved from isolated consumer-level analyses toward integrated sustainability frameworks. The strong interconnection between sustainability, green economy, and environmental awareness indicates that contemporary research increasingly adopts systemic perspectives, aligning consumer behavior theories with sustainability transitions and ecological modernization frameworks. This evolution supports the idea that environmentally responsible consumption cannot be fully understood

without considering supply chain dynamics, technological innovation, and policy environments.

Moreover, the emergence of technology-driven themes such as artificial intelligence, green computing, and energy efficiency suggests a theoretical expansion toward digital sustainability. Traditional models based solely on attitudes and intentions may no longer be sufficient to explain green consumer behavior in an era where technological infrastructure and environmental policies significantly shape consumption choices. Therefore, future theoretical models should integrate digital transformation and sustainability innovation as core explanatory variables.

Practical Implications

From a practical standpoint, the results offer important insights for policymakers, businesses, and sustainability practitioners. The growing focus on energy-related and technological themes indicates that governments should design policies that encourage digital innovation and renewable energy adoption as part of consumer sustainability strategies. Businesses, particularly those operating in green manufacturing and sustainable supply chains, can leverage these insights to develop marketing approaches that align environmental benefits with economic value propositions, thereby increasing consumer acceptance of sustainable products.

Additionally, the dominance of Asian research hubs highlights opportunities for emerging economies to lead sustainability initiatives through context-specific solutions. Firms and policymakers in these regions may focus on integrating green marketing strategies with technological innovation and energy efficiency to address environmental challenges while supporting economic development. Strengthening cross-country collaborations could further enhance knowledge transfer and accelerate the adoption of best practices in green consumption.

4. CONCLUSION

This bibliometric study demonstrates that research on green consumer behavior has evolved into a highly interdisciplinary field centered on sustainability, consumer decision-making, and environmental awareness, while increasingly integrating technological, economic, and policy dimensions. The dominance of themes such as sustainable development, green economy, and consumption behavior indicates a mature research core, whereas emerging topics related to energy utilization, digital innovation, and green computing highlight the future direction of the literature. Collaboration patterns reveal a growing global research landscape led by Asian countries, particularly China, alongside strong contributions from Western nations, although the network remains relatively fragmented and offers opportunities for deeper international partnerships. The findings suggest that understanding green consumer behavior requires a systemic perspective that connects behavioral insights with technological advancement and sustainability governance, thereby providing a foundation for future theoretical development and practical strategies aimed at promoting environmentally responsible consumption.

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