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ORIGINAL

Research on Green Purchase Intention and Behavior: A Bibliometric Analysis (2015-2025)

Investigación sobre la intención y el comportamiento verde de compra: un análisis bibliométrico (2015-2025)

Nuohan Li[1], Hafizah Omar Zaki[1], Che Aniza Binti Che Wel[1], Nadzirah Binti Rosli[1]

[1]Faculty of Economics and Management, The National University of Malaysia. 43600, UKM Bangi, Selangor, Malaysia.

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Corresponding Author: Nadzirah Binti Rosli

ABSTRACT

With the increasing global emphasis on sustainable development, green consumption has emerged as a prominent topic of interest among academics and policymakers. This study conducts a comprehensive bibliometric and visual analysis of literature related to green purchase intention and behavior indexed in the Web of Science Core Collection (SCI and SSCI) from 2015 to 2025. Utilizing VOSviewer software, the analysis systematically examines publication trends, key contributors, core journals, high-frequency keywords, co-citation networks, and international collaboration patterns. The findings reveal that: (1) Research on green consumption has experienced consistent annual growth, particularly after 2020, highlighting heightened scholarly attention; (2) Among nations, China, India, and Malaysia lead in research activity and collaboration; (3) Co-citation analysis identifies foundational literature and key research clusters in the field; (4) Sustainability, Journal of Cleaner Production and similar journals serve as primary publication outlets with significant academic influence; (5) Keyword co-occurrence analysis highlights themes such as “model” “impact” “antecedents” and “determinants” as central to the field; (6) The co-citation network illustrates the evolution of theoretical frameworks and thematic trajectories. These results offer a comprehensive overview of the intellectual structure and developmental trajectory of green consumption research, providing a solid foundation for future empirical studies and policy-making initiatives.

Keywords: Green Purchase Intention; Green Purchase Behavior; Bibliometrics; Visual Analysis.

RESUMEN

Con el creciente énfasis mundial en el desarrollo sostenible, el consumo verde ha emergido como un tema de interés entre académicos y formuladores de políticas. Este estudio lleva a cabo un amplio análisis bibliométrico y visual de la literatura relacionada con la intención de compra verde y el comportamiento indexen el Web of Science Core Collection (SCI y SSCI) de 2015 a 2025. Utilizando el software VOSviewer, el análisis examina sistemáticamente las tendencias de publicación, los contribuyentes clave, las revistas principales, palabras clave de alta frecuencia, redes de co-citación, y los patrones de colaboración internacional. Los resultados revelan que: (1) la investigación sobre el consumo verde ha experimentado un crecimiento anual constante, en particular después de 2020, lo que pone de relieve una mayor atención académica; (2) entre las naciones, China, India y Malasia lideren la actividad de investigación y colaboración; (3) el análisis de cocitación identifica la literatura fundacional y los grupos de investigación clave en el campo; (4) sostenibilidad, revista de producción más limpia y revistas similares sirven como principales medios de publicación con una influencia académica significativa; (5) el análisis de co-ocurrende de palabras clave pone de relieve

temas como “modelo” “impacto” “antecedentes” y “determinantes” como centrales para el campo; (6) la red de cocitación ilustra la evolución de los marcos teóricos y las trayectorias temáticas. Estos resultados ofrecen una visión global de la estructura intelectual y la trayectoria de desarrollo de la investigación del consumo verde, proporcionando una base sólida para futuros estudios empíricos e iniciativas de formulación de políticas.

Palabras clave: Green Purchase Intention; Green Purchase Behavior; Bibliometrics; Visual Analysis.

INTRODUCTION

In response to the escalating challenges of climate change, resource depletion and ecological degradation, the pursuit of sustainable economic and social development has gained widespread global consensus. Within this context, green consumption has attracted growing attention from governments, businesses and scholars as a pivotal strategy for advancing sustainability agendas. Green consumption not only reflects consumers' awareness of environmental consequences during purchasing decisions but also plays a critical role in promoting green manufacturing, technological innovation and policy implementation. It embodies both practical applications and symbolic expressions of individuals' environmental responsibility and ecological values.

However, a persistent "intention–behavior gap" remains between consumers' stated willingness to engage in green purchasing and their actual behavior. Although public awareness of environmental issues has increased and green products have become more accessible, various factors, such as social norms, brand perceptions and environmental attitudes, continue to inhibit the conversion of intention into action.[1,2] This disjunction underscores the complexity of the psychological and decision-making processes involved in green consumption and calls for deeper scholarly investigation.

At the theoretical level, research on green purchase intention and behavior has drawn from a range of disciplinary perspectives, including environmental psychology, behavioral economics, social marketing and sustainable management. Classical models such as the Theory of Planned Behavior (TPB)[3] have been widely adopted to explain the mechanisms underlying green consumption. These models posit that behavior is influenced by environmental attitudes, subjective norms, perceived behavioral control and moral responsibility. In recent years, researchers have expanded these frameworks by incorporating new variables, such as emotional experience, cultural values, digital engagement and social influence, to better account for the non-rational and context-dependent aspects of green consumer behavior.[4]

Despite the growing volume of empirical research, several critical gaps remain. First, the field lacks a comprehensive, macroscopic overview that systematically synthesizes existing studies. Second, there is insufficient application of quantitative and visual bibliometric methods to track the evolution of research hotspots, collaborative networks, and knowledge structures. Third, given the multidisciplinary nature of green consumption research, a unified conceptual framework and developmental trajectory has yet to be fully established. Addressing these gaps requires a structured bibliometric analysis that can map the intellectual landscape of the field, identify prevailing trends, and guide future scholarly inquiry.

To this end, the present study conducts a bibliometric analysis of literature published between 2015 and 2025 in the Web of Science Core Collection (SCI and SSCI). Using VOSviewer and related visualization tools, this research systematically explores the publication trends, influential authors, key institutions, international collaborations, keyword co-occurrences and thematic clusters in the domain of green purchase intention and behavior. The analysis seeks to answer the following research questions:

1. What are the developmental trajectories and evolving characteristics of research on green purchase intention and behavior over the past decade?
2. How are the core research forces—authors, institutions and countries—distributed, and what are the structural features of the collaborative networks?
3. What are the dominant themes and emerging hotspots in green purchase intention and behavior research?
4. What theoretical challenges and practical gaps remain and how might future research address them?

By answering these questions, this study aims to provide a systematic, visualized and well-structured knowledge map of the field. The findings are expected to contribute to theoretical advancement, methodological refinement and the practical promotion of green consumption, thereby supporting global efforts toward sustainable development.

METHOD

This study draws on data obtained from the Web of Science (WoS) Core Collection, specifically the Science Citation Index Expanded (SCI-E) and the Social Sciences Citation Index (SSCI). The WoS Core Collection is widely regarded as a reliable and authoritative source for bibliometric research, offering comprehensive coverage across disciplines and ensuring the inclusion of high-quality scholarly publications.[5]

An advanced search was conducted using the following query terms in both titles (TI) and abstracts (AB). TI = ("green purchase intention" OR "green purchasing behavior" OR "green consumer behavior" OR "green consumption") OR AB = ("green purchase intention" OR "green purchasing behavior" OR "green consumer behavior" OR "green consumption"). To ensure data integrity and citation completeness, the dataset covers publications from January 1, 2015, to January 1, 2025. Given the typical citation and indexing lag in databases such as WoS, the cutoff at the beginning of 2025 provides a more stable basis for bibliometric analysis. The document type was restricted to "articles" and "review papers", and only publications in English were considered. A total of 386 valid records were retrieved. Key bibliographic fields such as title, author(s), institutional affiliation, abstract, keywords, citation count and publication year were extracted and exported in ".txt" format for analysis.

The bibliometric analysis and visualization were performed using VOSviewer, a specialized tool developed by the Centre for Science and Technology Studies (CWTS) at Leiden University in the Netherlands. VOSviewer facilitates the visualization of bibliometric networks, including keyword co-occurrence, author and institutional collaboration, national cooperation, and co-citation analysis. The software supports direct processing of WoS export files and generates network diagrams and heatmaps that clearly reveal the structure of scholarly communication and research hotspots within the field.

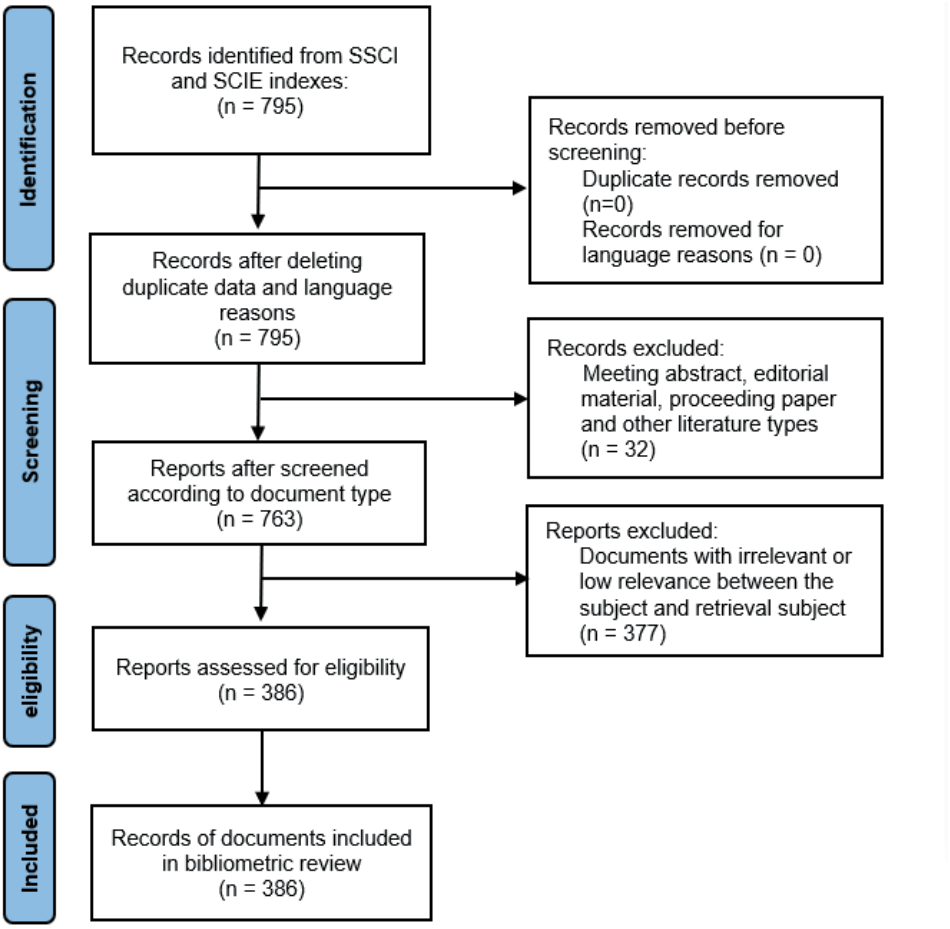

Figure 1. Data Screening Process

RESULTS

Analysis of Annual Publication Volume

Figure 2 presents the annual and cumulative publication trends in the field of green purchase intention and behavior from 2015 to 2025. The overall trajectory demonstrates a marked upward trend, with particularly notable growth occurring after 2020. This increase reflects a rising level of academic attention and engagement with the topic over the past decade.

Between 2015 and 2018, the volume of annual publications remained modest—6 in 2015, 9 in both 2016 and 2017 and 12 in 2018—suggesting that scholarly interest in green consumption was still in its early, exploratory phase. Starting in 2019, the field began to expand steadily, with publications increasing from 22 in 2019 to 54 in 2022. This represents an average annual growth rate of over 34,8 %, indicating a transition into a more active developmental phase. The years 2023 and 2024 marked a period of rapid acceleration. In 2023, the number of published articles rose to 79, reaching a peak of 102 publications in 2024—the highest annual output during the study period. Concurrently, the cumulative number of publications increased from just 6 in 2015 to 373 by the end of 2023, demonstrating a clear pattern of exponential growth and reflecting the increasing academic influence and recognition of the field. It should be noted that the data for 2025 includes only 13 publications, as the retrieval was conducted on January 1, 2025, and thus does not represent the full year.

In summary, research on green purchase intention and behavior has followed a "start-growth-peak" trajectory over the past decade. The sharp increase in publications observed after 2020 can be attributed to several driving factors, including the implementation of global sustainable development policies, heightened environmental awareness among consumers, and the amplified dissemination of green values through social media. These developments have collectively catalyzed both theoretical inquiry and practical exploration within the domain of green consumption.

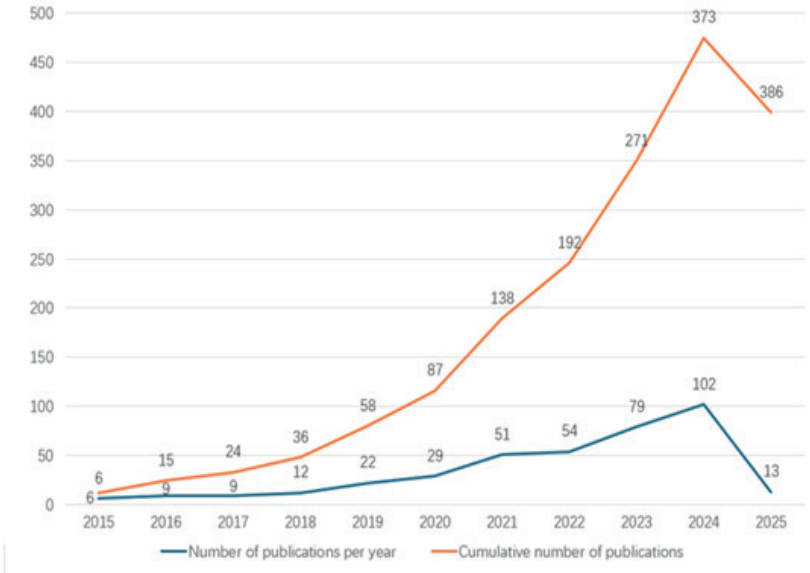

Figure 2. Annual and cumulative number of publications on green purchase intention and behavior (2015–2025)

Bibliometric Analysis of Countries

To explore the global distribution and scholarly impact of research on green purchase intention and behavior, this study conducted a bibliometric analysis of contributing countries based on publications indexed in the Web of Science Core Collection (SCI and SSCI) from 2015 to 2025. Particular attention is given to the top five countries in terms of publication volume: China, India, the United States, Malaysia and Pakistan (table 1).

China ranks first, with a total of 218 publications, demonstrating its dominant position and substantial investment in green consumption research. While India is second in terms of publication count, with 35 articles, it exhibits the highest average number of citations, 99,51 citations per article and a total of 3,483 citations. This highlights India's strong academic influence, indicating both the high quality and international visibility of its research outputs. The United States, with 33 publications and a total of 1,475 citations (an average of 44,70 citations per article), maintains a consistent level of scholarly influence in the field. Its contributions are particularly prominent in areas such as sustainable development, green marketing and consumer psychology, reflecting its theoretical and empirical leadership in these domains. Malaysia and Pakistan rank fourth and fifth, with 24 and 23 publications, respectively. Despite a smaller number of articles, Malaysia demonstrates a high academic impact, with an average of 62,67 citations per article, surpassing China and Pakistan. This suggests that Malaysia's research, though limited in quantity, is well-recognized and influential. Pakistan's output is relatively stable, with an average of 26,87 citations per article, comparable to China's citation rate, indicating steady progress and growing participation in the field.

Overall, Asian countries are emerging as key contributors to the global research landscape in green consumption. China leads in research volume, India excels in scholarly influence, and Malaysia distinguishes itself through high-quality publications. Moving forward, enhancing multilateral and cross-border collaborations

will be critical to fostering knowledge exchange, regional integration, and the continued advancement of global green consumption research.

Table 1. Top 5 Countries by Publication Output

Rank	Country	Publications	Citations	Average Citation
1	China	218	5675	26,03
2	India	35	3483	99,51
3	The United States	33	1475	44,70
4	Malaysia	24	1492	62,67
5	Pakistan	23	618	26,87

To provide a more intuitive understanding of international collaboration and publication activity in the field of green purchase intention and behavior, a chord diagram was constructed using data from countries with at least four publications (figure 3). In this visualization, connections between countries are represented by colored arcs, where the width of the nodes indicates the volume of publications, and the thickness and color intensity of the connecting chords reflect the frequency and strength of international cooperation. The diagram reveals several prominent clusters and centers of collaborative activity across regions:

1. China occupies a central position in the global collaboration network. As indicated by its wide node and dense chords, China not only leads in publication volume but also demonstrates strong collaborative ties with numerous countries, particularly Malaysia, Pakistan and others in the Global South. This suggests China's expanding academic influence and its role as a hub in green consumption research.
2. Countries such as India, Malaysia, and Pakistan exhibit robust interconnections, both with each other and with external partners including China and certain Middle Eastern nations. This indicates a regionally concentrated interest in sustainable consumption and a growing body of collaborative research addressing related socio-economic and environmental challenges.
3. Advanced economies such as the United States, UK and Australia maintain broad but relatively decentralized cooperative ties. While these countries collaborate with several partners, e.g., China, India and France, they do not form a concentrated core within the network. This pattern suggests that while these nations contribute significantly to the field, their collaborations are more distributed than focused.
4. Countries including Saudi Arabia, Lithuania and Romania are gradually integrating into the international research landscape by forming collaborative relationships with major publishing countries such as China and India. Although their publication volumes remain modest, their participation reflects the expanding global relevance of green consumption research.

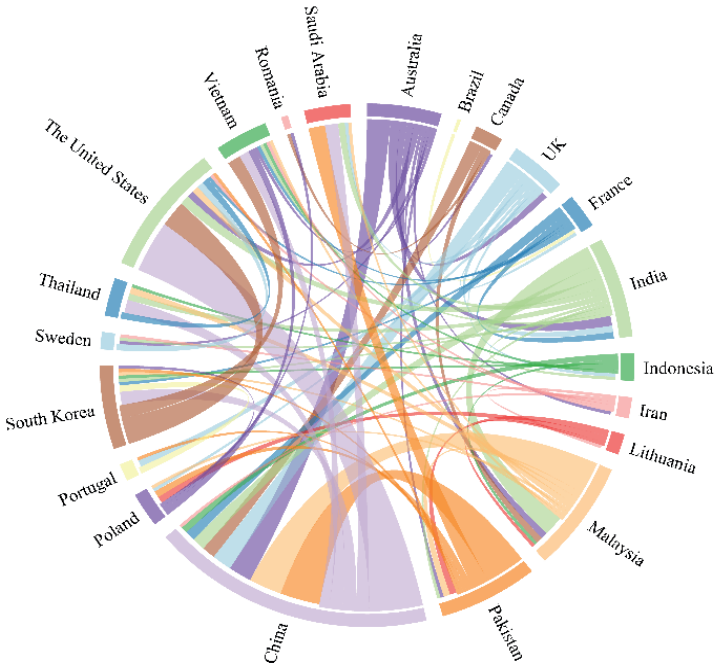

Figure 3. Countries Chord Diagram (≥4 Publications)

In conclusion, the study of green purchase intention and behavior has increasingly transcended geographical boundaries, giving rise to a globally interconnected research network with China at its center and active participation from both developed and developing countries. Moving forward, further enhancement of North and South cooperation, data sharing and cross-regional collaboration is essential for deepening scholarly exchange and promoting global synergy in addressing green consumption and sustainability challenges.

Author Bibliometric Analysis

Author bibliometric analysis aims to identify the core contributors, research teams, and collaborative network structures within a given field by examining indicators such as publication volume, citation frequency, and co-authorship patterns.[5] This approach helps spotlight prolific and highly cited scholars who often play pivotal roles in shaping the theoretical foundations and methodological advancements of the discipline. Identifying these key authors provides valuable reference points for future research development, offering both theoretical insights and methodological guidance. Moreover, analyzing author collaboration networks enables a deeper understanding of the structure of academic cooperation, including the degree of inter-institutional and transnational collaboration. It also reveals whether the field has formed stable, cohesive research communities or remains fragmented in terms of scholarly interaction.

Based on the analysis of the 386 research articles included in this study, a total of 1197 authors were identified, including both first authors and co-authors. Among them, the vast majority, 91,23 %, contributed to only a single publication. A further 8,02 % of authors (96 individuals) published between two and three articles. Notably, only nine authors (0,75 %) published four or more articles in the field during the study period. These high-productivity authors, as listed in table 2, represent the most consistent contributors to green consumption intention and behavior research. Their sustained output and academic visibility make them central figures in the emerging literature of this domain.

Table 2. High-Productivity Authors (≥4 Publications)

Rank	Author	Documents	Citations	Average Citation
1	Long, Ruyin	6	136	22,67
2	Yang, Xianchuan	6	158	26,33
3	Chen, Hong	4	125	31,25
4	Chen, Shih-chih	4	117	29,25
5	Li, Jin	4	31	7,75
6	Zhong, Yiping	4	26	6,50
7	Al Mamun, Abdullah	4	316	79,00
8	Wang, Jianming	4	148	37,00
9	Wang, Ying	4	215	53,75

Among the high-productivity authors, Long, Ruyin and Yang, Xianchuan stand out with six publications each, while the remaining seven authors have each published four articles. Notably, Al Mamun, Abdullah and Wang, Ying exhibit the highest citation impact, with total citation counts of 316 and 215, corresponding to average citations per article of 79,00 and 53,75, respectively. These figures underscore their substantial academic influence within the field.

According to Price's Law, the threshold for identifying core authors in a research domain is approximately $n \geq n_{max}$, where n_{max} is the number of publications by the most prolific author. In this case, with $n_{max}=6$, the minimum threshold for core authors is approximately 2,45, suggesting that scholars with three or more publications can be regarded as core contributors in the area of green purchase intention and behavior research.

Visual analysis of the co-authorship network further reveals that these high-output authors are clustered into three main collaborative teams. Team 1: Li, Jin; Tan, Min; Zhang, Guanfei and Zhong, Yiping; Team 2: Chen, Hong; Long, Ruyin and Yang, Menghua; Team 3: Chen, Shih-chih; Yang, Xianchuan and Zhang, Lei. The total author link strengths for these teams were 9, 7 and 6 respectively, indicating strong internal collaboration and high academic cohesion within each group. These stable partnerships reflect sustained research productivity and consistent thematic focus within each team.

However, despite the emergence of distinct and productive collaborative groups, cross-team collaboration remains limited. The current structure of the author collaboration network appears fragmented, suggesting that the field has not yet developed an integrated or globally cohesive scholarly community. Moving forward, researchers from diverse institutions and regions are encouraged to pursue cross-institutional and transnational cooperation. Such efforts, facilitated through joint research projects, international funding schemes, and

open data platforms, could help dismantle disciplinary silos, promote knowledge integration, and enhance the synergistic potential and innovation capacity of the global research network in green consumption studies.

Bibliometric Analysis of Journals

To identify the leading publication venues and high-impact journals in research on green purchase intention and behavior, this study conducted a bibliometric analysis of journals within the collected literature. Table 3 presents the top ten journals ranked by number of published articles, along with their total citations and average citations per article.

In terms of publication volume, Sustainability emerges as the most prominent platform with 74 articles, representing a substantial share of the total publications. However, its average citation count of 22,38 suggests considerable academic participation but moderate scholarly impact. As an open-access, interdisciplinary journal with broad coverage, Sustainability is a favored venue for many researchers. In contrast, the Journal of Cleaner Production ranks second with 28 publications but leads significantly in citation impact, with a total of 3130 citations and an average of 111,79 citations per article. This highlights its status as an authoritative journal in green consumption research, reflecting the high quality and influence of its published work.

Following these are Frontiers in Psychology, Journal of Retailing and Consumer Services and International Journal of Environmental Research and Public Health. These journals approach green consumption from diverse perspectives such as psychology, consumer behavior, and public health, demonstrating the field's interdisciplinary nature. Notably, although Business Strategy and the Environment and Sustainable Development each published only nine articles, their average citations, 50,67 and 47,11 respectively, indicate strong academic influence, particularly in green strategy and sustainable development.

In summary, research on green consumption intention and behavior is characterized by the coexistence of high-output journals and highly cited journals. Interdisciplinary, open-access journals provide broad dissemination platforms, while high-impact journals ensure academic rigor and depth, collectively underpinning the sustainable advancement of this field.

Table 3. Top Journals by Publication Volume

Rank	Publications/Journal	Documents	Citations	Average Citation
1	Sustainability	74	1656	22,38
2	Journal of Cleaner Production	28	3130	111,79
3	Frontiers in Psychology	24	538	22,42
4	Journal of Retailing and Consumer Services	18	1332	74
5	International Journal of Environmental Research and Public Health	12	202	16,83
6	Environment Development and Sustainability	12	209	17,42
7	Asia Pacific Journal of Marketing and Logistics	12	362	30,17
8	Sustainable Development	9	424	47,11
9	Business Strategy and the Environment	9	456	50,67
10	Environmental Science and Pollution Research	8	273	34,13

DISCUSSION

Keyword Co-occurrence Analysis

Keyword co-occurrence analysis is a fundamental bibliometric method used to uncover research themes and trends. It identifies core concepts, research hotspots and their interrelationships by analyzing the frequency and co-occurrence patterns of keywords in the literature.[6] This approach not only quantitatively reveals research focus and knowledge structures but also guides researchers in topic selection and theoretical innovation, making it a vital tool for exploring the knowledge embedded in scholarly work.

In this study, keyword mapping was conducted on 386 papers using VOSviewer. Keywords with a frequency of ten or more were selected for visualization. The resulting co-occurrence network, shown in figure 4, was refined by removing duplicates and irrelevant terms.

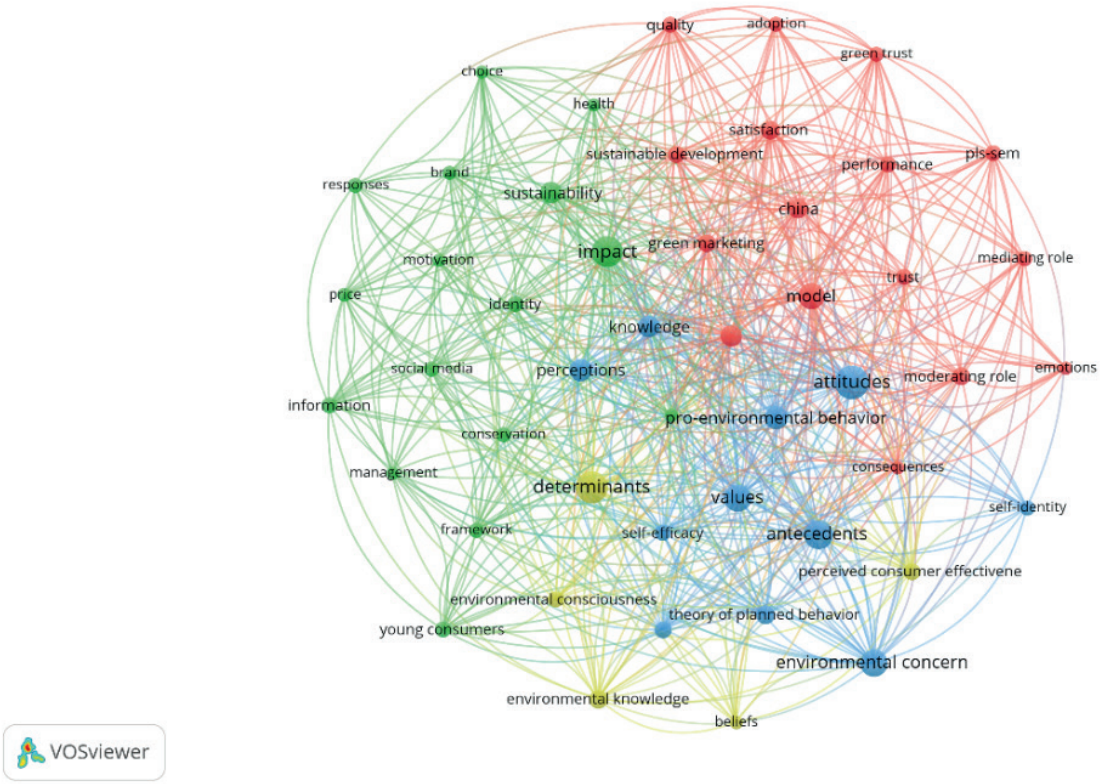

Figure 4. Keyword Co-occurrence Network

The results reveal that the keywords form four distinct clusters, with larger nodes representing higher frequency of occurrence. As illustrated in figure 4, high-frequency keywords such as model, impact, antecedents and determinants serve as representative terms in this research domain. For a more detailed understanding, table 4 presents the specific clusters along with their respective member keywords

Table 4. Clusters and Members

Rank	Keyword	Members
1	Model	China, Consequences, Emotions, Green marketing, Green trust, Mediating role, Moderating role, Perceived value, Performance, PLS-SEM, Quality, Satisfaction, Sustainable development, Trust
2	Impact	Brand, Choice, Conservation, framework，Health, Identify, Information, Management, Motivation, Price, Responses, Social media, sustainability, Word-of-mouth, young consumers
3	Antecedents	Attitudes, Consciousness, Environmental concern, knowledge, Perceptions, pro-environmental behavior, self-efficacy, self-identity, theory of planned behavior, values
4	Determinants	Beliefs, Environmental consciousness, Environmental knowledge, Perceived consumer effectiveness

The analysis of the four keyword clusters indicates that research on green purchase intention and behavior over the past decade has followed a coherent evolutionary trajectory, from explaining behavioral motivations to modeling underlying mechanisms, and finally to exploring the influence pathways of strategic interventions. The “Antecedents” and “Determinants” clusters form the theoretical foundation rooted in individual psychology and cognition respectively. The “Model” cluster elucidates the interactions among variables through structural modeling, while the “Impact” cluster extends the research to practical contexts, addressing real-world issues such as branding, social media, and intergenerational consumption. Overall, the keyword network reflects a trend toward diversified integration and synergistic development across theory, methodology and application in green consumption research.

Co-citation Analysis

Co-citation analysis is a key bibliometric method used to identify knowledge links and structures among academic literature, authors or journals. It is based on the principle that when two documents are cited together by a third document, a co-citation relationship is established; the frequency of such co-citations reflects the strength of the knowledge connection between the documents within a given research topic.[7] This method effectively reveals the knowledge base of a research field by identifying frequently co-cited works, which typically represent core literature recognized for establishing theoretical foundations or methodological frameworks.[8]

Journal Co-citation Analysis

A visual analysis of co-cited journals in green purchase intention and behavior research (figure 5) was conducted, with a minimum citation threshold of 70, resulting in 63 journals included in the co-citation network. The analysis identified four major journal clusters, each represented by different colors and corresponding to distinct research themes and disciplinary backgrounds. This clustering structure highlights the multidisciplinary and cross-disciplinary nature of green consumption research, as well as the diversity of its knowledge base.

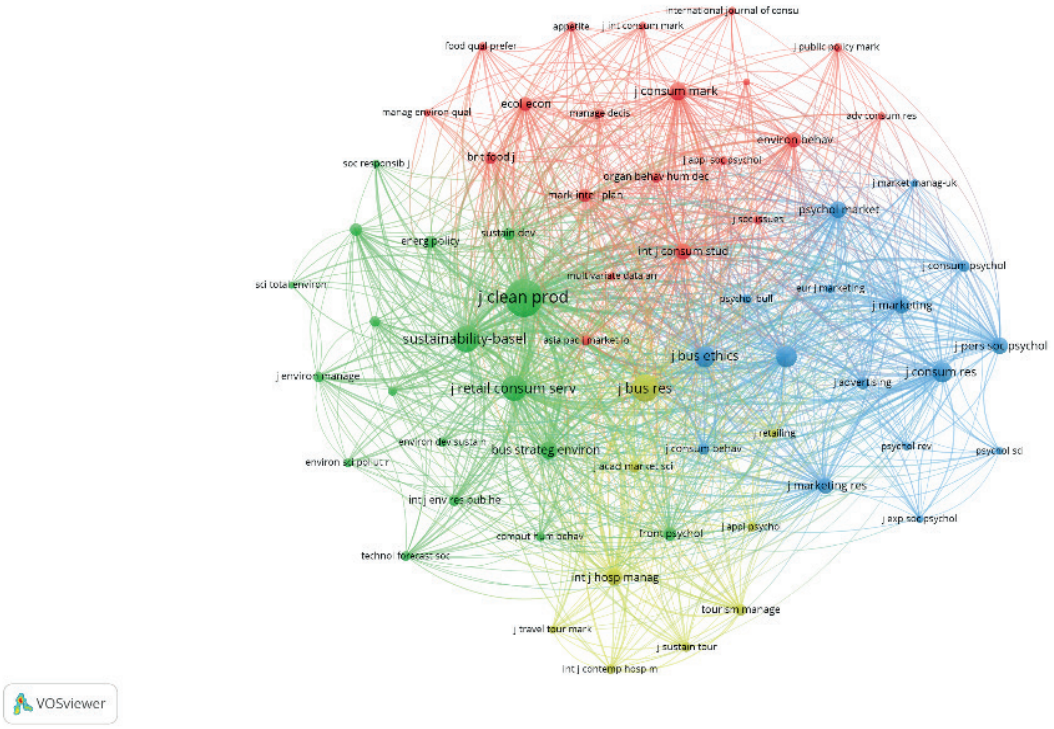

Figure 5. Journal Co-citation Mapping

Red Cluster: Psychological research on consumer behavior and marketing

The red cluster primarily includes journals such as Journal of Consumer Marketing, International Journal of Consumer Studies, Journal of Public Policy & Marketing and Appetite. These journals focus on the psychological mechanisms underlying consumer behavior, preferences and marketing strategies. Research in this cluster employs experimental designs, behavioral studies, and surveys to examine how individuals respond to green product information, advertising stimuli and policy guidance. The emphasis lies on behavioral science and psychological principles as the micro-level foundation for sustainable consumption decision-making.

Green Cluster: Research on sustainable development and environmental management

The green cluster encompasses journals like Journal of Cleaner Production, Sustainability, Journal of Environmental Management, Science of the Total Environment and Environmental Science and Pollution Research. These journals adopt a macro perspective, concentrating on green technologies, eco-design, corporate sustainability strategies and policy instruments. Their research highlights the systemic link between green consumption and environmental protection, exploring how management practices and policies can promote resource-efficient and environmentally friendly consumption patterns. This cluster offers a robust theoretical basis in ecology and environmental economics, reflecting a strong practical orientation.

Blue Cluster: Marketing, psychosocial and ethical research

The blue cluster includes journals such as Journal of Business Ethics, Journal of Marketing, Journal of Consumer Psychology, Journal of Personality and Social Psychology and Psychological Bulletin. Research in this group addresses consumer ethical awareness, corporate social responsibility (CSR), brand trust, moral cognition, and psychosocial mechanisms. The core focus is on the ethical motivations and social norms influencing green consumption, emphasizing the role of corporate responsibility and ethical marketing. This cluster provides theoretical support for the ethical dimension of green marketing strategies.

Yellow Cluster: Tourism, hotel management and green service research

The yellow cluster comprises journals like Journal of Sustainable Tourism, Tourism Management, International Journal of Hospitality Management and Journal of Travel & Tourism Marketing. Research here centers on green consumer behavior within tourism and hospitality contexts, investigating sustainable consumer choices, acceptance of green hospitality services and environmentally friendly tourism management practices. This cluster highlights the application of green consumption concepts in specific industries (e.g., tourism services), illustrating the trend toward segmented research in green service sectors.

Analyzing the top 5 cited articles reveals that the 5 highly co-referenced works are from 5 distinct author groups, as shown in table 5.

Table 5. Top 5 Cited Articles

Rank	Title	Author(s)	Journal/ Publisher	Year	Citation
1	"The theory of planned behavior.	Ajzen, I	Organizational Behavior and Human Decision Processes	1991	120
2	"Evaluating Structural Equation Models with Unobservable Variables and Measurement Error	Fornell, Claes, and David F. Larcker.	Journal of marketing research	1981	113
3	"Multivariate Data Analysis	Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R.	Pearson Prentice-Hall, Upper Saddle River	2006	74
4	"Common method biases in behavioral research: a critical review of the literature and recommended remedies	Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P.	Journal of applied psychology	2003	65
5	Predicting green product consumption using theory of planned behavior and reasoned action.	Paul, Justin, Ashwin Modi, and Jayesh Patel	Journal of retailing and consumer services	2016	64

In summary, the co-citation network of journals in green consumption research exhibits clear cross-disciplinary characteristics. The red and blue clusters emphasize consumer behavior and psychological mechanisms, the green cluster focuses on macro-environmental and policy issues, while the yellow cluster highlights scenario-based and industry-specific applications. This multidimensional knowledge base indicates that green consumption is shaped not only by individual consumer choices but also by corporate strategies, social ethics, environmental policies, and industry contexts. The strong co-citation links among journals demonstrate that these research domains are interconnected, mutually reinforcing, and integrated. Thus, co-citation analysis not only identifies the core knowledge sources in the field but also offers theoretical insights for multidisciplinary integration and collaboration in future research.

Literature Co-citation Analysis

Analyzing the five most frequently cited works in green consumer behavior research between 2015 and 2025 reveals the core theoretical foundations and dominant research paradigms in the field. These seminal papers have not only had significant academic influence but also provided key methodological and theoretical frameworks for empirical studies.

First, Ajzen's[3] seminal paper on the Theory of Planned Behavior (TPB) leads with 120 citations, underscoring its foundational role in green consumption research. TPB offers a systematic framework explaining the formation of consumers' green behaviors by emphasizing the influence of attitudes, subjective norms and perceived behavioral control on behavioral intentions. Since its introduction, TPB has been extensively applied to studies on green purchase intentions, environmental behaviors, and sustainable choices, serving as a core theoretical pillar.

Second, Fornell et al.[9] work on Structural Equation Modeling (SEM) methodology ranks second with 113 citations. This paper provides rigorous statistical tools essential for constructing and validating empirical models

in green consumption research, particularly for measuring latent variables, validating path relationships, and assessing model fit.

Third, Multivariate Data Analysis, cited 74 times, is a classic reference providing methodological support for advanced statistical techniques such as cluster analysis, factor analysis, regression, and mediation/moderation testing. Its prominence highlights the field's strong reliance on quantitative modeling.

Fourth Podsakoff et al. cited 65 times, address the issue of common method bias in behavioral research and propose strategies for its control. The citation frequency reflects increasing attention to data quality and research validity, marking a maturation of methodologies in green consumer behavior studies.

Finally Paul et al.[10] integrate TPB with the Theory of Reasoned Action (TRA) to predict green product consumption, with 64 citations. Their work exemplifies theoretical integration and contextual extension, emphasizing the moderating effects of culture, context and product characteristics on green consumer choices.

Collectively, these five highly cited works represent the intertwined development of theory, methodology and empirical application in green consumption research. Among them, the theoretical work of Ajzen et al. provides the research framework, the methodological support of Fornell, Hair and Podsakoff, etc. and the applied research of Paul et al. reflects the application and expansion of the theory to real-world problems. This close co-citation relationship indicates that the field has a clear research line and methodological standardization, laying a solid foundation for subsequent research.

To comprehensively explore the knowledge structure and theoretical foundations of the green consumption field, this study conducted a co-citation analysis on literature cited at least 50 times between 2015 and 2025. A total of 49 highly cited documents were analyzed using VOSviewer, resulting in the identification of four distinct knowledge clusters, each represented by a different color. These clusters correspond to key research themes and theoretical pathways within the field. The co-citation network (figure 6) reveals a clear clustering pattern, reflecting both the diversity and integrative nature of green consumption research.

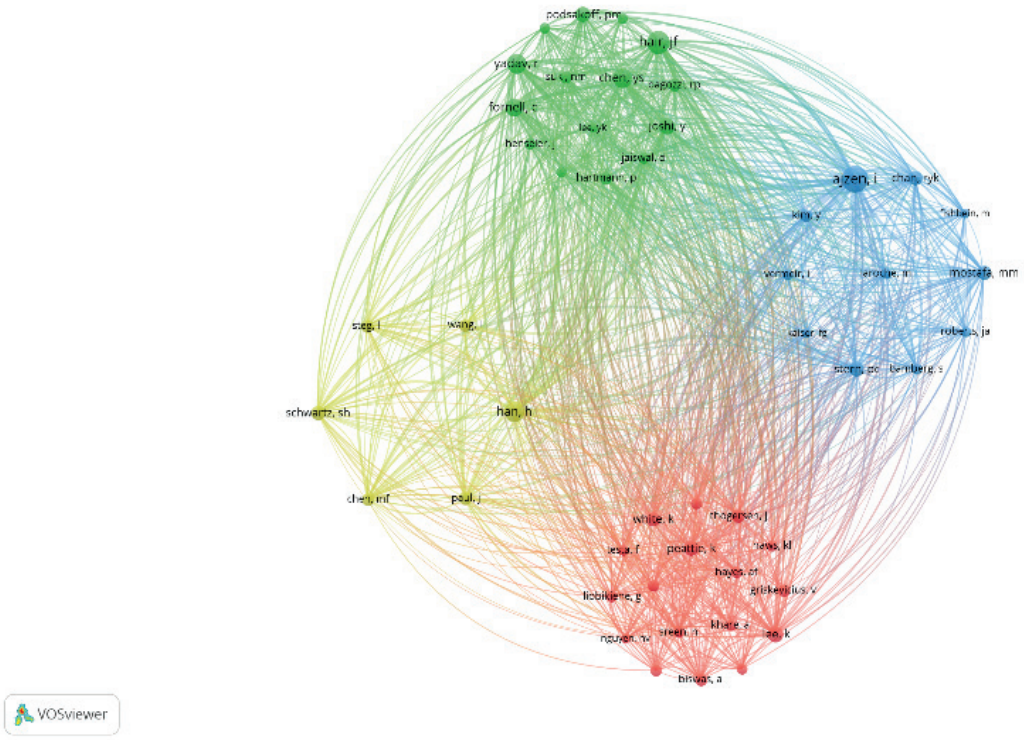

Figure 6. Literature Co-citation Connection

Blue cluster (Cluster 1): Environmental behavior and normative pathways research

The blue cluster centers on psychological theoretical models and individual decision-making mechanisms underlying green purchase behavior. This cluster forms the theoretical core of green purchase intention and behavior research, applying behavioral science perspectives to explain consumers' choices of environmentally friendly products through variables such as motivations, attitudes, beliefs and norms.

Ajzen's[3] Theory of Planned Behavior (TPB) is the most representative work, positing that behavior is driven by behavioral intentions, themselves influenced by attitudes, subjective norms and perceived behavioral control. TPB is widely used to explain green consumption, energy-saving, and eco-friendly habits. Building on

TPB, Stern[11] proposed the Values-Beliefs-Norms (VBN) model, highlighting the influence of values and personal moral norms, and framing environmental behavior as both a rational choice and an expression of moral identity. Mostafa[12] introduces a gender dimension, empirically examining how environmental knowledge, concern and attitudes differently affect male and female consumers' behaviors, thereby integrating socio-cultural factors into behavioral models and enhancing their explanatory power.

This cluster is central to the green consumption research network, bridging multiple themes (e.g., branding, emotion, management) and providing key theoretical frameworks and methodologies that underpin pathway modeling of green behavior.

Green cluster (Cluster 2): Green brand value perception research

The green cluster investigates the formation of green brand value and its impact on consumers' green purchase intention, focusing on variables such as green brand image, trust and satisfaction. Chen's[13] green brand value-driven model is a cornerstone, demonstrating how brand image influences consumer trust and satisfaction to enhance loyalty and competitiveness, thus supporting green brand strategy development. Additionally, Yadav[14] extends TPB in developing countries, emphasizing social norms and perceived behavioral control in young consumers' green purchase intentions, with particular attention to cultural and generational moderators. Methodologically, this cluster relies heavily on quantitative techniques like structural equation modeling (SEM), referencing Fornell et al.[9] criteria for reliability and validity assessment and Hair et al.'s multivariate statistical methods, highlighting the field's growing empirical rigor and systematization.

This cluster acts as a bridge between behavioral theory and management practice, linking academic inquiry with corporate strategy and facilitating a productive dialogue between theory and application.

Red cluster (Cluster 3): Socio-cultural perspectives on green consumption

The red cluster emphasizes socio-cultural influences and green marketing practices, connecting consumer behavior research with market applications. Unlike clusters focused on individual psychology, it highlights the shaping role of social culture, values, consumption habits, gender roles and market environments on green behavior.

Lee[15] studies young consumers, showing how their environmental concerns create new green marketing opportunities driven by brand responsibility, social impact and sustainability values, underscoring generational differences. Peattie[16] conceptualizes green consumption as a social norm and cultural expression, with identity, value enactment and moral judgment underlying purchasing behavior. Sreen et al.[17] further incorporate culture, gender, and behavioral variables, revealing how cultural backgrounds and gender roles differentially influence green purchasing intentions.

This cluster underscores the "social constructiveness" and "cultural diversity" of green consumption, providing theoretical foundations and practical pathways for green marketing and serving as a vital link between micro-level psychological studies and macro-level market strategies.

Yellow cluster (Cluster 4): Values- and ethics-driven behavior

The yellow cluster focuses on ethical norms, value-driven motivations and behavioral decision-making mechanisms, emphasizing green consumption as a reflection of intrinsic ethical beliefs and social responsibility beyond rational choice. This type of research emphasizes the key role of normative theoretical foundations in green behavior research.

For example, Theory of Green Purchasing Behavior (TGPB) integrates TPB, the Normative Activation Model (NAM) and Moral Motivation Theory to highlight how internalized environmental responsibility influences consumer behavior. This localized and integrative model builds on Schwartz et al.[18] Altruistic Normative Decision-Making Model, which posits that alignment between social expectations and personal responsibility prompts altruistic behaviors like green consumption. Moreover, Paul et al.[10] combines TPB and the Theory of Reasoned Action (TRA) in their Behavioral Intentions Prediction Model (BIPM), validating its applicability in green consumption by showing that purchase intentions derive from attitudes, subjective norms and perceived control.

The yellow cluster thus maps a coherent pathway of "moral cognition—norm activation—behavioral decision" emphasizing the critical role of values and ethics, an essential direction for advancing green consumption research.[19]

Despite offering comprehensive bibliometric and visual analysis of green consumption research from 2015 to 2025, this study has several limitations that future research should address:

1. Database Coverage: the reliance on Web of Science's SCI and SSCI indices ensures authoritative data but excludes influential conference papers, book chapters, non-English publications and relevant works from databases like Scopus, Google Scholar, and CNKI, potentially causing coverage bias.
2. Depth of Interpretation: bibliometric methods emphasize quantitative and structural features,

revealing hotspots and networks but insufficiently addressing the semantic content, theoretical logic, and empirical methodologies of the literature, limiting insight into theory evolution and model innovation.

3. Subjectivity in Visualization Parameters: VOSviewer's clustering results depend on researcher-defined thresholds (e.g., citation or co-occurrence minimums), introducing subjectivity and affecting network presentations. Findings should therefore be interpreted cautiously within the domain context.

4. Citation Lag Effect: although the period covers up to 2025, recent high-quality studies published after 2023 may have limited citations due to natural lag effects, leading to underestimation in impact rankings. Additionally, 2025 data are partly predictive and require ongoing validation.

In future research, integrating multiple databases, applying text mining and content analysis, and incorporating dynamic evolution analyses could broaden and deepen understanding, thereby better supporting sustainable consumption theory and policy development.

CONCLUSIONS

Based on a bibliometric analysis of green purchae intention and behavior literature indexed in the Web of Science core collection (SCI and SSCI) from 2015 to 2025, this study employed VOSviewer visualization tools systematically examine annual publication trends, core authors, key journals, keyword co-occurrences, co-citation networks and country-institution collaboration patterns. The aim was to clarify the developmental trajectory and evolutionary trends within this research domain. The main findings are summarized as follows:

1. Publication Trends: Research on green consumption has shown continuous growth, especially after 2020. This surge is driven by intensified environmental policies and the global Sustainable Development Goals (SDGs), positioning green consumption as a prominent interdisciplinary hotspot intersecting environmental management, consumer behavior and sustainable markets.

2. National Collaboration: China leads in publication volume but lags somewhat in citation impact and international collaboration depth. In contrast, India, the United States and Malaysia, despite fewer publications, exhibit strong citation performance, highlighting their research quality and theoretical contributions.

3. Author Networks: The field has formed core academic teams centered around prolific authors primarily based in China, India and Malaysia. However, collaboration networks remain fragmented with regional clustering, limiting the establishment of a truly global research framework. Strengthening transnational and cross-institutional collaborations is urgently needed.

4. Journal Influence: Leading journals such as Sustainability, Journal of Cleaner Production and Frontiers in Psychology reflect the interdisciplinary nature of green consumption research, spanning sustainable development, environmental management and psychological behavior perspectives.

5. Keyword Analysis: High-frequency keywords like "model" "impact" "antecedents" and "determinants" indicate a sustained focus on theory-driven behavioral prediction models and psychological variable exploration.

6. Journal Co-citation Clusters: Green purchase and behavior research is concentrated across four major clusters corresponding to consumer behavior and market psychology, sustainable development and environmental management, social ethics and marketing strategy and tourism and green services. These represent micro-psychological, meso-business strategy and macro-environmental policy perspectives respectively, illustrating the field's multidimensional and problem-oriented character.

7. Theoretical Knowledge Clusters: Citation analysis identified four core knowledge groups: green brand value perception (green cluster), values and ethics driven behavior (yellow cluster), socio-cultural perspectives (red cluster) and environmental behaviors and normative pathways (blue cluster). This highlights the multidimensional theoretical integration within green purchase and behavior research.

Despite significant progress, several research gaps and promising directions remain:

1. Cross-Cultural Behavioral Mechanisms: Existing studies predominantly focus on East and South Asian contexts. Comparative research across diverse cultures is necessary to enhance theory universality and adaptability.

2. Integration and Innovation of Theoretical Models: Widely used frameworks such as TPB, NAM, and TRA still suffer from limited variable scope and predictive power. Future research should incorporate theories like Social Cognitive Theory, Ethical Grounding Theory, and the Value-Belief-Norm (VBN) model for richer integration.

3. Expansion into Green Services and Digital Contexts: As green consumption shifts toward service economies and digital platforms, modeling consumer intentions in emerging areas—green tourism, green e-commerce, green finance, etc.—will be crucial.

4. Policy Alignment and Practical Relevance: Green consumption research must better align with

policymaking and corporate green transformation to increase practical impact, providing theoretical and empirical foundations to support global green and low-carbon development.

In summary, this study not only visualizes the knowledge structure, trends and collaborative networks of green purchase intention and bahavior research but also offers theoretical insights and methodological guidance for future investigations from a multidimensional perspective.

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CONFLICT OF INTEREST

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AUTHORSHIP CONTRIBUTION

Data curation: Nuohan Li.
Methodology: Hafizah Omar Zaki.
Resources: Hafizah Omar Zaki, Che Aniza Binti Che Wel.
Software: Che Aniza Binti Che Wel.
Supervision: Nadzirah Binti Rosli.
Validation: Nuohan Li.
Drafting - original draft: Nuohan Li.
Writing - proofreading and editing: Nadzirah Binti Rosli.