"Green Consumption Research at the Intersection of Marketing and Personality Traits: A Bibliometric Review and Knowledge Mapping"

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Abstract: Studies around green consumption have grown at a pace, although the information base is widely scattered on marketing, sustainability, and psychology, and personality factors are increasingly referred to in explaining the heterogeneity in consumer reactions on green appeals. In order to centralize this rising area of intersection, this paper carries out a bibliometric review and knowledge mapping of journal articles about green consumption/green marketing and personality traits in the Scopus index. With the help of performance analysis and science-mapping, we report a sharp increase in the rate of publications after 2020, which implies the passage into a high-growth period of the field. Patterns of impact indicate that citation influence is limited to a few countries and outlets and average citations in recent years are indicative of a citation-window effect. Science mapping reveals that the intellectual underpinnings of the domain are very deep-rooted with the Theory of Planned Behavior as the most densely co-cited core. In conceptual mapping, a predominant group of marketing, environmental concern, and (purchase) intention/behavior is observed, and a lesser central group of personality-related is it as well, but not completely explanatory factor traits are usually considered as secondary theoretical processes. According to the trend analyses, an increased focus on trust/credibility, digital setting (e.g. social media), and evaluative constructs related to green claims is evident, which once again supports the value of personality-informed segmentation and message development. This review sheds light on how personality traits can take a more central role to ensure the continued resolution of long-standing issues in green marketing, including consumer heterogeneity and the intention-behavior gap, and creates an agenda of future research to develop theory and practice in green marketing.

Keywords: Bibliometric analysis; Knowledge mapping; Green consumption; Green marketing; Personality traits; Theory of Planned Behavior; Keyword co-occurrence; Co-citation analysis; bibliographic coupling; Sustainability marketing.

Introduction

Green consumption has emerged as a primary field of study in sustainability and marketing research due to the fact that the changing consumer preference has been broadly identified as the key to speeding up the process of low-carbon shifts and decreasing the number of ecologically harmful effects of

individual purchasing decisions (Li et al., 2025; Martins, 2022; Singh et al., 2011). Green marketing has become a major managerial instrument used to affect pro-environmental decisions, which influence the attitudes of people towards environmentally friendly products, as well as, to minimize the attitude-behavior discrepancies, which frequently arise in sustainable consumption, as companies transition to a more sustainable-focused approach in branding, product design and communication (Bradbury & Cronin, 2025; Ewe & Tjiptono, 2023; Kalamas et al., 2014; Onel, 2017, 2017; Trivedi et al., 2015; Wang et al., 2024) Nonetheless, despite such consumer environmental concern, it is difficult to transfer intentions to the same purchasing and post purchase patterns, particularly when price mark-ups, doubts about assertions as well as information overload are factors of restraint (Buil & Mata, 2024; Szaban, 2023; Yarış & Yazicioğlu, 2022; Zwicker et al., 2023).

In this context, person traits would offer a theoretically significant perspective to the explanation of differences on how consumers vary in their responses to the same green appeals (Bohlen et al., 1993; Chamberlin & Boks, 2018; Pardo-Jaramillo et al., 2020, 2020; Tawde et al., 2023). Personality describes relatively consistent individual difference that drives information processing, affective reactions, and consistency of behavior that is essential in market segmentation and targeting in green marketing campaigns (Chamorro-Mera et al., 2009, 2009; Duong, 2022; Shatnawi & Thoo, 2019). Heterogeneity in green trust, sensitivity to greenwashing cues, and preference to particular types of appeals (e.g., moral, efficacy, identity, or social-norm appeals) can be thus explained by the trait frameworks (e.g., Big Five, HEXACO) as the avenue towards making sustainability communications more effective than one-size-fits-all approaches (Agarwal & Dubey, 2024; Duong, 2022).

1.1. Conceptual positioning and problem statement

Repetition of the relevance of personality to consumer heterogeneity, Notwithstanding the congruency of personality in green marketing, green consumption, and personality traits, theoretical studies about the intersection of these two fields have developed in several streams of discipline, such as marketing, environmental psychology, sustainability science, and decision sciences(Huang & Rust, 2011; Manojkrishnan & G, 2025; Mansoor et al., 2022; Sun & Kim, 2023). The result of this cross-disciplinary spread of diffusion has been an abundant though scattered evidence base in which ideas and measures tend to evolve in parallel, as opposed to cumulative. In the fundamental behavioral reasoning here, attitude remains firmly intention-based; as shown by our mapping findings, the most dense intellectual core in this domain has been the Theory of Planned Behavior (TPB) (Taufique & Vaithianathan, 2018; Waris & Hameed, 2020). Meanwhile, conceptual maps indicate that the thematic core of the study is largely provided by the *"Marketing-Environmental Concern-Intention/Behavior"* and the personality group seems to be a relatively unrelated but somewhat interconnected cluster which implies that traits are not often viewed as stand-alone mechanisms that form dominant exchanges in the marketing-behavior domain (Szaban, 2023; Uikey, Baber, et al., 2025).

Such an imbalance has both practical and theoretical implications. Managerially, the development of trust and credibility as the current trend in topics is in line with wider concerns that perceived exaggeration or greenwashing of claims can undermine green claims and increase skepticism and decrease the possibility of purchases(Guo et al., 2017; Khan et al., 2023). Theoretically, such partiality in personality leads to the inability of the field to address enduring differences between pro-environmental attitudes and actual behavior, and, more generally, the manner in which stable traits interact with situational contexts, message framing and marketplace information *(e.g. eco-labels, brand credibility and the impact of social-media)*(Amireh, 2021; Collart et al., 2010; Duong, 2022; Shatnawi & Thoo, 2019).

1.2. Difference in the research and impetus of a bibliometric method

Though the previous reviews have contributed to the body of knowledge on green consumption and sustainable marketing, the use of narrative synthesis is becoming more and more challenging with the growth in the number of publications and the diversification of research clusters(Agarwal & Dubey, 2024; Wang et al., 2021). We find that scientific annual output is increasing at an accelerated pace after

2020, and growth cumulatively is following an S-shaped pattern that is typical of a booming field of study and increased consolidation. Such trend patterns normally mean that the field has become large enough to allow bibliometric techniques to be especially useful: with publication metadata and citation connections, it becomes possible to map with some systematicity the influential works, structure of collaboration, and development of the theme (Aria & Cuccurullo, 2017; Ellili, 2022)

Bibliometrics further makes available means to examine what the field is being constructed out of *(co-citation structure),* who is the producer of knowledge and how they interact *(co-authorship networks)*, and what the field is discussing at the moment *(keyword co-occurrence, trend topics and bibliographic coupling)*(Gál et al., 2025; Sharma et al., 2025; Vu Thi et al., 2025; Wang et al., 2021). The low profile of TPB-related foundations, the rise of trust and digital contexts themes, and the biased non-overlapping formation of the personality-related themes, in our mapping outputs, are indicative of a timely necessity of an integrative knowledge map, which elucidates how the streams are intertwined--and blind spots not yet always overcome.

1.3. Objectives and Research Questions

Based on this, the proposed research paper has the objective of synthesising and organising the literature on green consumption at the nexus of marketing and personality traits by performing a bibliometric review and knowledge mapping analysis of journal articles indexed in Scopus. These goals are to: (i) record the trajectory of publication and influence of fields; (ii) determine the sources of influence, authors, affiliation, and nationalities; (iii) graphic collaboration/intellectual basis; and (iv) disclose conceptual cluster and research fronts that bridge green marketing, green consumption and personality traits.

The study is based on the following research questions guided by the following objectives:

- *RQ1: What are the patterns of development of the field and the overall state of publication?*
- *RQ2: Which individuals and sources have the most impact on this knowledge base (who, what, affiliations and countries)?*
- *RQ3: How the social and intellectual structure of the field is reflected in the co-authorship and co-citation networks?*
- *RQ4: Which conceptual themes and clusters are related to green marketing, green consumption, and personality traits?*
- *RQ5 What are the emerging topics and research frontiers, and what are the future research possibilities?*

1.4. Review organization and contributions

There are three contributions to this review. In theory, it elucidates how personality-trait views can be better situated at the heart of prevailing intention-based models that are now driving green consumption studies (Dolšak et al., 2020; Lorenzo-Romero et al., 2021; Osburg, 2016; She et al., 2019; Waris & Hameed, 2020) and where trait processes can be invoked to explain how the heterogeneity in trust formation, skepticism and consistency of intention-behavior relationships (Busic-Sontic et al., 2017; Giancola et al., 2023; Malik & Singh, 2022; Salem & Alanadoly, 2021; Uikey, Marak, et al., 2025). The methodologically, it shows how these complementary bibliometric methods can be used concurrently to identify the foundational knowledge, the fronts of active research, and the changing themes within a rapidly growing field: performance analysis, co-word mapping, bibliographic coupling and co-citation analysis (Agarwal & Dubey, 2024; Laheri et al., 2024; Srivastava et al., 2024; Wang et al., 2021). In practice, the research can inform the segmentation, targeting and message design strategies of green marketing communications by revealing influential thematic groups and emerging topics (of particular significance, trust/credibility and digital contexts), as well as the approaches to alleviate the risks of skepticism and greenwashing (Boncinelli et al., 2023; Chen et al., 2025; Di Pillo et al., 2025; Dilotsotlhe & Duh, 2021; Margariti et al., 2024).

The rest of the paper is organized in the following way. Section 2 gives a little conceptual background on green consumption/green marketing constructs and personality-trait perspectives. Part 3 describes the bibliometric methodology. Section 4 is on performance and science-mapping. Implications, research gaps and future directions are discussed in section 5 and the conclusion with practical implications are presented at the end.

2. *Conceptual Background*

2.1 Green marketing domain and green consumption

Green consumption is generally defined as the favoring of products and services as well as lifestyles by consumers that minimize environmental impact throughout the consumption cycle (purchase, use, and disposal). In marketing, this field has grown beyond green products assertions to more tactical ones related to how companies are design, report, and provide sustainability value, and also has long-running criticisms of shallow or deceptive environmental positioning. (Agarwal & Dubey, 2024; Bathmanathan & Rajadurai, 2019; Chung, 2020; Prieto-Sandoval et al., 2022; Stall-Meadows & Davey, 2013; Taufique & Islam, 2020).

Some of these fundamental constructs reappear throughout the literature since each of them can describe how consumers can translate sustainability issues into behavior in the marketplace. The first is that the purchase intention is still a dominant dependent variable, and it is theorized intuitively by using intention-based models (e.g. planned behavior logic) in which attitudes, norms, and perceived control influence intentions and, ultimately, behavior (Armutcu & Tan, 2023; Kumar, 2018). Second, credibility dimension of green marketing is usually operationalised through the concept of green trust-belief in the sustainability of a brand name and its environmental performance and claims based on the information asymmetry that prevails around the sustainability attributes (Cai et al., 2025; Hermanto et al., 2024; Trivedi et al., 2015). Third, the threats of credibility are often analyzed with references to greenwashing (deceptive environmental communication) and its institutional/market-based factors (Di Pillo et al., 2025) and more general conceptual explanations of how greenwash works and why it has been maintained (Amponsah & Owusuaa-Foster, 2025, 2025)

Similarly, resistance to persuasion is represented by consumers with skepticism, particularly, environmental claims in marketing communications (Balcarová et al., 2025; Hilale & Chakor, 2024, 2024; Wang et al., 2020) and the skepticism dispositions that characterize general advertisement skepticism that influences claims processing (Alhomaid, 2025, 2025; Kolodenko et al., 2024; Saxena et al., 2023). Lastly, eco-labels are market indicators aimed at minimizing information ambiguity; studies often represent how and if customers visit and utilize the eco-labels in their decision making (Chao, 2022)

2.2. *Perspective of personality traits*

Individual-differences Personality traits offer a consistent individual view that can be used to explain the logic behind consumers reacting differently to green appeals and why consumers display consistent pro-environmental behaviour across situations. In modern employment, the usual trait taxonomies are Big Five, and more recently, HEXACO that adds Honesty-Humility as a separate dimension that applies to both ethical and prosocial dispositions (Duong, 2022; Uikey, Marak, et al., 2025).

One logic that can be very handy in this case is a trait-attitude-behavior logic: traits modify information processing, value priorities and affective reactions, which in turn cause attitudes and intentions that marketing usually quantifies (e.g., purchase intention frameworks)(Ansari et al., 2022; Finisterra do Paço et al., 2019; Ojiaku et al., 2018; Wu & Takács-György, 2022). Personality has been shown to be systematically related to environmental concern and engagement, most reliably with Openness and Agreeableness (Lu et al., 2015; Ma et al., 2024), and with more generalized Green Personality profiles predicting environmentally friendly behavior in a wide variety of areas (Susanty et al., 2021, 2021). This

trend is further supported by the meta-analytic evidence where the significant associations with pro-environmental attitudes and behaviors were observed based on Big Five/HEXACO traits (especially Openness and Honesty-Humility) (Soutter, Bates, and Mottus, 2020).

Personality is important in green marketing perspective since it can temper the action of the message frame and interventions (e.g., identity cues, emotion, habits, social influence). Sustainable behavior shift frameworks emphasize these psychological levers and implicitly encourage segmentation approaches to design messages to the extent that they match the sustainable consumer differences (Dolšak et al., 2020, 2020; Gordon et al., 2011).

2.3 Why bibliometric review of this intersection.

Though the focus of green consumption/marketing as well as character of personality research is huge in its own right, the intersection is spread across marketing, psychology, and sustainability outlets. Bibliometric review and knowledge mapping are thus particularly useable in (i) finding the intellectual backbone of the field (co-citation), (ii) exposing the structure of collaboration, (co-authorship and country/institution networks), and (iii) tracking how the themes evolve over time (keyword co-occurrence, thematic mapping). (Zupic & Cater, 2015; Donthu et al., 2021).

Scientifically, science-map tools and methods (e.g., bibliometrix to perform reproducible bibliometric analysis, and VOSviewer to visualize a network) represent well-established methods of clustering, overlay visualization, and robustness checks, which is why they are suitable in the context of a large Scopus corpus at the marketing-personality interface (Aria and Cuccurullo, 2017; van Eck and Waltman, 2010).

3. Methodology

3.1. Review design and protocol

This paper used a bibliometric review with science mapping to comprehensively synthesise and visualise the intellectual, social and conceptual framework of a research on green consumption, green marketing and personality traits interaction. Bibliometric reviews should be used in research areas that have grown at a fast rate and become scattered across fields since they allow transcending, replicable evaluation of publication output and knowledge systems with the help of publication metadata and citation networks (Donthu et al., 2021; Zupic and Cater, 2015). Search field The reviewed model was based on well-known bibliometric reporting ideas and principles, such as reporting database and search strategy, screening steps, and mapping procedures, and provided both performance analysis (productivity and impact) and science mapping (network-based structures) (Donthu et al., 2021; Zupic and Cater, 2015).

3.2 Data source and rationale

Scopus was searched to retrieve data because it has a wide range of peer-reviewed journals in the fields of business, management, social sciences, environmental studies, and psychology with a high level of metadata depth (author affiliations, indexed keywords, references, and citation data) required to attain strong bibliometric mapping. Bibliometric research has also embraced the use of scopus owing to the ease of reliable exports in line with the science mapping software and quality assurance helped through indexed sources selection (Donthu et al., 2021).

3.3. Search strategy and query formulation:

The search strategy and query formulation were performed in a systematic way based on the updated database information.

Search in the Scopus database was performed in the TITLE-ABS-KEY fields to guarantee the relevancy and, at the same time, find the variants of concepts in the titles and abstracts. The search query core sustainability-consumption and marketing terms was used with personality-traits terminology and the

more general behavioural wording to reduce the exclusion of inter-disciplinary literature. The last query restricted searches by similar scholarly outputs and maintained a good enough metadata level:

Search string (Scopus)used:

TITLE-ABS-
KEY (green AND consumption OR green AND marketing OR personality AND traits OR green AND behaviour) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ENVI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "AGRI") OR LIMIT-TO (SUBJAREA , "ARTS") OR LIMIT-TO (SUBJAREA , "MULT") OR LIMIT-TO (SUBJAREA , "ENER") OR LIMIT-TO (SUBJAREA , "BIOC") OR LIMIT-TO (SUBJAREA , "PSYC") OR LIMIT-TO (SUBJAREA , "DECI"))

The period was established to be the entire period of publications indexed by Scopus that were returned on this query (cumulative in time, as early as the beginning of 2000s and until the year of exported publications). The output dataset was saved in Scopus CSV format having full bibliographic data, author keywords, indexed keywords, affiliations, references cited and citation count.

3.4. Inclusion and exclusion criteria

In order to achieve conceptual fit to the objective of the research, the following criteria were used;

Inclusion criteria	Exclusion criteria
Articles in peer-reviewed English journals (doctype ar).	Other forms of non-article documents (e.g., editorials, notes, and conference papers, book chapters).
Research with consumer/behavioral orientation covers green consumption and/or green marketing encompassing constructs such as green purchase intention, environmental concern, attitudes, trust, eco-labels, or greenwashing.	Sustainability research without a consumer/marketing or behavioral connection (e.g., the theorically-pure technical environmental engineering research).
Research that directly utilizes personality traits (e.g., Big Five, HEXACO), as well as research that has personality-related characteristics as predictive of consumer heterogeneity and segmentation.	Redundant records, half-finished records that were not reliable to clean (e.g. lack of vital bibliographic fields), and records that did not fit into the specified scope following screening

3.5. Data screening and finalisation

There were three phases of screening:

1. Preliminary search: Entries presented by the Scopus search query were imported.
2. Cleaning and deduplication: Dups were deleted and incoherent metadata entries were adjusted where (occasionally) possible (e.g. missing or malformed author names).
3. Screen of eligibility: The titles and abstracts were screened to ensure that they were relevant to the topic of the green consumption/marketing-personality intersection. Documents making reference to green in non-technical terms and those that refer to personality beyond the consumer/behavioral frame were filtered out.

The remnant chosen dataset was taken into the analysis of performance and the mapping of the network.

3.6. Bibliometric Indicators and methods

Analyses were classified according to performance analysis and science mapping, which are established patterns in bibliometric systems (Donthu et al., 2021; Zupic and Cater, 2015).

3.6.1 Performance analysis

The development and impact of the domain were measured and assessed by performance analysis as:

a. Trends in scientific production and growth annually.
b. Citation indicators (Total citations; Annual citations per year) which are calculated by using Scopus "Cited by" at the date of exporting the citation.
c. The most fruitful and powerful organizations (best authors, affiliations, countries, and sources).
d. The vast majority of the documents, which are referenced in the world to find foundational and the most effective contributions.

3.6.2. Science mapping

In order to bring forth social, intellectual, and conceptual structures through network-based approach to science mapping was done:

a. To test the structure of collaboration and the network concentration Co-authorship analysis (authors; countries)
b. The keywords co-occurrence (co-word) examination to determine conceptual clusters between green marketing, green consumption and personality characteristics (Callon et al., 1991).
c. Co-citation (references/sources) analysis to define the intellectual grounding of the field with the emphasis on the canonical theory bases including TPB (Small, 1973).
d. Bibliographic coupling which is used to include up to date research fronts by connecting documents which share reference bases (Kessler, 1963).
e. Thematic mapping and trend topics (time-informed analyses) to assess thematic centrality/density as well as detect emerging topics with time.

3.7. Tools and parameter settings

Two tool chaining formed complements were employed. *Firstly,* bibliometrix / Biblioshiny (R) to examine performance indicators, trend topics, thematic mapping, and descriptive bibliometric summaries (Aria and Cuccurullo, 2017). *Second,* VOSviewer was employed to draw network and visualise co-authorship, co-occurrence, co-citation density, and radiographic coupling maps, since it has robust clustering and normalisation approaches of bibliometric networks (van Eck and Waltman,2010).

Thresholds to signal including a network were used (e.g. minimum number of times a keyword appeared in a document; minimum number of documents a writer/country written in) so that interpretability would be preserved but sparse noise would not appear. Tool defaults were normalised when needed (e.g. the association strength in VOSviewer), the built-in modularity-based algorithms created clusters. Selection of threshold values was done in an iterative style to achieve a balance between readability and coverage and subsequently that triggering was done by robustness checks.

3.8. Sturdiness and sensitivity analysis.

Since the corpus is interdisciplinary, indexed-keyword artefacts are present, to ensure that some robustness checks have been conducted (Donthu et al., 2021). Firstly, Threshold sensitivity- Network maps have been regenerated with different thresholds (increased / reduced minimum occurrences) to verify the stability of clusters. Second, Comparison of keyword source-Comparisons between measurements done on author and indexed keywords were done to determine whether conceptual structures held. Third, Artefact exclusion test- Generic indexed terms (e.g., human/humans/article)

had been excluded in a second run in order to be sure that thematic-map and co-word structures were not motivated by non-conceptual terms. Fourth, Dominance test- In one instance whereby an outlet provided a disproportionate amount of volume, sensitivity tests were carried out by re-testing conceptual maps with and without the most prolific source to ensure that themes were not the result of an outlet concentration artefact.

4. Data Analysis

This section reports the bibliometric and science-mapping studies that were performed to quantify, graphically and intuitively, and represent the scholarly environment of green consumption studies at the nexus of green marketing and personality traits. Due to the magnitude, interdisciplinary character and fast expansion of the Scopus-indexed corpus, descriptive reporting can never be enough to disclose the knowledge structure and thematic organization behind the field. In this regard, the analyses presented below will be a mix of performance (e.g., increase in publications, impact of citation, leading sources and contributors) and network-based mapping (e.g., co-authorship, co-citation, bibliographic coupling, and keyword co-occurrence) to identify influence patterns, collaboration and conceptual clustering. This section is critical in addition to documenting who publishes what and where, to defining the intellectual base, current areas of research and future directions of the field, thus providing an evidence-based foundation of the integrative discussion and future research agenda to be developed in later sections.

4.1. Performance analysis

In bibliometric reviews, performance analysis can be described as the method to outline the productivity and impact profile of a research area by quantifying trends in terms of annual growth of publications, citation performance, the most important journals, authors, institutions and countries. Unlike network mapping, which describes how knowledge is organized and interrelated, performance analysis presents a baseline evidence necessary to assess the maturity, momentum and positioning of the literature by disciplines and to distinguish the significant contributors determining the development of the literature. In that regard, the indicators of performance that were presented in this paper form the empirical basis of future science-mapping studies and assist in interpreting thematic changes and frontiers in a fast-growing field (Donthu et al., 2021; Zupic and Cater, 2015).

4.1.1. Trends of annual publications and general growth trends.

The Figure-1, shows that the field of green consumption-related scholarship is experiencing a shift towards becoming a fast-growing research field. The output is low and comparatively stable during the initial years (around 2000-2008), but gradually increases in the 2010s when the volumes of publications grow, and reach a moderate level, which indicates the stabilization around the fundamental constructs and frequently relied behavioral models. Since 2019, the curve becomes steeper, indicating a faster academic interest and diversification of the theme, which can be explained by the increased institutional interest in sustainability, the increased attention of the market to environmental assertions, and the growth of green marketing studies into other psychological and behavioral outlooks.

The highest point in 2025 is the most potent increase in the dataset, which indicates that the area is in the high-growth stage with the expanding scope and disintegration. The drastic drop that is noted in 2026 should be regarded as potentially a partial-year and indexing effect since the Scopus export was taken in January 2026, and therefore, many 2026 publications would not have been indexed yet. In general, the trend offers good reasons to believe in bibliometric synthesis: the fast development and the growing thematic focus make the knowledge mapping the necessity to organize the literature, define the most influential actors and intellectual resources, and reveal the emerging clusters, in particular, the connections between green marketing and stable personal factors like personality traits.
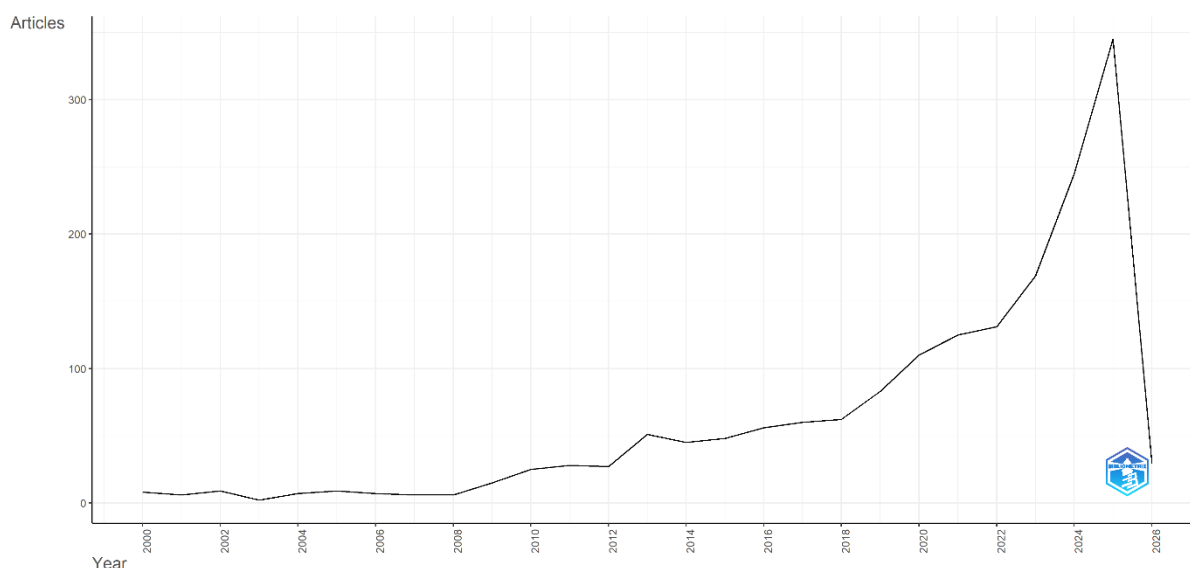
Figure-1: Annual scientific production trend

Source: Researcher's compilation using R studios' Bibliometrix

The cumulative growth curve *(Figure-2),* shows the typical S-shaped (logistic) pattern, which means that the literature has finally passed the stage of the slow accumulation and entered the stage of a rapid growth. The cumulative publications are growing gradually in the first years (2000s), and then sharply in the second half of the 2010s and the first half of 2020s, which is indicative of not only growing interest in research but also a wider range of disciplinary involvement. The steepest part of the curve (the take-off zone) is in the early-mid 2020s when the cumulative output is increasing the most rapidly. The horizontal line at half full ([?]1,000 cumulative publications) is intersected about 2023-2024 indicating that a significant portion of the field cumulative knowledge base has been generated very recently-a measure of high momentum and diversification of the themes.

The fitted curve is near a plateau near the 99 percent line (2000 cumulative publications), which suggests that, with the assumptions of the model, the field can eventually enter maturity as growth levels off in later years. This saturation interpretation must however be approached with care since logistic fits are susceptible to end-point effects as well as incomplete recent-year indexing (particularly when the data is exported early in a calendar year). The number in the real world can be used to make a strong conclusion: the field is already in the late growth phase, and the cumulative growth rate over the last years is increasing at an alarming rate. This supports the recommendation of a bibliometric review and knowledge mapping since rapid growth is more likely to enhance fragmentation and systematic clustering and structural mapping is required to consolidate the field and determine new areas of research.
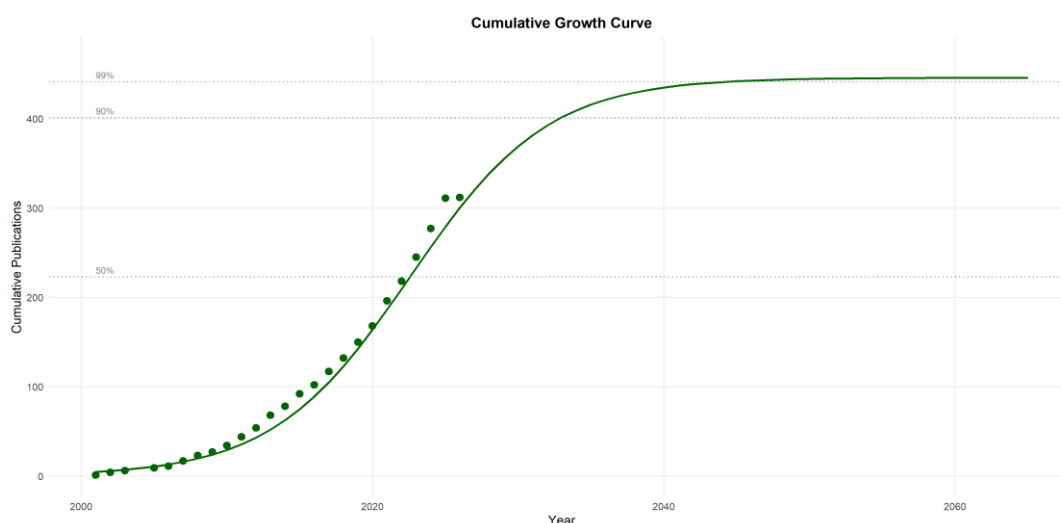
Figure-2: Cumulative publications trend

Source: Researcher's compilation using R studios' Bibliometrix

4.1.2. *Average citations trend analysis*

The curve of average citations per year *(Figure-3),* shows that the impact of citation has not been uniform throughout the years as the field has matured and there have been popular citation-window effects. Such a high early spike (early 2000s) is most likely due to high publication base being in a small number, where having a small number of very highly cited foundational articles may inflate the average. A second phase of relatively high averages is found in the mid-to-late 2000s, which is in line with the solidification of the powerful conceptual and empirical work that was still receiving references as the field grew in popularity. Since around the beginning of the 2010s until the end of the 2010s, the series stabilizes at a middle level, indicating a better-established research community because citations are not concentrated in several seminal studies but spread across a larger mass of studies.
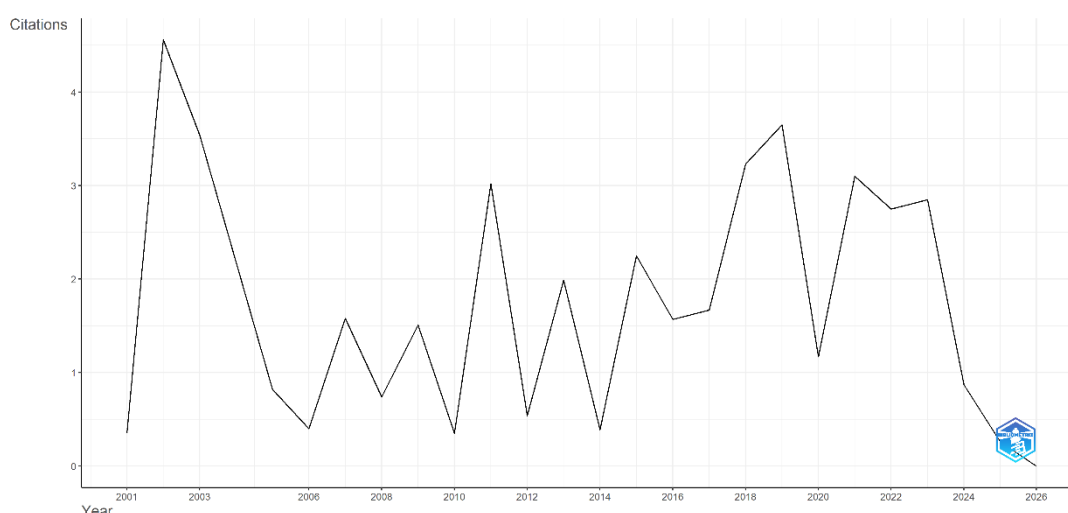

Figure-3: Average citations trend

Source: Researcher's compilation using R studios' Bibliometrix

The fall in the average citations, which started to drop slowly (around 2020), should be treated with some care and does not mean that scholarly relevance has decreased. Instead, it is in line with the accelerated growth of the number of publications per year as well as the fact that newer publications have not had as much time to get citations (recency/citation lag). In rapidly developing literatures, the denominator (publications) rises rapidly, whereas citations rise progressively more slowly, the effect of which artificially reduces the average of recent groups per year. Generally, the number validates the finding that the discipline has an established substantive and long-lasting base of citations, yet recent-year averages are growth and timing-biased. To make assessment and interpretation, these findings allow supporting of raw averages with normalized measures (e.g., citations per year by cohort, field-weighted measures, or full-year analysis) when determining the impact in fast growing fields.

4.1.3. Country scientific production analysis

The map of scientific production in the country *(Figure-5),* shows a high level of geographic concentration of research activity in Asia and the second layer of activity in North America, Europe and Oceania, which implies that the scholarship on green consumption/green marketing (including personality-related approach) is not only globally dispersed but also regionally dominant. According to the country counts provided by Scopus (country of affiliation, full counting), China leads the discipline (Freq = 660; 20.8%), then India (404; 12.7%), and the United States (398; 12.6%). These three countries contribute to almost half of all country-attributed contributions in the dataset (46.1). The second tier with notable growths consists of Malaysia (207; ~6.5%), the UK (164; ~5.2%), and Australia (128; ~4.0%), where other visible contributions are Indonesia (119), South Korea (98), Italy (94), and Pakistan (91): the top 10 countries are thus contributing nearly three-quarters (~74.6) of country-attributed outputs. Interpretatively, this tendency implies that the empirical foundation of the field as well as the theoretical advancement is being influenced largely by both the fast-growing Asian research ecosystems as well as the traditional research centers in the US/UK/Australia and some European nations (e.g., Italy, Germany, Spain, Portugal). The fact that emerging and middle-income settings (e.g., Malaysia, Indonesia, Pakistan, Saudi Arabia) are becoming prominent also points to the increased topicality of the green consumption and marketing concern in the market where consumer growth and sustainability policy changes are rapidly taking place. Meanwhile, the percentage of Africa and Latin American regions is relatively underrepresented, which means that contextual diversity and cross-cultural generalizability could be compromised. In general, the map confirms the conclusion that the literature is international and unevenly distributed, which supports the importance of collaboration and comparative designs to balance regional influence and enhance the validity of external insights, particularly those related to personality-linked green consumption behavior, in which cultural and institutional context can significantly influence the expression of traits and consumer confidence, and reactions to green marketing claims.
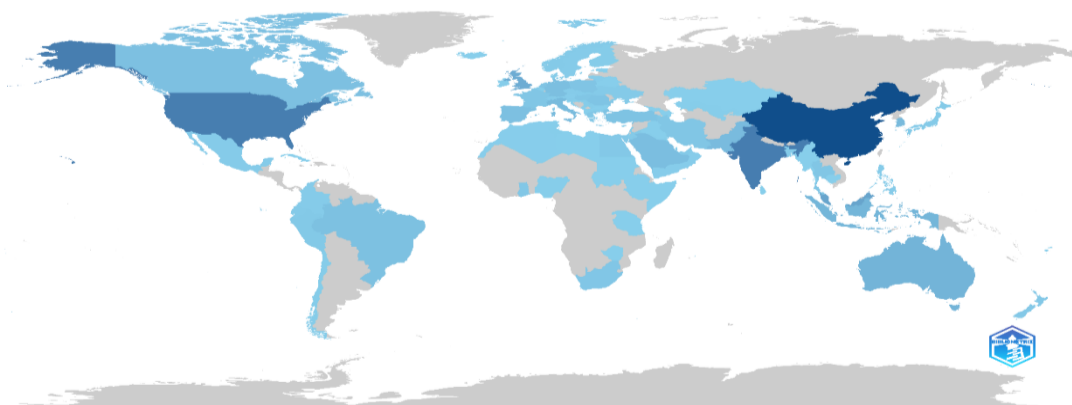

Figure-5: Country scientific production
Source: Researcher's compilation using R studios' Bibliometrix

4.1.4. *Most Relevant Authors*

Table-1, called the Most Relevant Authors indicates, the most active authors included in the Scopus corpus by the number of documents associated with each author name. Li Y (14 publications), Nguyen N (12) and Mohd Suki N (10) hold the first, second and third positions respectively, with Wang X coming in the fourth place with 9 publications. The second group of authors consists of Finisterra do Paco A, Li J, Li X, Wang Y, and Zhang X with 8 publications each, and Kumar R with 7 publications. In general, it is distributed in a relatively dispersed way, with the few authors being repeated contributors, although the absolute numbers on the top are quite small in proportion to the size of the corpus overall (n = 1,742), meaning that the field is densely populated with many players instead of some mega-authors.

In interpretation, the trend is in line with a research area that has grown quickly and globally, forming various active scholarly communities in place of one prevailing school. Meanwhile, the prevalence of high-frequency surnames containing initials (e.g., Li, Wang, Zhang, Nguyen) also causes a typical bibliometric issue, author-name confusion: when different people in similar name patterns occur, counts can be inflated or dispersed. This highlights the significance of the data cleaning and disambiguation process in the study (e.g., cross-checking affiliations, ORCID where applicable and consistent name standardization) before making solid conclusions concerning individual-level leadership. Finally, the productivity pattern of authors shows a distributed and more collaborative knowledge base with influence being probably shaped not just by the number of publications but also by citation impact and network position, which underlines the importance of complementing this figure with co-authorship and co-citation analyses in further sections.

Table-1 Most Relevant Authors

Author	Articles	Articles Fractionalized
LI Y	14	4.33
NGUYEN N	12	3.68
MOHD SUKI N	10	5.33
WANG X	9	2.45
FINISTERRA DO PAÇO A	8	3.33
LI J	8	2.33
LI X	8	1.68
WANG Y	8	2.03
ZHANG X	8	2.12
KUMAR R	7	2.25
WANG J	7	1.49
GUO R	6	1.54
HUANG Y	6	1.78
LI M	6	1.28
LIU H	6	1.04
LIU Y	6	1.67
SUN Y	6	1.83

WANG L	6	1.93
WANG S	6	1.75
YANG X	6	2.25
ZHANG L	6	2.03
ZHANG S	6	1.70
ZHANG Y	6	1.90
ALI F	5	1.18
AMOAKO GK	5	1.32

Source: Researcher's compilation using R studios' Bibliometrix

4.1.5.   Most Relevant Affiliations

The plot of the Most Relevant Affiliations determines the institutions that published the most in the Scopus corpus where research capacity on green consumption and green marketing (with personality-linked views) is predominantly located. The Hong Kong Polytechnic University (18 articles) and the University of Economics Ho Chi Minh City (17) are the top affiliates. The following place is occupied by two institutions with 16 articles each China University of Mining and Technology and Universiti Utara Malaysia, and the second tier comprises Hungarian University of Agriculture and Life Sciences (14) and Thuongmai University (14). Other active institutions are Bucharest University of Economic Studies (13), International University - Vietnam National University HCM City (13), Amity University (12) and Universidade da Beira Interior (12). In general, the highest affiliations add 12-18 papers respectively which means that institutional centres can be identified, but there is no excessive dominance.
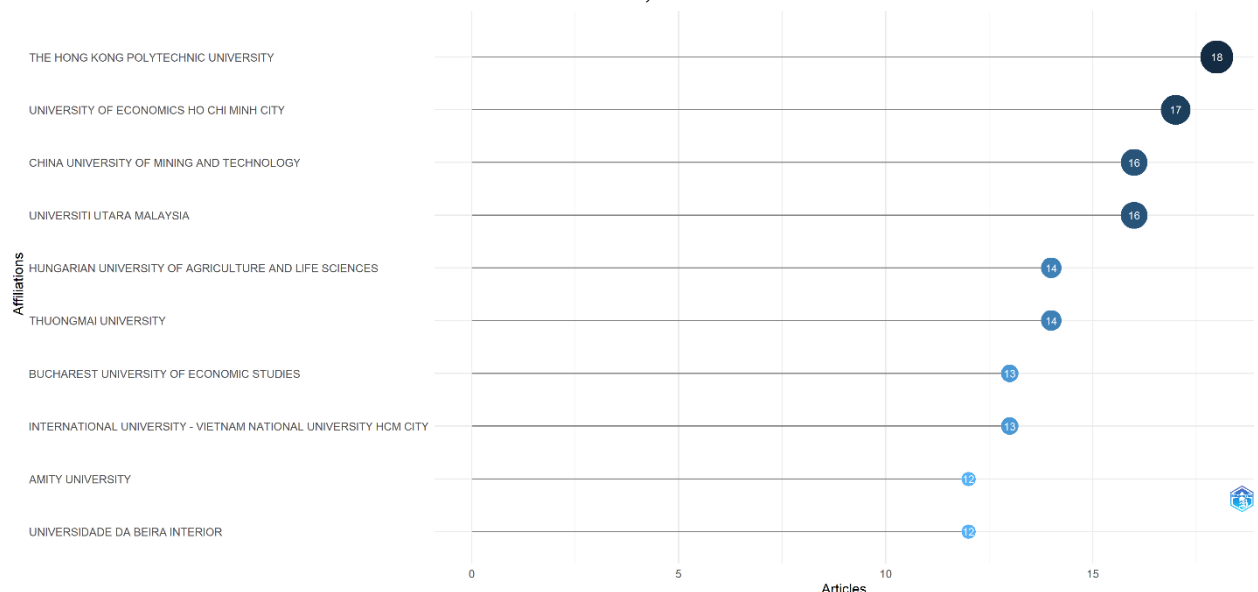

Figure-6: Most Relevant Affiliations

Source: Researcher's compilation using R studios' Bibliometrix

The distribution, interpreted, indicates that the field is well rooted in Asian ecosystems of research, in particular, China, Vietnam, Malaysia, and Hong Kong, with a significant presence of Europe (Hungary, Romania, Portugal) and South Asia (India). This trend is consistent with the larger country-wide geography of the literature, with emerging and fast-growing markets seemingly the most active in the areas of sustainability and consumer behavior studies. Simultaneously, the small size of the top counts as compared to the total corpus suggests that there is decentralization of knowledge production among

many institutions and not a limited number of powerful universities. To sum up, these findings suggest that there are several institutional hubs at the regional level which probably define the empirical contexts and research priorities but affiliation-based findings must be accompanied by collaboration network analyses to understand how these institutions are interconnected and affect the intellectual organization of the field.
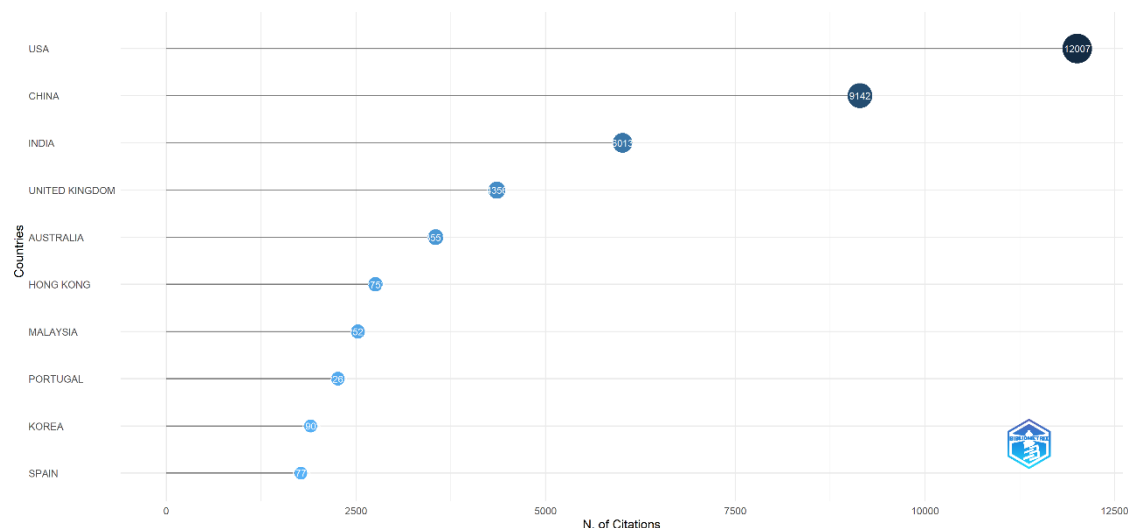
4.1.6. Most Global Cited Countries

Figure-7: Most Cited Countries

Source: Researcher's compilation using R studios' Bibliometrix

The profile of the most Cited Countries (*Figure-6),* shows that the biggest share of scholarly influence, in the form of total citations, is dominated by a few research centers. The USA has the largest number of citations (12,007), then comes China (9,142), India (6,013), and the United Kingdom (4,356) and Australia (3,551) constitute a strong second-tier. Some other sources are Hong Kong (2,753), Malaysia (2,527), Portugal (2,261), Korea (1,903) and Spain (1,773). This ranking implies that, despite the wide distribution of the publication activity across international borders, the visibility of the field, based on citation, is still primarily concentrated in the countries, in which the research infrastructure is usually established, and publication chains are connected on the global scale.

One of the most important lessons can be made when the average article citations are taken into account, as they represent the intensity of the impact, not its amount. Hong Kong has the highest average impact (137.7 citations/article) followed by the United Kingdom (92.7), USA (82.8), Australia (82.6) and Portugal (80.8) with high producing countries such as China (34.1), Malaysia (37.7), and Korea (38.1) having lower average impact of citations. This trend is in agreement with the joint influences of (i) citation-window effects (surges of more recent publications have not yet had sufficient time to gain citations) and (ii) journal position and collaboration distance. Altogether, the number implies a discipline in which knowledge production is more and more Asia-centric, yet influence on citations remains concentrated within a cluster of globally visible locations, which confirms the need to consider cross-country collaboration and comparative designs as the means to enhance the impact and overallisability of green consumption and personality-based green marketing studies.

4.1.7. Most global cited documents

The profile of the most global cited documents indicates that the impact structure is highly skewed with few foundational papers receiving an unfairly high share of scholarly attention. The most influential works with 2,101 and 1,719 citations, respectively, are evidently the two documents by Laroche et al.

(2001, Journal of Consumer Marketing) and Paul (2016, Journal of Retailing and Consumer Services), and then the number of the most influential works decreases sharply to a second level of sources between 850 and 1000 citations (e.g., Hartmann, 2012, Journal of Business Research; Chen, 2013, Journal of Business Ethics). The concentration in the top 10 documents is substantive: all 10 documents do not represent a small fraction of overall citations in the full corpus (10,138 out of 83,006), which means that they are generally used as points of reference that frame further empirical and theoretical activity. The ranking, too, displays dynamics of citation window: more old seminal studies are citing huge totals with time, the 2016 paper indicates glaring citations-per-year, indicating continued relevance during the field expansion stage.

Substantively, the most-cited set exposes the intellectual backbone of the field in classic contributions to consumer segmentation and willingness-to-pay a green product (Laroche et al., 2001), the most-cited synthesis/review work that has been able to consolidate green purchasing research (Paul, 2016), and core marketing ethics and branding processes such as green brand equity/green brand trust and consumer assessment of environmental standing (e.g., Chen, 2013; Hartmann, 2012). The fact that there are influential papers in consumer psychology (e.g., values-based accounts of green consumption), and in the context of hospitality/retailing outlets, is yet another indication that the research on green consumption is interdisciplinary and application-oriented and that it is no longer limited to the mainstream marketing journals but also to the sector-specific contexts. In general, it is possible to conclude that this tendency confirms the existence of a relatively small group of seminal works devoted to behavioral intention, value/identity mechanisms and trust/credibility, whereas more specialized themes, such as explicit personality-trait integration, are probably going to be reflected as new or marginal streams that are built on (not determining) the most visible foundations of the field globally.

Table-2 Most global cited documents

Paper	DOI	Total Citations	TC per Year	Normalized TC
LAROCHE M, 2001, J CONSUM MARK	10.1108/EUM0000000006155	2101	80.81	4.75
PAUL J, 2016, J RETAIL CONSUM SERV	10.1016/j.jretconser.2015.11.006	1719	156.27	16.64
HARTMANN P, 2012, J BUS RES	10.1016/j.jbusres.2011.11.001	852	56.80	5.88
CHEN Y-S, 2013, J BUS ETHICS	10.1007/s10551-012-1360-0	848	60.57	8.36
RANA J, 2017, J RETAIL CONSUM SERV	10.1016/j.jretconser.2017.06.004	824	82.40	12.91
HAWS KL, 2014, J CONSUM PSYCHOL	10.1016/j.jcps.2013.11.002	800	61.54	9.89
HAN H, 2010, INT J HOSP MANAGE	10.1016/j.ijhm.2010.01.001	789	46.41	4.70
PEATTIE K, 2010, ANNU REV ENVIRON RESOUR	10.1146/annurev-environ-032609-094328	757	44.53	4.51
MANAKTOLA K, 2007, INT J CONTEMP HOSP MANAGE	10.1108/09596110710757534	757	37.85	2.87

LEE K, 2008, MARK INTELL PLANN	10.1108/02634500810902839	691	36.37	3.24
JAISWAL D, 2018, J RETAIL CONSUM SERV	10.1016/j.jretconser.2017.11.008	625	69.44	8.07
PEATTIE K, 2005, QUAL MARK RES	10.1108/13522750510619733	576	26.18	3.84
BROUGH AR, 2016, J CONSUM RES	10.1093/jcr/ucw044	567	51.55	5.49
MOSTAFA MM, 2007, INT J CONSUM STUD	10.1111/j.1470-6431.2006.00523.x	531	26.55	2.01
LEE K, 2009, J CONSUM MARK	10.1108/07363760910940456	496	27.56	3.29
FOLLOWS SB, 2000, EUR J MARK	10.1108/03090560010322009	495	18.33	5.59
GUPTA S, 2009, J CONSUM MARK	10.1108/07363760910988201	476	26.44	3.16
AKEHURST G, 2012, MANAGE DECIS	10.1108/00251741211227726	440	29.33	3.04
ZHANG L, 2018, J CLEAN PROD	10.1016/j.jclepro.2018.03.201	438	48.67	5.65
SMITH S, 2010, AUSTRALAS MARK J	10.1016/j.ausmj.2010.01.001	421	24.76	2.51
MUISE A, 2009, CYBERPSYCHOL BEHAV	10.1089/cpb.2008.0263	417	23.17	2.77
KAUTISH P, 2019, J CLEAN PROD	10.1016/j.jclepro.2019.04.389	385	48.13	6.03
TAUFIQUE KMR, 2018, J CLEAN PROD	10.1016/j.jclepro.2018.02.097	384	42.67	4.96
PELOZA J, 2013, J MARK	10.1509/jm.11.0454	381	27.21	3.75
RAHBAR E, 2011, BUS STRATEGY SER	10.1108/17515631111114877	381	23.81	4.46

Source: Researcher's compilation using R studios' Bibliometrix

4.2. Science mapping
4.2.1.   Co-authorship analysis

The VOSviewer co-authorship map shows that there is a moderately and fragmented structure of collaboration between authors in the dataset. Authors are represented as nodes, the weight of publication/connection is the size of the node, and the co-authored relationship is represented as a link, clusters of nodes with different colours are used to show community of frequent collaboration. The most notable node, Mohd Suki, Norazah, is a node with a large size and a number of connections and this means that there is very high productivity and central node location. This author seems to be a connector actor of multiple collaborators in the vicinity (e.g. Lim, Shu Heng and others), which implies that it is a well-established research group (patterns of co-publication) and its internal organization defines an established pattern of collaboration.

In addition to the main centre, the network demonstrates the presence of a few small, thick subgroups having high internal, and fewer cross-cluster, connectivity. This is illustrated by a tight knit group around Tariq, Beenish (and fellow partners like Badawy, Mamoun; Raza, Syed Hassan; Sheikh, Adnan Ahmed; Durrani, Shahrukh) this means that the group works closely and collaborates very often. Internal cohesion is also very strong in another cluster (e.g., Channa, Nisar Ahmed with Gilal, Rukhsana Gul; Gilal, Naeem Gul). The right-side cluster (consisting of Lau, Teck Chai; Ahmed, Areej; Ramdzan Ali, Al Amirul Eimer) in contrast seems comparatively peripheral to the entire network, and is connected more by a small number of bridging ties. These fragmented clusters imply that there are several collaboration islands within the field, which is frequently based on either geographic location, institutional relationship, or on similarity in methodology/thematic interests.

All in all, the co-authorship format suggests that the studies on the subject of green consumption and green marketing (including the ones based on personality-linked views) are perpetuated by multiple and active groups, but not one and the same collaboration network. Although this pluralism can encourage thematic diversity, the inability to cross-cluster integrate as much could retard knowledge diffusion and promote conceptual duplication among groups. Two practical implications of the map are as follows, first, that few authors act as network anchors, determining patterns of productivity and collaboration; and second, that increased inter-cluster and cross-country collaboration might enhance theoretical incorporation--especially useful in explaining personality-traits, where multi-context replication and comparative structures are useful in testing the strength and boundary conditions of behavioural relationships.
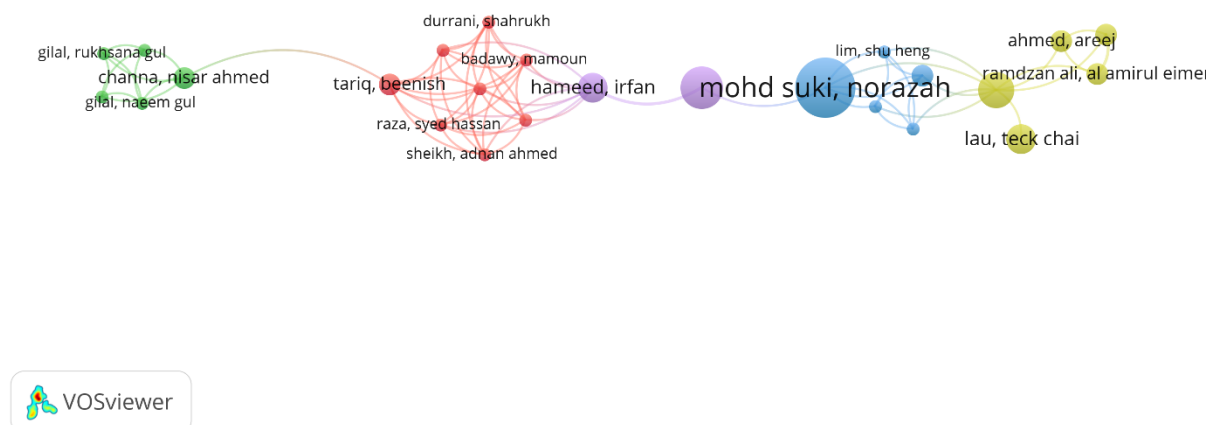

Figure-8: Co-authorship analysis

Source: Researcher's compilation using VOSviewer

4.2.2. Collaboration of research at global level

The map of international collaboration (*Figure-9),* visualises the country-level co-authorship network of the green consumption/green marketing literature (with the strands related to personality being embedded into it). The darker the shade, the greater the scientific output of the country, whereas the connecting arcs reflect the ties of cross-border collaboration (the denser/thicker the flow, the more of such outputs is produced co-authored). It is a very networked, hub-based pattern: the collaboration activity is concentrated on several major producers most obvious China, the United States, India, the United Kingdom, and Australia as anchor nodes connecting various partners in the region. Europe is similarly depicted as an interconnected network, with intra-European cooperation being prevalent and the network has strong links to North America and Asia, which are expected by the pre-existing research networks and journal ecosystems in sustainability and marketing.

Interpretatively, the figure indicates that knowledge creation within this field becomes more and more globalised, but it is asymmetrically arranged. The most intense collaboration flows are observed between Asia-Europe, Asia-North America, and Australia serves as a significant bridge in the Asia-Pacific network. Conversely, extensive regions of Africa and portions of Latin America are relatively peripheral and have less collaboration and less intense production. This imbalance is important since green consumption and personality-based reactions to green marketing are context-dependent, and the insufficient representation of different institutional and cultural contexts may limit the generalisability of mainstream models and undermine the external validity of results on segmentation.
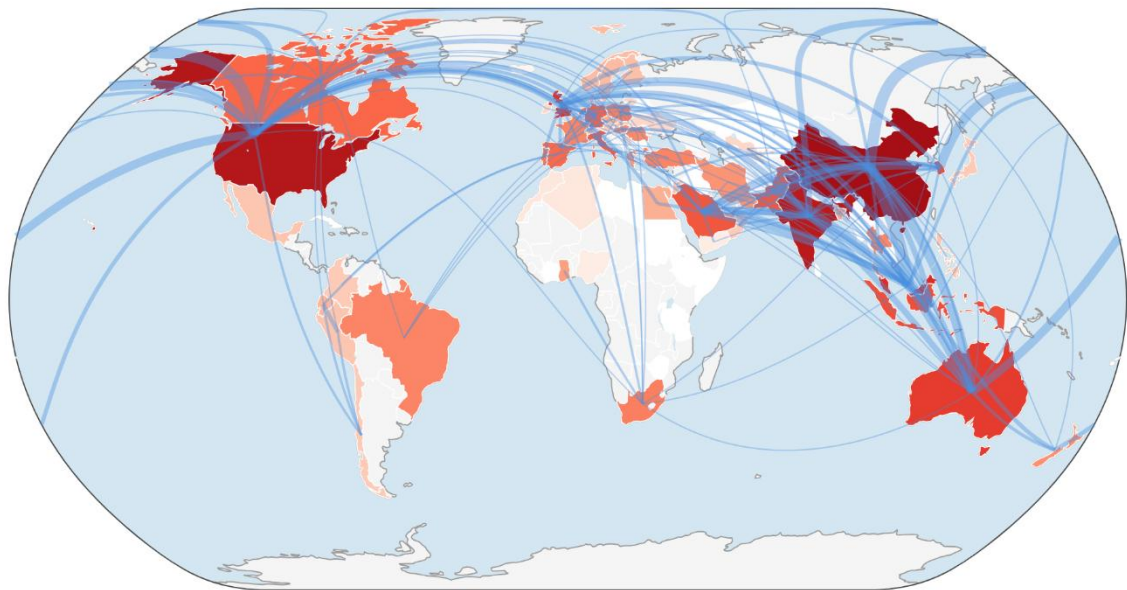

Figure-9: Collaboration of research at global level

Source: Researcher's compilation using R studios' Bibliometrix

On the whole, the map allows concluding that the field is characterised by a high level of international connectivity, yet, it also implies the reliance on a limited number of high-output hubs that determine the possibilities of collaboration and, consequently, research priorities. To address this in future studies, it would be beneficial to widen geographic breadth through South-South collaborations, enhance underrepresented region participation, and greater use of multi-country comparative design which would reduce geographic concentration and enhance theoretical strength- especially to personality-based explanations of green consumption whereby cultural norms, institutional trust, and market maturity can systematically condition behavioural reactions to green marketing claims.

4.2.3.   Co-occurrences analysis

The keyword co-occurrence map *(Figure-10),* of VOSviewer represents the conceptual map of the dataset performing associations between terms found in titles/abstracts/keywords most often. The size of the node depicts the frequency of terms, the link strength depicts the frequency of co-occurrence of terms, and the colours depict groupings of tightly related ideas. The map is quite dominated by an epicenter high frequency hub-marketing- which is highly linked with commerce, behavior, intention, and environmental concern. The arrangement suggests that the literature is largely structured around a marketing-behavioural decision-making centre, in which the operationalisation of green consumption has been most frequently based on behavioural outcomes (i.e., purchase behaviour) and proximal predictors (i.e., intentions and environmental concern). The TPB-related markers used (e.g., TPB, intendment) and general terms used in analysis (e.g. factor analysis, correlation, equation) serve to

confirm that a significant portion of the evidence base has been grounded in the well-known models of behaviour and survey-based empirical designs.

There is a particular and significant cluster on the right-hand side wherein personality is associated with demographic and psychometric characteristics of male, young adult, personality inventory, personality test, and specific characteristics (e.g., extraversion). This trend indicates that the personality-traits view exists, but more or less incorporated in a broader psychological/demographic measurement plane, as opposed to being closely coupled with the constructs of green-marketing. That is, personality is concomitant with marketing and behaviour, but the network implies that it may be conceptually unclean until keywords are cleaned and harmonised (e.g. eliminating demographic/index terms and standardising trait-framework nomenclature like Big Five/HEXACO). Finally, the word co-like structure indicates a position in a marketing-intention-environmental concern nexus, whereas the personality stream is a related, though secondary, grouping, which supports the primary thesis of your study that more integration is required to help explain how and when personality traits mediate responses to green marketing and converts them into the consistent green consumption behaviour.
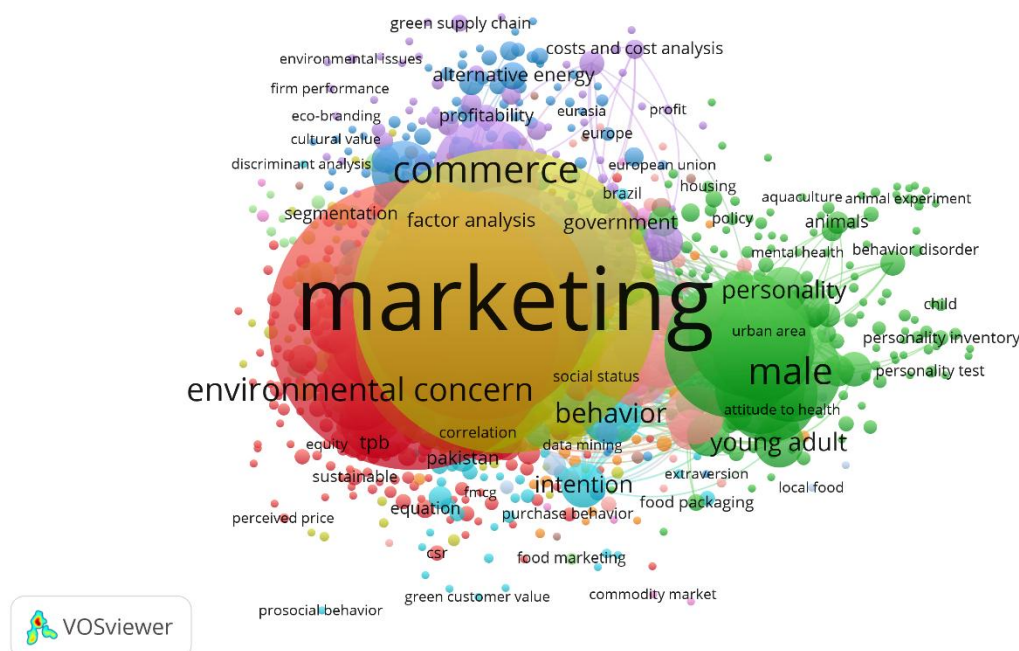

Figure-10: Co-occurrence map

Source: Researcher's compilation using VOSviewer

4.2.4. Co-citation Analysis

The co-citation density map (*Figure-11*), is a visualisation of the intellectual foundation of the discipline that shows co-citation frequently cited references that occur throughout the data; the hot spots are brighter implying the intensity of co-citation and consequently the strength of the foundation. The central and most noticeable hot spot is Ajzen, Icek -Theory of Planned Behavior (TPB) that comes off as the primary anchor reference. Its location and concentration suggests that TPB serves a central theoretical backbone to much of the literature in green consumption/green marketing, especially that which models behavioural intention and the intention-behaviour relationship. Near by this hotspot, are related attitude-behaviour and cognition based foundations including reference-oriented attitudes, action control, and prediction of goals/behaviour which serves to support the idea that the prevailing explanatory logic in the field is entrenched in social-psychological decision paradigms.

Another cluster of hotspots indicates parallel theoretical and conceptual perspectives that are co-occurring along with TPB in the reference base. As an example, Bagozzi emergence and articles about determinants of behaviour and consumer decision processes indicate that it should be combined with more mainstream consumer behaviour theory, whereas those nodes that mention myth of …. and determinants suggest critique/extension operations that narrow down intention models or introduce other constructs (e.g. norms, values, perceived control). The availability of outlets and domains like Advances in Consumer Research, Journal of Public Policy and Marketing and Stanford Social Innovation Review indicates that the knowledge base is not only based on marketing and psychology, but also on the neighboring fields related to social change, policy and sustainability transitions-as in keeping with the applied focus of the field.
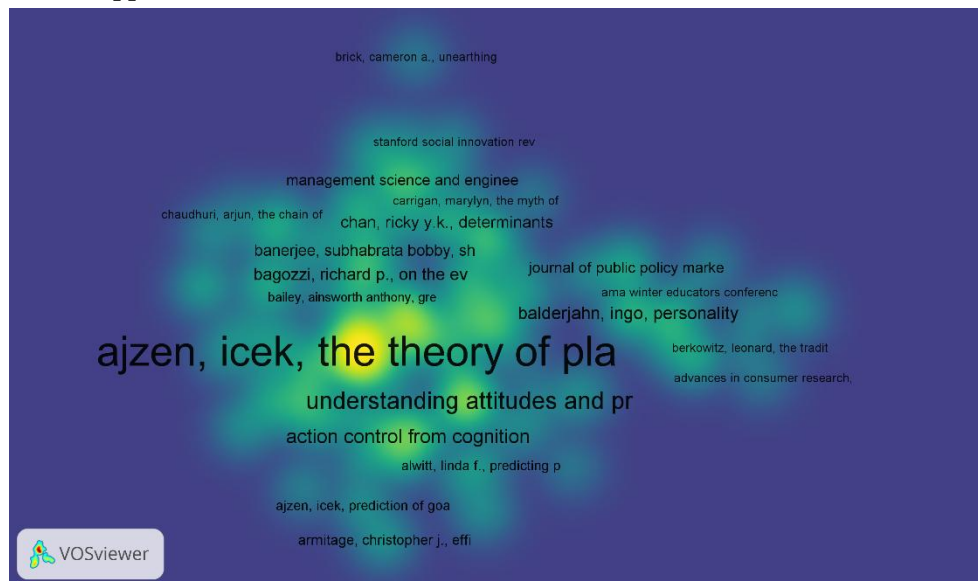

Figure-11: Co-citation density map

Source: Researcher's compilation using VOSviewer

On the whole, the map makes it possible to conclude that the intellectual organization of green consumption research at the marketing-personality intersection is theory-based and extremely concentrated with TPB, which suggests the high level of cumulative development, but also the possibility of theoretical path dependence. This gives you a good reason (i) to (ii) test the way newer streams, like those of personality traits, are being superimposed on or (ii) used to criticize intention-based models; and (iii) to discover where the new body of literature is taking us beyond TPB to more rich mechanisms (e.g., trait-attitude interaction, trust / skepticism of green claims, and context-dependent boundary conditions). Such a density pattern thus merits the bibliometric strategy: it shows a common theoretical basis as well as the possibility to trace how the emergent constructs are incorporated into (or deviate out of) the dominant co-citation core.

4.2.5. Bibliographic coupling

The bibliographic coupling map (*Figure-12),* of the VOSviewer demonstrates how the modern literature is organized in accordance with mutual reference list that is, the documents are connected with each other when they refer to the same previous studies, and, therefore, the coupling is particularly helpful to outline the modern research fronts instead of historical intellectual roots. The visual representation of the network shows that there are few, highly coupled, highly cited anchor documents that dominate the network, and the most central node on the right is Paul (2016). The fact that it has a large node and high density deals with the fact that current research borrowed a common foundational reference base that has been summed up by this study, which implies that it may be acting as a single point of synthesis that unifies constructs, measures, and theoretical framings of the green consumption/green marketing

research. Another significant anchor is that of Laroche (2001) which is highly coupled across clusters since it has been a long-standing reference on the willingness-to-pay/logics of green purchasing consumer segmentation. The fact that other big nodes have become more prominent, e.g. Hartmann (2012) and Chen (2013b) is an indication that the green branding/value-related mechanisms and ethics/credibility-oriented positions still influence the manner in which newer articles are constructed and previous papers referred to.

The colour segmentation at the cluster level implies that there are a number of research fronts that are somewhat differentiated and yet overlapping in their reference foundations. It seems that the blue cluster is based on synthesis/overview and mainstream green purchase research streams (anchored by Paul, 2016), whereas the red cluster has a stronger anchoring on the previous consumer and marketing foundations (e.g., Laroche, 2001; Hartmann, 2012; Chen, 2013b). There are newer coupling hubs in the green and yellow clusters (e.g., Kim (2013), Moser (2016a), Taufique (2018), Moon (2021b), and some 2022-2025 nodes), which implies activity and expansion in substreams, and suggests that these substreams have growing overlap in reference provision as time goes on--typical of fast-growing topics like green purchase intention, pro-environmental behaviour, and processes regarding trust/attitudes, and (within the scope of your study Notably, the high inter-cluster interrelations suggest that the research fronts are not solitary; however, they are related by a shared foundation canon, but also differentiated by the particular combinations of references that they activate.

In general, the bibliographic coupling structure gives the chance to conclude three points that can be applied to your review. To begin with, the recent expansion of the field is anchored on a very communal reference underpinning, and several synthesis and seminal works serve as coordinating pivots. Second, the existence of several big nodes since 2016 indicates that the literature currently exists in the active consolidation stage with more recent clusters stabilising around common theoretical frames and measurement traditions. Third, since bibliographic coupling shows existing fronts, the spread of more recent nodes across clusters shows where the field is diverging--a very strong empirical foundation to uncover new themes (e.g., credibility/trust, behavioural intention refinements, and personality-linked segmentation mechanisms) and suggest more explicit future research ways of integrating these fronts.
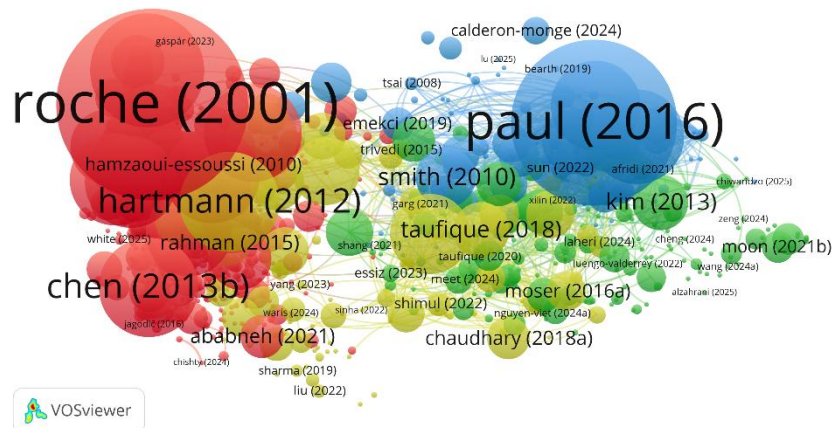

Figure-12: Bibliographic coupling map

Source: Researcher's compilation using VOSviewer

4.2.6. Thematic analysis

Clusters in the Thematic Map-*Figure-13,* (strategic diagram) are placed in terms of centrality (relevance/connectedness to the overall field) and density (internal development/maturity). The most massive cluster, with the focus on green marketing, marketing, consumption behavior, and green, is placed near the centre of the map, which means that it is the conceptual base of the literature: it is highly related to several streams (high relevance), as well as its internal cohesion is moderate-strong (development). Substantively, this validates the fact that studies on green consumption at the

marketing-personality interface are rooted in mainstream marketing and consumer-behaviour constructs, which are the major platform of integration where more specialised themes are developed.
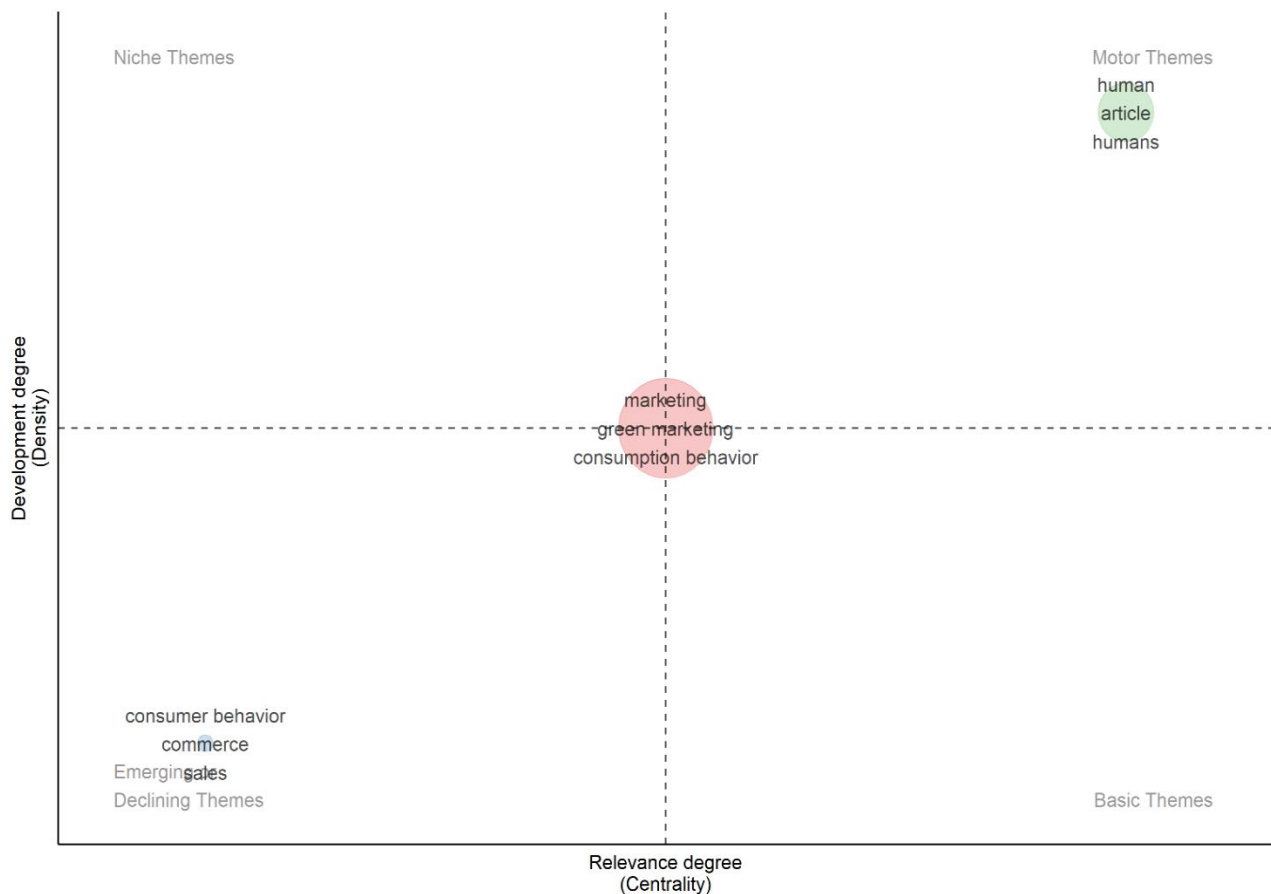

Figure-13: Thematic map

Source: Researcher's compilation using R studios' Bibliometrix

There are two other signals that should be interpreted. To start with, the "Motor Themes" quadrant has a cluster of mostly generic indexing terms in it that is better viewed as a metadata artefact and not a substantive theoretical theme--which implies that the keywords could use a little bit of cleaning up (i.e. removing non-substantive index terms) to enhance conceptual validity. Second, the Emerging/Declining quadrant displays a small, weakly developed cluster around consumer behavior/commerce/sales, suggesting either (a) a new substream that has not yet solidified conceptually, or (b) a group of generic terms that lose their relevance as the field gets more narrowly focused (e.g., green trust, greenwashing, eco-labels, identity/values, and personality-linked segmentation). All in all, as the map shows there is a field of a central, marketing-dominated core with few clearly differentiated mature subthemes at this threshold setting; there are also some methodological opportunities, especially possible improvements in the harmonisation of keywords and re-running of thematic maps with term sets refined to more closely mirror the personality-trait intersection, to better reveal the personality-trait intersection and also to identify genuinely emerging research frontiers.

4.2.7. Trend-topics analysis

The trend-topics visualization *(Figure-14),* follows the development of the dominant keywords over the years, their increasing and diversifying intensity, which suggests that there is a distinct change in the

focus of the sustainability-based themes to the mechanisms aimed at consumerism and marketing as the behavioural constructs. The earlier stages (c. 2003-2013) have a relatively narrow thematic range and contain terms related to energy and resources e.g. green power, electricity, renewable resource, and green electricity, indicating that earlier research was more oriented towards environmental/energy policy settings. Since the mid-2010s, the gist of the literature is unified around marketing and behavioural language -consumption, social marketing, market segmentation, demographics, environmental marketing, physiology, cluster analysis, and consumer behaviour/consumer behaviour. It is also a time of methodological growth (e.g. survey-based designs and clustering/segmentation methods) and thus suggests that the sphere turned to operationalisation of green consumption by consumer choice and market-based analytical models.

During the latest period (around 2019-2025) the topic structure is more intense and more conceptually specific. The terms are more concentrated around the variables of green marketing, marketing, consumption behavior, sustainability, perceptions and green purchase intention which depict an advanced behavioural-marketing agenda that concentrates on the determinants of adoption, intention formation and perception management. It is noteworthy that the concept of personality emerges as a conspicuous trend line starting around 2018-2019, which confirms the perspective of stable individual differences as a significant (yet not the leading) explanatory layer of the more general green consumption literature. The emergence of the term trust and the term social media around the same time in early 2020s is in line with the growing academic interest in the dynamics of credibility and the environment of digital influence-related concerns that have intimate connections to green claims, information asymmetry, and consumer skepticism. In general, the figure indicates that the field is in a late-growth, diversification phase, with mainstream marketing and behavioural constructs continuing to be at the centre of it, and newer lines, especially psychological traits and trust/communication mechanisms, as the new frontiers which need to be further mapped and integrated in the further co-word and thematic evolution analyses.
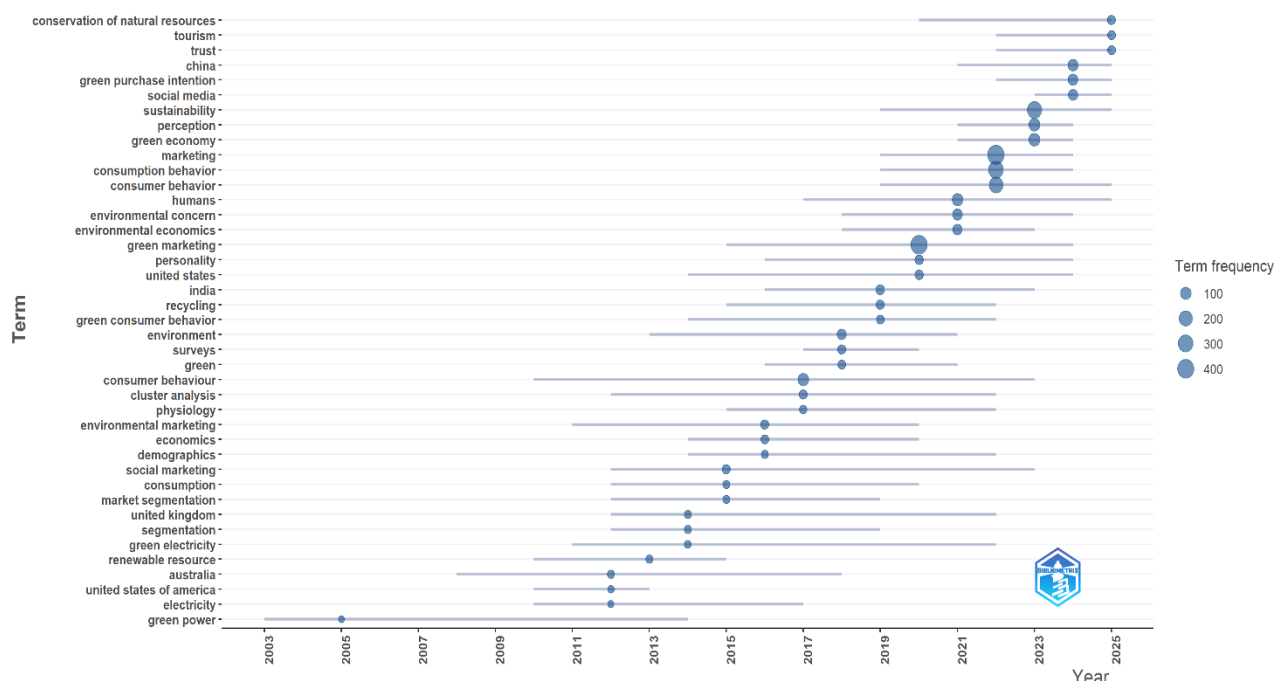

Figure-14: Trend-topics visualization

Source: Researcher's compilation using R studios' Bibliometrix

5. Discussion

The performance trends indicate a sector, which entered the slow growth phase (at the beginning of 2000s) and has entered the blistering growth phase starting in 2020, as the annual output rate has raced up, and the life-cycle curve indicates an expected peak around 2023-2024. This trend aligns with the wider process of institutionalisation of sustainability and ESG agendas in the corporate sector, business, and consumer culture, which has widened the consumer interest in green products and the academic interest in green consumption processes. Notably, the recent increase in the number of publications needs to be viewed in conjunction with the noted drop in the average number of citations per year during the last few years- a hypothesized citation-window-effect since the recent publications have little time to build up the number of citations. This trend supports the importance of considering productivity and impact indicators together instead of interpreting either of them individually (Agarwal & Dubey, 2024; Gál et al., 2025; Perju-Mitran et al., 2022, 2022; Sarkis, 2017; Wang et al., 2021)

Empirical results at the country level reveal that the citation influence is concentrated in several hubs (in particular, the USA and China), and new growth is Asia-centric, which is in line with the growing research capacity and the interest of sustainability transitions in the emerging markets. However, as the co-authorship and collaboration maps show, there is an uneven global network: strong relationships between the key producers are accompanied by low integration of the underexplored areas, particularly the Africa region and some Latin American backgrounds. Geographic concentration may have narrowing of the conditions of dominance of prevailing models and decreased generalisability as a consequence of the cultural and institutional embedding of the green consumption. It is expected that in the future the multi-country comparative designs and wider cooperation across the regions will be improved to enhance the external validity and portability of the theory (Agag et al., 2020; Herbes et al., 2018; Ijaz Baig & Yadegaridehkordi, 2024; Lamari, 2026; Ma et al., 2025)

The co-citation density map reveals evidently that the Theory of Planned Behavior (TPB) is the main intellectual foundation, and Ajzen TPB is the densest core of co-citation. This substantiates the fact that the discipline has largely been relying on the logic of attitude-intention-behave to describe green purchase and other consequence (Kumar, 2018; Nguyen-Van et al., 2025; Özgün Ayar & Selvi, 2025; Zhao et al., 2025). Although TPB has provided a solid cumulative framework that allows the research to be consistent in measuring and cross-studies comparative results, its dominance has also contributed to two long-standing challenges in green consumption studies: (i) the intention-behavior gap, and (ii) the propensity to focus on green behavior as an outcome of cognitive evaluations more than multi-level factors so that it depends on traits, identity, context, and constraints. This reading is supported by the bibliographic couplings that have been achieved: current research fronts have in common a common canonical reference base anchored by synthesis and fundamental marketing texts (Cheng et al., 2022; Hilale & Chakor, 2024; Lago et al., 2020; Mawardi et al., 2024; Smith & Paladino, 2010), but differ in explaining the mechanisms of trust, credibility, and consumer assessment of green claims.

The word co-occurrence map presents a huge, centralized cluster that is dominated by marketing, environmental concern, behavior, and intention which shows that the mainstream conceptual path remains the same which is: marketing - psychological antecedents - intention/behavior. In contrast, the cluster of personality is apparent but seems to be somewhat hidden within demographic and psychometric description (e.g. "male," "young adult, personality inventory/test). It is a theoretically significant indicator: personality exists, but it can often act as an auxiliary prism and not an explanatory stream in its entirety. Many of the trait-based contributions in practice seem to be operationalised into (a) control variables, (b) sample descriptors, or (c) simple moderators, instead of a framework of structure directing the segmentation and message-design theory.

The personality traits can be useful where the literature is least robust, in explaining the behavioral consistency, the heterogeneity in responding to green marketing appeals, and why some seemingly alike aware consumers respond differently to green appeals. The big five and HEXACO trait frameworks have been created to describe consistent individual dissimilarities and can be utilized in the more rigorous

segregation, particularly when combined with theory-based mechanisms (e.g., trait-attitude formation, moral/self-regulatory pathways, susceptibility to skepticism) (Duong, 2022; Khare, 2015; Lu et al., 2015; Song et al., 2023; Uikey, Marak, et al., 2025). The trend-topics outcomes also point to the momentum: the personality can be seen in the post-2018 period only, which means that this intersection is only in a nascent state and has not been completely consolidated yet.

The thematic map (centrality-density diagram) shows that the prevalent, central theme is the green marketing/marketing/consumption behavior, whereas, all other, motor theme words may seem to be indexing artefacts (e.g., human/humans/article). This can be seen in the case where the database-index keywords are not filtered and it highlights a methodological lesson to the field, without focused keyword harmonisation and elimination of non-conceptual descriptors, thematic mapping can inflate generic clusters and deflate conceptual constructs such as greenwashing, skepticism, eco-label credibility, and trait-based segmentation. Theoretically, the discipline appears to be at the center of its maturity but still underdeveloped in differentiated subthemes due to this metadata noise and due to the lack of alternatives to other explanatory formulations being forced into the background by the mainstream TPB-driven line.

Future research directions

a)   *Include personality as a theory-building mechanism, and not a control/moderator:*

Replacing traits as covariates with trait-informed mechanisms (e.g., trait-value-identity pathways; self-regulation; moral emotions). Coherent frameworks (Big Five or HEXACO) should be used and that operationalisation of traits should be reported consistently allowing cumulative comparisons to be made (Duong, 2022; Routley & Armstrong, 2024; Salem & Alanadoly, 2021; Sheikh et al., 2025; Tawde et al., 2023; Uikey, Marak, et al., 2025).

b)   *The science of trait-message congruence and segmentation:*

Determine the effectiveness of green appeals varies by trait profile (e.g. conscientiousness and efficacy-based appeals; openness and innovation/novelty appeals). This provides a straight line connection between personality psychology and marketing strategy and enhances the precision of targeting(Laganà et al., 2024; Premi et al., 2019; Thao et al., 2025).

c)   *Stronger designs should overcome intention-behavior gap:*

Field experiments and longitudinal panels, behavioral trace data (visit data, such as purchase data), are complementary to surveys and SEM, and can confirm that the model based on traits does not account for real purchasing but intentions alone (Barra et al., 2025; Ferreira & Pereira, 2023; Kumar, 2018; Manojkrishnan & G, 2025)

d)   *The major boundary conditions include trust, skepticism, and greenwashing*:

The appearance of the trending topics of trust and social media is an indication of a credibility issue. Future studies ought to simulate the influence of personality factors on skepticism, vulnerability to green claims, and processing of eco-labels and social proof particularly on digital platforms(Fazel, 2024; Mahajan et al., 2024; Matin et al., 2023; Rahman et al., 2015; Xiang et al., 2025).

e)   *Expand into other geographical areas and enhance cross-country partnership:*

Enlarge underrepresented contexts and perform comparative studies to determine whether there are cross-cultural, inter-institutional, and cross-levels of market maturity trait-behavior relationships and marketing impact. This will enhance the generalisability and minimise bias created by hubs(Ali, 2021; Joseph & Friedrich, 2023; Newton et al., 2015; Waris & Hameed, 2020).

f)   *Bibliometric work Methodological improvements:*

Cleaning routines could be used to remove indexing artefacts, merge synonymous constructs and make author key word comparisons against indexed key word in future mappings. Integrating bibliometrics with topic modeling/qualitative synthesis might additionally identify delicate trait-associated processes that might pass unnoticed by co-word strategies (Agarwal & Dubey, 2024; Blanco-Moreno et al., 2025; Muzammil & Vijayaraj, 2024; Vu Thi et al., 2025; Wang et al., 2021).

6. Conclusion

This bibliometric review and knowledge-mapping analysis synthesised the literature on green consumption at the crossroads of marketing and personality traits on the basis of performance indicators and science- mapping methods. The fact shows a fast-growing discipline, and the acceleration is high after 2020 and a common base of knowledge. The intellectual mainstream is still occupied with intention-based models, especially TPB, whereas current bodies of research persist in crowding around a limited range of landmark and synthesis articles (e.g., Laroche et al., 2001; Paul, 2016). Theoretically, the literature is based on a marketing-environmental issue-intention/behavior nexus, the personality-traits perspective is manifested but is marginally peripheral and frequently is manifested in terms of measurement and demographic indexes as opposed to incorporated explanatory processes. Networks of collaboration demonstrate teams of active authors, interconnectedness on world scale, however, also disclose the disintegration and geographic imbalances which reduce cross-context generalisation.

In sum, the results imply that the following phase of research will change the trend of merely anticipating green intentions to a description of behavioral consistency and heterogeneity based on trait-based segmentation, credibility relationships (trust/greenwashing) as well as multi-context validation. The field can do better than offer incremental extensions to TPB by making personality theories more explicit in marketing models that would give deeper accounts of why and when green marketing works into sustained green consumption.

Practical implications

The present review provides multiple implications. Firstly, Trait-based segmentation and targeting: To enhance the success of green campaigns, marketers need to create segments that depend on constant individual differences as opposed to depending on demographics only. It is possible to better target the messages and decrease the fatigue of the messages by using personality-based segmentation and aligning the appeal type with the predispositions of the consumers (McCrae and John, 1992; Ashton and Lee, 2007). Second, Credibility management and design of messages: The emergence of topics related to trust and social media indicates that credibility is becoming more and more important to the consumers. Companies are advised to make a bet on open substantiation (third-party checked eco-labels, credible eco-labels), and tailor messaging based on skepticism profiles of consumers, decreasing the perceived greenwashing reputational risks. Third, between will and action, less friction: Being able to persuade with the help of intention-based models is dominant, but behavior can be hard to acquire, so choices architecture and friction reduction (availability, affordability, convenience, return policies, and clear product information) should be combined with persuasive messages. This particularly applies to the consumers who are pro-environmental in their attitude, but limited in their action. Fourth, Policy and social communication: The policymakers and NGOs can use trait-sensitive communication to sustainability campaigns in the efforts of maximizing adoption of interventions (e.g., community norm cues, efficacy messages, identity-based framing) by tailoring them to heterogeneous citizen profiles. Fifth, Localization and global Strategy: Due to uneven production and impacts of research across geography, multinational companies must not adopt a universal green message. Both the trait effect and the reaction to the green claims can be conditional on the local market maturity, institutional trust as well as cultural norms, and therefore the localized testing is necessary.

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