



Greenwashing and Sustainable Marketing: A Bibliometric Analysis of the Global Literature (2005–2025)

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Abstract

This study examines the evolution and intellectual structure of research on greenwashing and sustainable marketing through a bibliometric analysis of 371 peer-reviewed articles indexed in the Scopus database between 2005 and 2025. Using bibliometric techniques and visualization through VOSviewer, the study analyzes publication trends, citation structures, co-authorship networks, and keyword co-occurrence patterns to map the development of the field. The findings reveal a significant growth in scholarly interest after 2015, reflecting increasing global attention toward corporate sustainability, environmental accountability, and ethical marketing practices. Six major thematic clusters emerge from the analysis: green consumer behavior and purchase intention, corporate social responsibility and brand equity, greenwashing and consumer skepticism, sustainable marketing strategies and business performance, circular economy perspectives, and digital transparency in sustainability communication. The results highlight that misleading environmental claims can significantly undermine consumer trust and brand credibility, while psychological factors such as environmental concern, perceived consumer effectiveness, and moral norms shape consumer responses to sustainability messaging. The analysis also shows a growing research focus on transparency, digital communication, and circular economy integration in marketing strategies. By synthesizing interdisciplinary contributions from marketing, management, psychology, and environmental studies, the study provides a comprehensive overview of the field's evolution, identifies key research gaps, and outlines emerging research directions. The findings offer valuable insights for researchers, marketers, and policymakers seeking to enhance transparency, strengthen consumer trust, and promote responsible sustainability communication in marketing practices.

Keywords: *Bibliometric Analysis; Circular Economy; Greenwashing; Sustainable Marketing; Corporate Social Responsibility*

1. Introduction

Sustainability has become a major concern for businesses across the world. Issues such as climate change, pollution, and the overuse of natural resources have increased pressure on companies to act responsibly. Today, businesses are not judged only by their profits but also by how they treat the environment and society. Because of this shift, marketing has also changed. It is no longer just about selling products. It is now also about showing responsibility, building trust, and supporting long-term environmental goals. Green and sustainable marketing focuses on promoting products and services that are less harmful to the environment (Peattie, 2010). This includes using eco-friendly materials, reducing waste, improving energy efficiency, and communicating sustainability efforts clearly to consumers. Over time, sustainable marketing has moved from being a niche idea to a common business practice. Many companies now include sustainability as part of their brand identity. Governments, investors, and consumers expect firms to be transparent about their environmental impact. As a result, sustainable marketing has become an important tool for building reputation and staying competitive in the market.

At the same time, consumer behavior has changed. Many consumers today are more aware of environmental problems and want to support responsible brands (Modi & Patel, 2016). However, this has also created new challenges. Some companies exaggerate their environmental claims to attract customers. This practice, known as greenwashing, has reduced consumer trust. When people feel misled, they become more skeptical of all green claims. This makes it harder for genuinely responsible firms to stand out. Along with trust issues, consumers also face practical barriers such as higher prices, limited product availability, and confusion about sustainability labels. These challenges show that sustainable marketing is complex and needs careful study.

Over the years, researchers have paid increasing attention to green and sustainable marketing. Early studies mainly focused on defining the concept and understanding why consumers choose green products. Later research examined factors such as environmental awareness, attitudes, and purchase intention. Many studies also explored the gap between what consumers say and what they actually do. More recent research has expanded into areas such as corporate sustainability communication, green branding, ESG reporting, and digital marketing. New topics like the circular economy and climate-related marketing have also gained attention (Donthu et al., 2021). This shows that the field has grown and become more diverse over time.

Even though there is a large amount of research, the literature is spread across different disciplines and contexts. Studies come from marketing, management, environmental studies, and economics. They use different methods, focus on different countries, and study different industries. Some studies are based on surveys, others on case studies or conceptual discussions. Because of this variety, it is difficult to see the overall picture of how sustainable marketing research has developed. Important themes often appear in isolation, making it hard to understand how they connect with each other.

This is where bibliometric analysis becomes useful. Bibliometric analysis is a research method that uses quantitative techniques to study academic publications. It looks at patterns such as publication growth, citation counts, keyword usage, and collaboration networks. Instead of reading studies one by one, bibliometric analysis allows researchers to analyze a large body of literature in a systematic way. This helps in identifying influential papers, key authors, major research themes, and emerging trends in a field.

For green and sustainable marketing, bibliometric analysis is especially helpful. The field is growing quickly, and keeping track of all developments is challenging. Bibliometric methods make it easier to understand how research has evolved over time and which topics have received the most attention. They also help compare contributions across countries and institutions. Most importantly, bibliometric analysis helps identify research gaps by showing which areas are well studied and which are still underexplored.

A bibliometric approach enables a systematic and comprehensive understanding of research on greenwashing and sustainable marketing. By mapping key themes such as greenwashing, sustainable consumption, corporate communication, and digital transparency, this study examines how ideas are structured and interrelated across the literature, reducing subjectivity and providing a clearer, evidence-based overview of the field. Accordingly, this study conducts a bibliometric analysis of global research published between 2005 and 2025, aiming to analyze publication trends, influential authors, collaboration networks, keyword co-occurrence patterns, and major thematic clusters. Specifically, the study seeks to examine how research on greenwashing and sustainable marketing has evolved over time, identify the countries, authors, and publications contributing most significantly to the field, determine the dominant thematic clusters shaping the literature, and highlight emerging research directions and critical gaps. By achieving these objectives, the study provides an organized picture of the intellectual structure and evolution of the field, offering insights for researchers, marketers, and policymakers to strengthen transparency, enhance consumer trust, and implement responsible marketing practices, while contributing to a deeper and more practical understanding of sustainable marketing and the mitigation of greenwashing.

2. Methodology

This section outlines the research design, database selection, search strategy, inclusion and exclusion criteria, data cleaning procedures, and analytical framework adopted to examine the intellectual structure of sustainable marketing research. The methodological approach ensures systematic mapping, transparency, and reproducibility of findings.

2.1 Research Design

The study adopts a bibliometric research design to systematically analyze the development, thematic structure, and intellectual progression of sustainable marketing literature. Bibliometric analysis enables quantitative examination of publication trends, citation structures, collaboration networks, and thematic evolution within a defined body of academic

work. This approach is particularly suitable for identifying dominant research streams, theoretical foundations, and emerging areas within sustainability-oriented marketing scholarship. By integrating descriptive statistical analysis with network visualization techniques, the study provides a comprehensive mapping of the field.

2.2 Data Source and Search Strategy

To capture the academic landscape of sustainable marketing research, a structured search was conducted in the Scopus database, selected due to its extensive indexing of peer-reviewed journals across business, management, environmental studies, and social sciences.

The following Boolean search string was applied:

TITLE-ABS-KEY (("greenwash*" OR "green claims" OR "environmental claims" OR "misleading environmental claims" OR "deceptive environmental claims") AND ("marketing" OR "advertising" OR "branding" OR "corporate communication" OR "green marketing")) AND PUBYEAR > 2004 AND PUBYEAR < 2026 AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "ARTS") OR LIMIT-TO (SUBJAREA , "PSYC")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))

The search was limited to peer-reviewed journal articles published between 2005 and 2025. The year 2005 was selected as the starting point to capture the acceleration of sustainability discourse in marketing following global environmental policy shifts and corporate responsibility movements. Initial retrieval yielded a large dataset, which was refined using structured inclusion criteria.

The following filters were applied to refine the dataset:

Table 1. Inclusion Criteria

Inclusion Criteria	Inclusions	Number of results
Year Range	2005-2025	Filtered to 9283
Subject Areas	Social Science Economics/Econometrics/Finance Business/Management/Accounting Arts and Humanities Psychology	1197
Document Type	Journal articles only ("ar")	712
Publication Stage	Final publication ("final")	593
Source Type	Journals only ("j")	395
Language and Access	English and open access	Final dataset: 371

2.3 Data Cleaning and Screening

The retrieved records were exported in CSV format and screened to remove duplicates, conference papers, editorials, and articles where sustainability was mentioned but not central to marketing discourse. Abstracts and keywords were manually reviewed to ensure thematic relevance.

Bibliographic variables including authors, institutional affiliations, publication year, keywords, citation counts, and abstracts were retained for analysis. Standardization of keywords was conducted to merge synonymous terms such as "green marketing" and "environmental marketing" where conceptually aligned.

2.4 Analytical Framework

The bibliometric analysis was conducted using VOSviewer in combination with descriptive statistical techniques. The analytical procedures included:

- Annual publication trend analysis to examine growth patterns
- Citation analysis to identify influential studies and foundational works
- Co-authorship network analysis to map collaboration structures
- Keyword co-occurrence analysis to identify major thematic clusters
- Overlay visualization to examine thematic evolution over time

Minimum occurrence thresholds were applied to keywords and authors to ensure clarity in network visualization and reduce noise. Cluster identification enabled classification of research into six dominant thematic areas, which were later interpreted qualitatively in the thematic analysis section of the paper.

3. Results and Findings

This section presents the findings of the bibliometric analysis. The results are organized to highlight publication growth trends, geographical distribution of research output, influential studies, collaboration networks, and thematic clusters derived from keyword co-occurrence analysis.

3.1 Publication Trends

Year-wise publication trends are depicted in the figure below. It shows how the academic literature has expanded over the last 20 years.

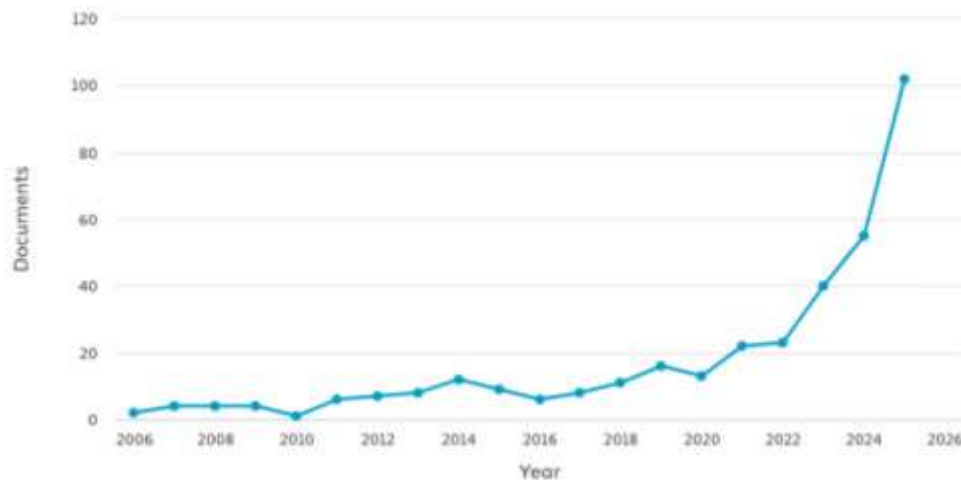


Figure 1. Year-wise Distribution of Documents

The analysis reveals a steady growth in sustainable marketing and greenwashing research. The upward trajectory indicates that sustainability has transitioned from a niche marketing concern to a mainstream strategic research domain. From 2006 to around 2015, the number of documents remained relatively low and stable, generally ranging between two and ten publications per year. This pattern suggests that the field was still emerging, with sustainability being discussed mainly as part of broader topics such as corporate social responsibility. A noticeable increase appears after 2016, indicating a growing academic recognition of sustainability as a strategic marketing issue. This period aligns with a global rise in climate awareness and an increase in corporate commitments to ethical and environmentally responsible practices. The most significant surge occurs after 2020, where publication numbers rise sharply. This rise may be associated with the COVID-19 pandemic, which heightened consumer interest in ethical consumption and accelerated global discussions around ESG (Environmental, Social, and Governance) standards. Between 2024 and 2025, the publication count jumps dramatically from 55 to 102 documents, marking the highest output in the dataset. Such a notable rise may relate to stricter international sustainability regulations, heightened concerns regarding greenwashing, and an expansion of journals and

conferences dedicated to sustainability themes. Overall, the trend illustrates how green marketing has transitioned from a niche subject to a mainstream research area over the last two decades.

3.2 Geographic Concentration of Research Output

The figures below depict geographic concentration of academic output in terms of countries publishing the highest numbers of articles on greenwashing and sustainable marketing in India.

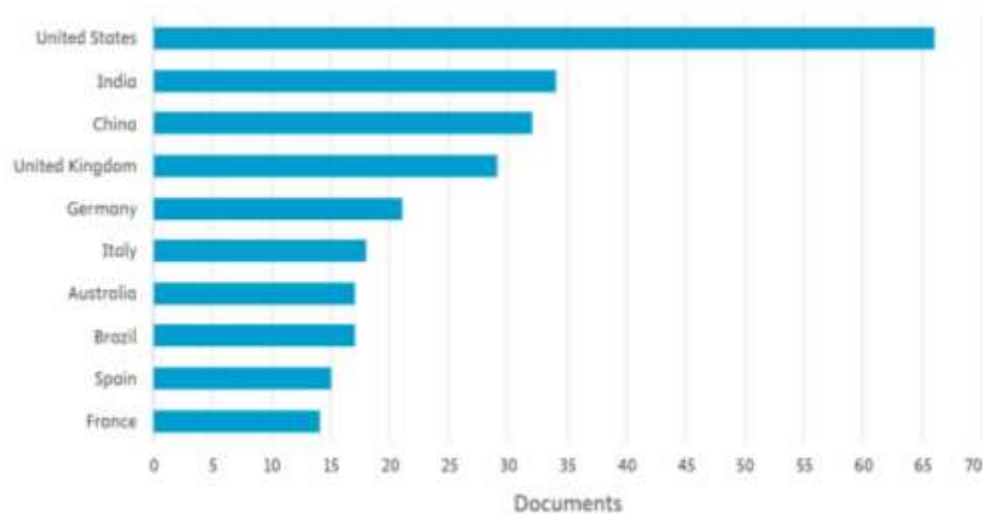


Figure 2. Geographic Concentration of Academic Output

The geographical distribution of publications demonstrates that research on sustainable marketing is globally widespread but led by specific regions. The United States ranks as the most productive contributor with 66 documents, reflecting its large academic network, substantial research funding, and the increasing importance of ESG reporting in American businesses. India (34) and China (32) follow, highlighting the rapid growth of sustainability-related research in emerging economies. These countries are experiencing significant environmental challenges and regulatory changes, which may be encouraging scholars to explore sustainable consumer behavior and marketing strategies. European countries such as the United Kingdom (29), Germany (21), Italy (18), Spain (15), and France (14) also appear prominently. Europe's strong environmental policies and long-standing commitment to the circular economy likely contribute to this consistent academic output. Countries like Australia and Brazil show moderate but meaningful contributions, suggesting that sustainable marketing is gaining academic attention across diverse economic contexts. Overall, the international distribution of publications indicates that sustainability has become a global research priority, with both developed and developing nations actively contributing to the academic discourse.

3.3 Citation Structure and Influential Studies

Citation analysis identifies foundational works that shaped theoretical development in green consumer behavior, CSR, and sustainable branding. Highly cited studies predominantly focus on psychological determinants of green purchase intention, stakeholder theory applications in CSR, and authenticity in sustainability communication. The citation network demonstrates the interdisciplinary nature of the field, integrating marketing theory, environmental economics, behavioral science, and corporate governance.

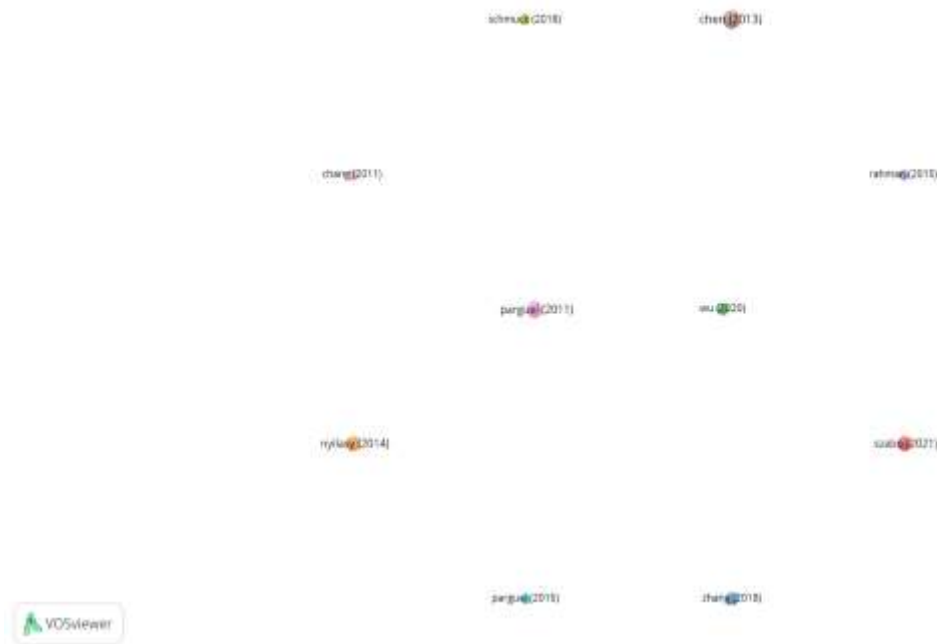


Figure 3. Influential Studies

The author co citation network highlights the most influential scholars in the field of greenwashing, sustainability, and green marketing. In this map, node size represents the number of citations, while the links show how often authors are cited together in the same studies. A larger node indicates higher academic influence, and stronger links suggest that the authors' works are closely connected within the literature. The chart shows that Szabo (2021), Chen (2013), Parguel (2011), and Nyilasy (2014) are among the most influential authors in this research domain. Chen 2013 and Parguel 2011 have particularly high citation counts, which suggests that their studies form the theoretical foundation of greenwashing and green marketing research. These works are frequently cited together, indicating that later studies rely on their conceptual frameworks to understand misleading environmental claims and consumer responses.

Another prominent group includes Schmuck (2018), Zhang (2018), and Wu (2020). These studies focus more on consumer perception, skepticism, and behavioral outcomes related to greenwashing. Their close positioning in the network suggests a shift in the literature from defining greenwashing to examining its psychological and behavioral effects. This cluster reflects the growing interest in how greenwashing affects trust, purchase intention, and brand loyalty, especially in modern and digital marketing contexts. The presence of Rahman (2015) and Parguel (2015) shows the expansion of greenwashing research into corporate communication and sustainability claims. These authors are moderately sized but well connected, indicating their role in bridging early conceptual studies with more applied research. Their work often examines how firms communicate sustainability and how consumers interpret these messages, especially when transparency is lacking.

The strong interconnections among authors in this network indicate a high level of intellectual cohesion in the field. Most influential studies are not isolated but are repeatedly cited together, which shows that greenwashing and sustainable marketing research has developed around shared theories and concepts. Attribution theory, trust theory, and consumer behaviour models appear to be central to this body of work, as reflected by the repeated co citation of authors using these approaches. Overall, the author co citation analysis demonstrates that the field is mature and theoretically grounded, with a few key authors shaping its direction. However, the strong reliance on a limited set of foundational studies also suggests the need for new perspectives, especially those using diverse methodologies, digital platforms, and non Western contexts. Future research could benefit from expanding beyond these core authors to include interdisciplinary and region specific insights.

3.4 Country-Level Collaboration Networks

Co-authorship analysis reveals increasing international collaboration, particularly between European, North American, and Asian institutions. Research clusters indicate that sustainability marketing has evolved into a globally

interconnected research area. However, developing economies remain comparatively underrepresented in high-impact collaboration networks.

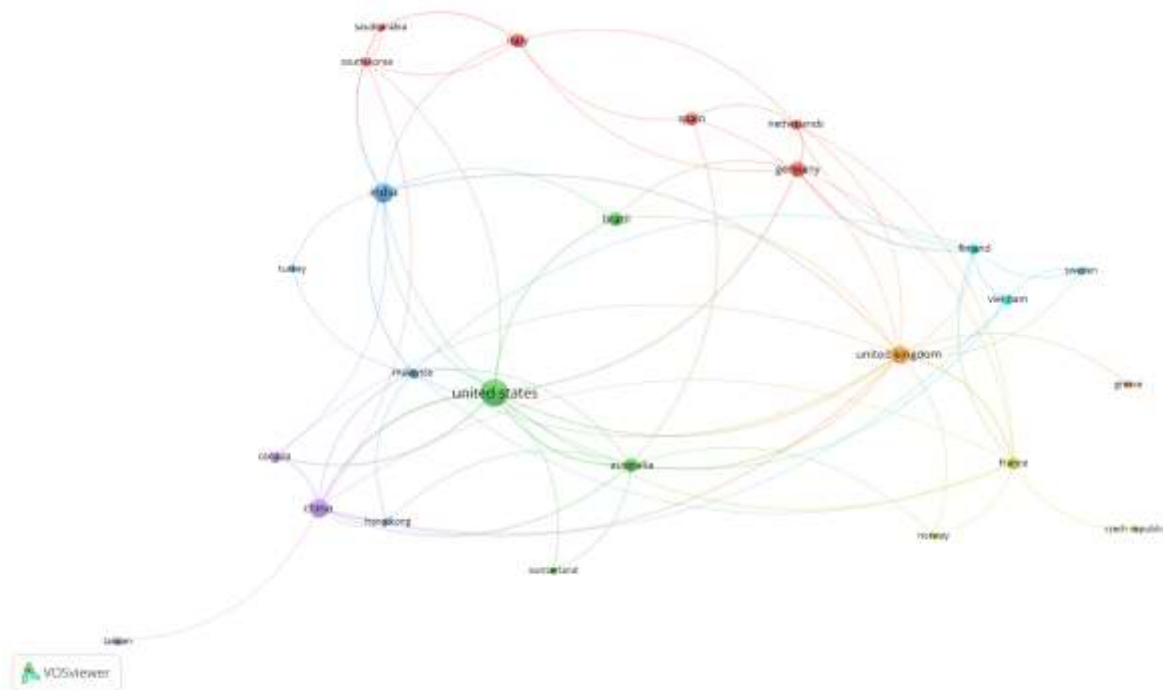


Figure 4. Country-level collaboration networks

Moreover, the citation networks also reveal that most highly cited authors originate from developed economies, suggesting a regional concentration of research. There is comparatively less visibility of authors focusing on developing countries or emerging markets. This indicates a potential gap in understanding how greenwashing operates in different cultural, regulatory, and economic contexts.

3.5 Thematic Analysis

The conceptual landscape of greenwashing and sustainable marketing is explored using keyword co-occurrence analysis as part of the bibliometric mapping procedure. This method identifies patterns of thematic convergence by clustering frequently co-occurring terms, thereby uncovering the underlying knowledge structure and dominant research themes within the selected body of literature. Keyword co-occurrence analysis identified six dominant thematic clusters, which have been discussed below.

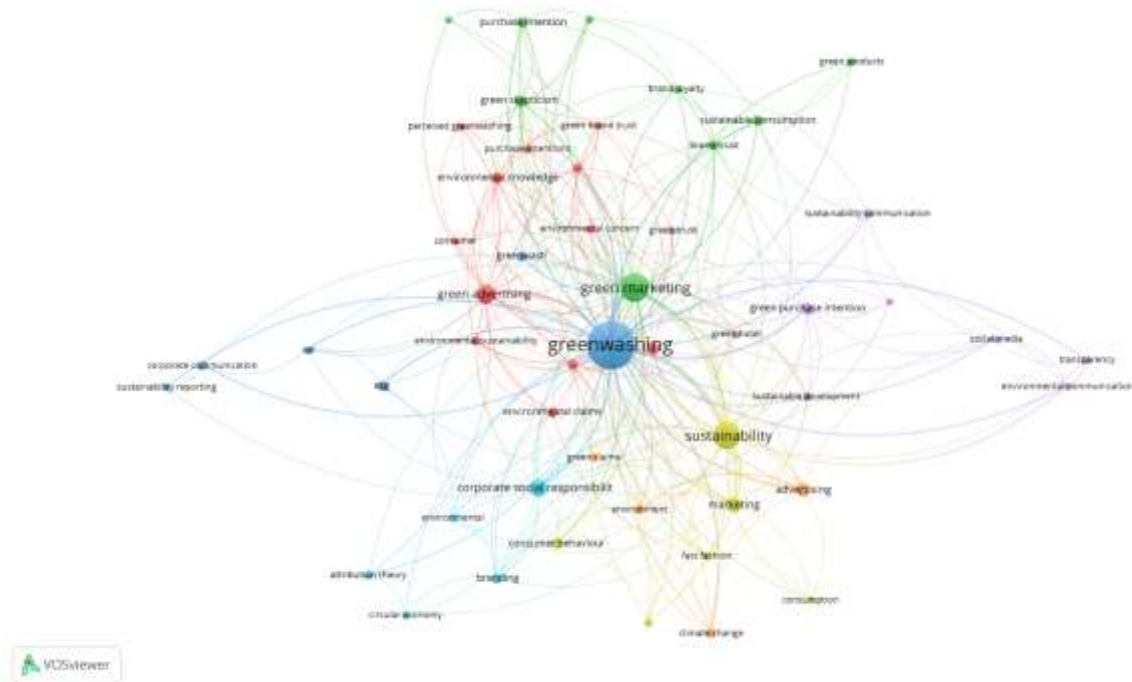


Figure 5. Keyword co-occurrence analysis

3.5.1 Green Consumer Behaviour and Purchase Intention

Green consumer behaviour has been one of the most dominant themes in sustainable marketing research. Several studies have examined how environmental awareness translates into purchase intention. For instance, a study by (Chen & Chang, 2012) examined green trust and green perceived value and found that both significantly influence green purchase intentions. The study used survey data and structural equation modelling to test consumer perceptions toward eco friendly products. The findings suggested that when consumers perceive environmental benefits and trust environmental claims, their willingness to purchase increases. Similarly, (Joshi & Rahman, 2015) conducted a review focusing on factors affecting green purchase behaviour. They analysed psychological, social and situational variables and found that environmental concern, subjective norms and perceived behavioural control play central roles. Their findings indicated that although awareness levels are high, actual purchasing behaviour is still inconsistent. This highlighted the well known attitude behaviour gap in green marketing.

Another study by Yadav & Pathak (2017) focused on young consumers in emerging markets and applied the Theory of Planned Behavior. The results showed that environmental concern and attitude significantly affect purchase intention, especially among millennials. The study emphasized that demographic factors such as age and education strengthen pro-environmental behavior. Further research by Paul, Modi & Patel (2016) extended behavioral models by including environmental knowledge and perceived consumer effectiveness. Their results demonstrated that consumers who believe their actions can positively impact the environment are more likely to purchase green products. This suggests that marketing communication should emphasize individual impact.

In addition, Biswas & Roy (2015) studied green product consumption among Indian consumers and found that price sensitivity and product availability remain barriers despite positive attitudes. This reflects a structural limitation within developing markets where green products may not always be accessible or affordable. A large body of research examines the determinants of green purchase intention and sustainable consumption. Paul, Modi, and Patel (2016), using survey data from India, found that environmental concern and perceived consumer effectiveness positively influence green purchase intention, while price sensitivity remains a significant barrier. Vermeir and Verbeke (2008), through a European multi-country survey, identified a clear gap between positive sustainability attitudes and actual purchasing behavior, reinforcing the well-known attitude-behavior gap.

Joshi and Rahman (2015) conducted a systematic review of green buying behavior and found that environmental knowledge, social norms, and perceived value significantly influence consumer decisions. White, Habib, and Hardisty

(2019), using behavioral experiments, demonstrated that contextual nudges and behavioral cues can effectively increase sustainable choices when aligned with consumer values. Meta-analytic studies confirm that environmental concern and trust in green claims are strong predictors of purchase intention. However, many studies rely heavily on self-reported survey data rather than actual purchase behavior. Sustainable consumption is shaped not only by attitudes but also by contextual factors such as income level, product accessibility, and economic conditions. A study on sustainable consumption and consumer behavior is based on a systematic review and meta-analysis of factors influencing green purchase intention. The author synthesized findings from multiple empirical studies to identify the strongest predictors of sustainable consumer behavior, including environmental concern, perceived consumer effectiveness, social norms, and trust in green claims. The study quantitatively assessed relationships between these variables and purchase intention, offering a consolidated understanding of consumer motivations. The interpretation of the findings suggests that while positive environmental attitudes are important, they do not always translate into actual purchasing behavior. This supports the widely discussed "attitude-behavior gap" in sustainable consumption literature. The study identifies a significant gap in research addressing contextual and situational factors such as price sensitivity, product availability, and cultural differences. It also highlights the lack of longitudinal studies that examine whether green purchase intentions lead to sustained behavior over time.

3.5.2 Corporate Social Responsibility and Sustainable Branding

Corporate social responsibility has been closely linked with sustainable marketing strategies. A study by (Bhattacharya & Sen, 2004) explored how CSR initiatives influence consumer identification with companies. The findings showed that consumers are more likely to support brands that demonstrate authentic social and environmental responsibility. This strengthens brand loyalty and long term relationship building. Similarly, (Du, Bhattacharya & Sen, 2010) analyzed communication strategies in CSR. They found that transparent communication enhances credibility and reduces skepticism. The study emphasised that companies must align CSR actions with core business values to avoid accusations of greenwashing.

Research by Martínez & del Bosque (2013) investigated CSR in the tourism sector and found that socially responsible actions improve brand image and customer satisfaction. The study used structural modeling to test the relationship between CSR perception and brand equity components. Another study by Luo & Bhattacharya (2006) analyzed financial performance and CSR engagement. The findings suggested that CSR contributes positively to firm value when consumers perceive the company as trustworthy. However, excessive CSR spending without strategic alignment may not always lead to financial gains.

Additionally, Fatma, Rahman & Khan (2015) examined CSR in developing economies and found that awareness of CSR activities significantly impacts customer trust and advocacy behavior. Their research emphasised the need for better communication strategies in emerging markets. Another study on corporate sustainability communication and ESG reporting by Braga et al. conducted a comprehensive literature review focusing on sustainability communication in marketing. The study reviewed academic work related to CSR communication, sustainability reporting, green advertising, and ESG disclosure practices. The authors classified existing studies based on communication channels, message framing, and consumer responses, providing a structured overview of how sustainability messages are conveyed by firms. The study reveals that transparent and consistent sustainability communication enhances corporate credibility and stakeholder trust, whereas vague or exaggerated claims increase skepticism. The authors interpret sustainability communication as a strategic marketing tool rather than a purely informational activity. However, the study identifies a research gap in measuring the effectiveness of different communication formats, particularly in digital and social-media contexts. There is also limited research comparing consumer interpretations of sustainability reports across regions and industries.

3.5.3 Greenwashing and Consumer Skepticism

Greenwashing has become an important theme in sustainable marketing. Delmas & Burbano (2011) defined greenwashing as misleading environmental claims and analyzed its drivers and consequences. Their conceptual framework highlighted regulatory gaps and competitive pressures as major reasons behind greenwashing practices. A study by Chen & Chang (2013) examined greenwash effects on green trust and found that perceived deception significantly reduces brand trust and purchase intention. Using survey data, the study demonstrated that even minor inconsistencies in environmental communication can damage consumer confidence.

Similarly, Nyilasy, Gangadharbatla & Paladino (2014) investigated consumer responses to misleading green advertising. The results suggested that exaggerated claims trigger skepticism, particularly among highly environmentally conscious consumers. This indicates that informed consumers are more critical of vague environmental messages. Another

important contribution by Lyon & Montgomery (2015) explored corporate environmental performance and symbolic communication. They found that companies sometimes focus more on image building rather than actual performance improvement. This creates reputational risks in the long term.

Greenwashing has emerged as one of the most central themes in sustainable marketing research. Early foundational work by Delmas and Burbano (2011) examined corporate environmental communication practices and identified greenwashing as symbolic environmental action without substantive performance improvements. Using case analysis and secondary data, the study demonstrated that firms engaging in misleading environmental communication face significant reputational risk. Empirical research further strengthened this argument. Chen and Chang (2013) used survey data and structural equation modelling to analyze the relationship between perceived greenwashing, green trust, and green brand equity. Their findings revealed that perceived greenwashing significantly reduces green trust, which in turn lowers purchase intention. Similarly, Nyilasy, Gangadharbatla, and Paladino (2014) used experimental design to test consumer responses to misleading green advertising. The results showed that consumers, especially those with higher environmental knowledge, respond with increased skepticism and negative brand evaluation when exposed to deceptive claims.

Market-based evidence also confirms the widespread nature of greenwashing. TerraChoice (2010) conducted product audits and found that a large proportion of environmental claims lacked verification or were misleading. More recent systematic and bibliometric analyses demonstrate a sharp increase in greenwashing research after 2015, reflecting growing regulatory scrutiny and consumer awareness. Across studies, common psychological mechanisms emerge, including skepticism, perceived deception, moral judgment, and trust erosion. Greenwashing is no longer viewed as an isolated marketing tactic but as a major threat to corporate legitimacy and sustainable brand relationships.

3.5.4 Sustainable Marketing Strategies and Business Performance

Sustainable marketing strategies integrate environmental responsibility into overall business models. Peattie & Crane (2005) critically examined the evolution of green marketing and identified strategic failures due to short-term orientation. They argued that sustainability must be embedded within long-term strategic planning rather than treated as a promotional tool. Research by Leonidou et al. (2013) analyzed environmental marketing strategies and firm performance. Their findings showed that proactive environmental strategies lead to competitive advantage and improved financial outcomes. The study used meta-analytical techniques to synthesize previous research.

Similarly, Porter & Kramer (2006) introduced the concept of shared value, arguing that businesses can achieve economic success while addressing social problems. Their framework encouraged companies to integrate sustainability into core operations. A study by Papadas, Avlonitis & Carrigan (2017) examined internal green marketing orientation and found that organizational culture significantly influences successful implementation of sustainable strategies. Firms with strong internal environmental values were more effective in delivering green outcomes.

Research under this theme investigates how green marketing strategies influence brand-related outcomes such as loyalty, trust, and competitive advantage. Chen (2010) found that green brand image positively influences green satisfaction and green trust, which ultimately strengthen brand equity. Kang, Stein, Heo, and Lee (2012), studying green hotel practices, demonstrated that authentic environmental initiatives enhance brand image and customer loyalty.

Hartmann and Apaolaza-Ibañez (2012) found that emotional appeals in green advertising positively influence brand attitudes and purchase intention. However, Joy et al. (2012), examining sustainability in the fast-fashion industry, highlighted the contradiction between sustainability messaging and consumption-driven branding. Overall, green marketing strategies provide competitive advantage when claims align with actual corporate performance. However, superficial or symbolic sustainability campaigns increase the risk of consumer backlash and reputational damage.

3.5.5 Sustainability, Climate Change, and Circular Economy Perspectives

This research stream connects marketing with broader environmental challenges. Peattie and Peattie (2009) conceptualized social marketing as a tool for promoting pro-environmental behavior and climate change mitigation. Kirchherr, Reike, and Hekkert (2017), through systematic review, examined circular economy definitions and highlighted the importance of reuse and resource efficiency. Lieder and Rashid (2016) analyzed circular economy implementation in business models and emphasized the role of marketing in communicating value propositions to consumers. These studies indicate that marketing plays a significant role in shaping sustainable consumption patterns.

However, much of this literature remains conceptual rather than empirical, and practical measurement of environmental impact remains limited. In addition to conceptual discussions, empirical research has increasingly examined how climate change messaging influences consumer behaviour. Trudel (2019) analysed consumer responses to

sustainability framing and found that when environmental impact is presented in concrete and relatable terms, consumers are more likely to support climate friendly products. The study used experimental methods and demonstrated that behavioural change is stronger when environmental consequences are personalised rather than abstract.

Similarly, Whitmarsh and O'Neill (2010) explored public engagement with climate change communication. Using survey and behavioral analysis, the study found that individuals who perceive climate change as personally relevant are more willing to adopt low-carbon consumption practices. The findings suggest that marketing communication plays a critical role in translating climate awareness into measurable behavioral outcomes. Research by Camacho-Otero, Boks, and Pettersen (2018) investigated sustainable consumption in the context of circular economy transitions. Through systematic literature review, they identified that marketing strategies must address both product design and consumer habits. The study emphasised that encouraging reuse and repair requires a shift in value perception, where durability and longevity are positioned as desirable attributes.

Geissdoerfer et al. (2017) further connected circular economy principles with sustainable business models. Their work demonstrated that circular strategies, including recycling and product life extension, require coordinated communication efforts to ensure consumer participation. Without effective marketing integration, circular initiatives remain operational rather than market-driven. Bocken, de Pauw, Bakker, and van der Grinten (2016) analyzed sustainable business model innovation and identified strategies such as product service systems and resource efficiency models. Their findings indicate that marketing departments play a central role in communicating new value propositions that move beyond ownership toward access-based consumption.

Finally, McDonough and Braungart (2002), through the cradle-to-cradle framework, introduced the concept of regenerative design in production systems. Although largely theoretical, their work has significantly influenced circular marketing discourse by framing waste as a design failure. This perspective has shaped contemporary discussions about how marketing can promote regenerative consumption patterns rather than linear consumption models.

3.5.6 Transparency and Digital Communication in Sustainable Marketing

Digital platforms have transformed sustainability communication. Du, Bhattacharya, and Sen (2010) found that transparent CSR communication enhances consumer trust and loyalty. Loureiro, Sarmento, and Le Bellego (2017) showed that engagement in online green brand communities strengthens green trust and brand relationships. Nyilasy et al. (2014) demonstrated that misleading green advertising is quickly detected and penalised in digital environments. Digital platforms increase both transparency and scrutiny, making authenticity critical. Although influencer-based sustainability communication is growing, empirical studies remain limited.

Recent empirical research has examined how digital transparency mechanisms influence sustainable brand perception. Seele and Gatti (2017) analysed online corporate communication and found that increased digital visibility reduces opportunities for greenwashing. Their study demonstrated that companies operating in highly transparent digital environments are more cautious in their sustainability claims. Kapitan and Silvera (2016) investigated influencer credibility in digital marketing contexts. Although not exclusively focused on sustainability, their findings show that perceived authenticity significantly affects message persuasiveness. This has direct implications for sustainability communication, as influencer endorsement of green products depends heavily on perceived transparency.

Loureiro and Lotade (2005) examined trust formation in environmentally labelled products and found that third party certification significantly enhances credibility. In digital marketplaces, certification logos and verifiable claims become key trust building mechanisms that reduce consumer skepticism. More recently, Wang, Hsieh, and Sarkis (2018) explored the impact of online sustainability disclosure on firm reputation. Using quantitative modelling, they found that firms providing detailed environmental performance metrics online experience higher stakeholder trust compared to those offering general statements.

Coombs and Holladay (2012) analysed crisis communication in digital spaces and highlighted that real time responsiveness influences public perception of corporate responsibility. In sustainability contexts, rapid clarification of environmental claims can mitigate reputational damage when accusations of greenwashing arise. Finally, Saxton and Waters (2014) examined social media engagement strategies and concluded that interactive communication enhances stakeholder trust more effectively than one way promotional messaging. Applied to sustainable marketing, this suggests that transparency and dialogue are critical components of digital sustainability communication.

3.6 Evolution of Research

The evolution of research in the study area is shown through the network visualization chart. It maps the time periods in which the research has been undertaken.

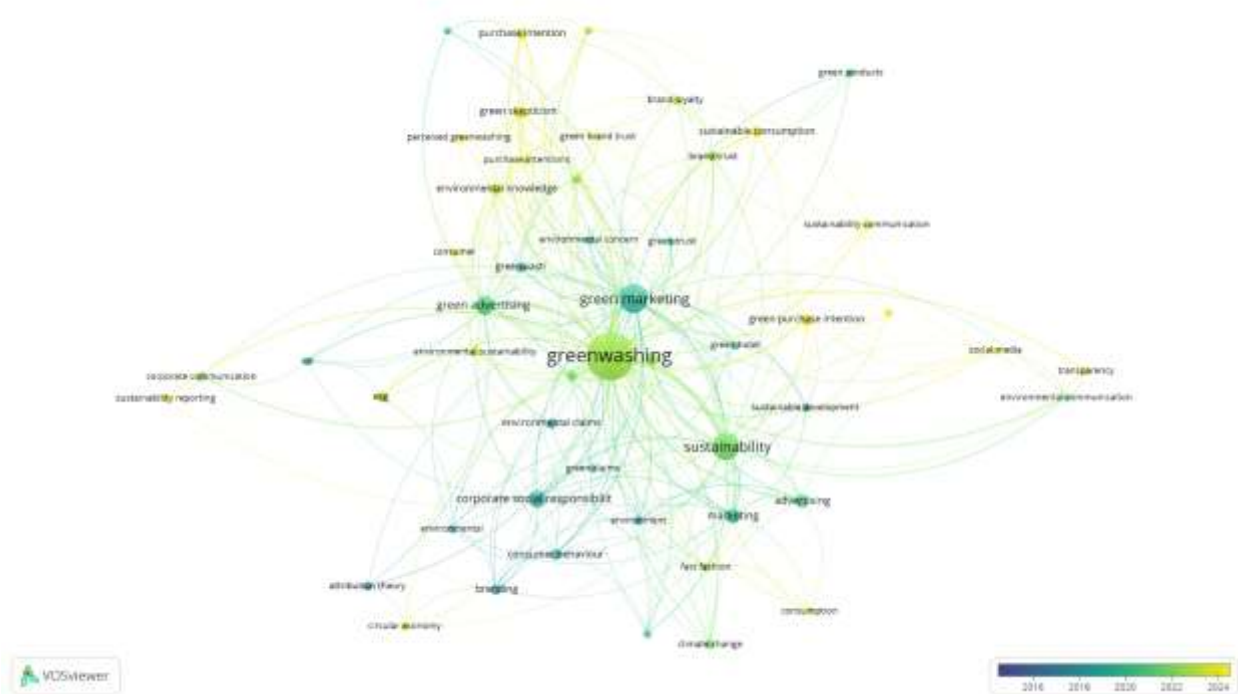


Figure 6. Evolution of Research

The evolution of research on greenwashing and sustainable marketing is examined with the help of an overlay visualization that was created with the help of bibliometric mapping. In this visualization, the size of the nodes is the frequency of the keywords, whereas the color gradient is the average year of publication of the keywords. The colors are blue (previously researched themes), green (relatively new themes), and yellow (newest themes), which fall between the years of possibly 2016 and 2024. Network structure provides an explanation of the manner in which the thematic focus of the literature has changed over the period of time.

The first phase of the research which is expressed in blue-colored nodes was concentrated on the basic notions about sustainability and corporate responsibility. Some of the major themes in this stage are corporate social responsibility, branding, consumer behaviour, environmental sustainability, marketing, climate change and environmental claims. In this era, sustainability was mostly discussed on a big strategic plane on a literature level. The scholars looked at how companies included the environmental factors in their corporate policies and branding measures. CSR was a key issue in the development of sustainability communication and branding. Consumer behaviour concerning environmental responsible consumption was also studied as well as the impact of environmental concerns on consumer decisions. Greenwashing was not the current subject of academic interest yet at this stage. Rather, the focus of research was on overall sustainability practices, environmental communication, as well as integration of sustainability in marketing and corporate governance practices. This initial work provided the conceptual basis of other studies on authenticity and credibility of corporate environmental statements.

The second stage, represented by the color green, is the time when the central topic of greenwashing became a dominant trend in the literature. Keywords that feature in this stage are greenwashing, green marketing, sustainability, green advertising, environmental concern, environmental knowledge, environmental claims, and consumer behavior. At this period, the research focus began to change dramatically as the focus on detecting and interpreting practices of misleading environmental communication began to gain scholarly interest. Researchers started to investigate the strategic use of green marketing by firms to attract the images of environmental friendliness possibly overstating or falsely reporting on sustainability activities. Greenwashing as a notion was, therefore, of central interest to the overall discussion of sustainable marketing. The researches at this time also focused on the way consumers perceive environmental claims and

react to green marketing activities. The environmental knowledge and environmental concern were largely studied as variables that affected the consumer perceptions of corporate sustainability communication. The literature further examined how green advertising influences the consumer attitude towards brands that are responsible in relation to the environment. Notably, the visualization of the network demonstrates that greenwashing is a very centralized node; this means that it has a close relationship with many other related concepts, including sustainability, marketing, and consumer perception. This implies that greenwashing has now become an important concept that connects corporate responsibility topics, marketing and consumer trust.

The latest research phase, denoted by yellow colored nodes, puts into light new themes which dwell on consumer psychology, behavioral outcomes, and communication transparency. Among the important issues during this stage are the green purchase intention, purchase intention, brand loyalty, brand trust, green brand trust, green skepticism, perceived greenwashing, sustainability communication, transparency, and social media. The recent studies have been more deposited towards defining the role of greenwashing in consumer attitudes, trust, and purchase decisions. The psychology behind consumer reactions to sustainability communications has become a subject of research by scholars, including cynicism towards corporate environmental communications and feelings of authenticity.

Green skepticism and perceived greenwashing have become increasingly popular concepts that can attest to the increasing interest in the credibility of corporate sustainability communication. Consumers are also more demanding of possibly deceptive green claims now that they are more environmentally conscious. The focus on green purchase intention and brand loyalty is also another significant trend in the new literature. Researchers are looking into the role trust in green brands plays on consumer willingness to have sustainable consumption. This looks like a move, which is no longer firm-based sustainability policies but a consumer-based behavioral effectiveness.

Moreover, the position of the keywords like social media, transparency, sustainability communication, etc., means that scholars start to acknowledge the importance of digital platforms in forming the perception of the population as regards the corporate accountability towards the environment. The social media has emerged as a pivotal medium where sustainability claims are propagated, reviewed and debated. Other recent works point to more general sustainability paradigms, such as the circular economy and sustainable consumption, which indicate that research agendas are now developing beyond single firm practices, towards systemic sustainability transitions.

The temporal overlay visualization shows that there is a visible sequence in the subject of greenwashing and sustainable marketing research focus. The initial research dealt mostly with high-level sustainability and social responsibility of the corporations. In the long run, the literature came to pay more attention to the problem of greenwashing as a marketing strategy. Recently, another focus in research has been transferred to the study of consumer perceptions, dynamics related to trust, and the consequences of behavioral patterns connected with corporate sustainability communication. This development indicates a larger change in sustainability research into a consumer-based and communication-based view of the research. The impending aspect of credibility in corporate environmental claims is evidenced by the rising urge of trust, transparency, and skepticism. The results indicate that the research area is moving towards the further comprehension of how sustainability communication impacts consumer behavior, brand relations, and market performance in a more environmentally conscious market.

3.7 Research Gaps Identified from Bibliometric Analysis

Although extensive research explores psychological determinants such as environmental concern, moral norms, and attitudes toward green products (e.g., Ajzen, 1991; Paul Stern, 2000; Peattie, 2010), a persistent attitude-behavior gap remains insufficiently resolved. Many studies rely heavily on self-reported intentions rather than observed purchasing behavior. Additionally, limited longitudinal research tracks how pro-environmental intentions translate into sustained behavioral change over time. Future research should prioritize behavioral data, cross-cultural validation, and experimental designs that test real purchasing environments rather than hypothetical scenarios.

While research consistently links CSR engagement to brand trust, reputation, and loyalty (e.g., Du et al., 2010; Bhattacharya & Sen, 2004), there is limited empirical evidence measuring the long-term financial performance outcomes of sustainability-driven branding strategies. Many studies examine perceptual outcomes rather than objective financial indicators. Furthermore, sector-specific comparisons remain underdeveloped, making it difficult to determine whether CSR impacts differ across industries. Future research should integrate financial modeling, longitudinal firm-level data, and comparative industry analyses. Research identifies greenwashing as a significant threat to consumer trust (e.g., Delmas & Burbano, 2011), yet empirical measurement of its long-term reputational consequences remains limited. Most studies focus on consumer perception rather than quantifying brand recovery trajectories following exposure. Moreover, limited

research examines regulatory effectiveness in mitigating deceptive environmental claims. Future studies should investigate post-greenwashing brand rehabilitation strategies and policy-based enforcement mechanisms.

Although sustainable branding is often associated with competitive differentiation (e.g., Porter & Kramer, 2006), empirical evidence isolating sustainability as a direct source of sustained competitive advantage remains fragmented. Many studies adopt case-based approaches rather than large-scale quantitative validation. Additionally, limited research explores how small and medium enterprises operationalise sustainability branding compared to multinational corporations. Future research should incorporate strategic performance metrics and multi-country datasets to validate sustainability as a durable competitive driver. Although the literature increasingly integrates circular economy principles and climate change discourse into marketing (e.g., Geissdoerfer et al., 2017; Bocken et al., 2016), empirical research directly linking circular practices to measurable consumer behavioural change remains limited. Many studies remain conceptual (e.g., McDonough & Braungart, 2002). Furthermore, limited research measures the actual environmental impact of sustainability-oriented marketing interventions rather than attitudinal outcomes.

Studies such as Whitmarsh & O'Neill (2010) and Trudel (2019) demonstrate behavioural relevance, yet cross-cultural replication and long-term impact analysis remain underdeveloped. Additionally, limited integration exists between circular design strategies and marketing communication execution. Future research should prioritise experimental field studies measuring real reductions in resource consumption attributable to marketing initiatives. Although research highlights the importance of digital transparency and online disclosure (e.g., Seele & Gatti, 2017; Wang et al., 2018), limited empirical studies examine how specific digital mechanisms such as algorithmic amplification, influencer partnerships, and user-generated content shape long-term trust formation.

Research by Kapitan & Silvera (2016) and Saxton & Waters (2014) provides foundational insights, yet misinformation dynamics and conflicting sustainability narratives in digital ecosystems remain insufficiently explored. Additionally, few studies investigate how real-time crisis communication (e.g., Coombs & Holladay, 2012) interacts with sustainability reputation management. Future research should employ digital analytics, platform-level data, and experimental designs to evaluate credibility mechanisms in algorithm-driven environments.

4. Discussion

The bibliometric search has shown the strong growth of the research on greenwashing and sustainable marketing between 2005 and 2025 with a significant surge after 2015. This trend is reflected in the process of global changes in environmental awareness, corporate responsibility, and ESG reporting guidelines, which occurred alongside the increased consumer awareness of the sustainability claims. The six identified thematic clusters, green consumer behaviour, CSR and brand equity, greenwashing and consumer scepticism, sustainable marketing strategies, circular economy views, and digital transparency, support the interdisciplinary nature of the field, which relies on marketing, psychology, management, and environmental science.

The credibility of and the feeling of authenticity among the consumers are critical indicators of whether the sustainable marketing programs have been successful. Despite the positive relationship between environmental concern, moral norms, and perceived consumer efficacy and the green purchase intentions, the attitude-behavior gap that has long been observed in the studies exists, and this means that the positive intention often does not result in actual behavior. Other contextual factors, such as price sensitivity, availability of the product, and cultural heterogeneity, also make the adoption of sustainable goods more complex. Greenwashing remains the major impediment, as the false assertions regarding the environment undermine brand authority and strip consumers off trust, thus highlighting the necessity of clear and verifiable sustainability messages.

Authentic sustainable branding and corporate social responsibility have shown to build brand equity and consumer loyalty. However, research that can be related to the long-term economic and reputational impact of sustainability strategies is limited especially in the context of the emerging markets and in the heterogeneous industries. Similarly, although online platforms offer new opportunities on the way to transparency and involvement, empirical studies analyzing the effectiveness of influencer teams, live communication, and artificial intelligence of sustainability stories are limited. The integration of principles of the circular economy refers to a more comprehensive systems-level concept of sustainability; however, the majority of the available literature focuses on the conceptual aspect, and very few studies have empirically quantified the behavioural or environmental outcomes.

In turn, these observations indicate a set of gaps in research: (i) longitudinal and experimental research to track consumer behaviour in the long term; (ii) cross-cultural support of sustainable marketing constructs; (iii) empirical

assessment of digital communication formats; and (iv) quantitative assessment of interventions in the circle economy. By tackling these shortcomings, scholars and practitioners will be better positioned to come up with evidence-based marketing practices aimed at reducing the attitude-behavior gap in order to enhance trust and simultaneously achieve environmental and economic goals.

6. Conclusion

The study provides a research-level bibliometric inquiry into 371 peer-reviewed papers dealing with the topic of greenwashing and sustainable marketing published between 2005 and 2025. The results outline the conceptual map of the field, identifying six major thematic groups and highlighting key figures and geographical dominations as well as dominant research trends. It has been argued in the analysis that the discipline has grown out of primitive studies of green consumer behavior into complex studies of CSR, digital communication, the circular economy, and trust relations. The results highlight the importance of authenticity, transparency, and stakeholder involvement in guiding consumer reactions and developing sustainable brand equity. The current issues, such as greenwashing, attitudinal-behavioral disjunction, and lack of empirical evidence in the digital and circular economy sphere, are indicative of the need to conduct further research. This study complements the existing understanding of the development of sustainable marketing research and offers practical suggestions to scholars, marketers, and policymakers who aim to improve communication, encourage responsible consumption, and prevent greenwashing because of global scholarship aggregation.

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