

# Green Supply Chain Marketing: Trends and Research Evolution

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## ABSTRACT

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This study aims to map the intellectual structure, research trends, and evolution of Green Supply Chain Marketing through a bibliometric analysis of scholarly publications indexed in the Scopus database. Using VOSviewer as an analytical tool, the study examines keyword co-occurrence, overlay visualization, density mapping, co-authorship networks, institutional collaboration, and country-level partnerships to identify dominant themes and emerging research directions. The findings reveal that the field has evolved from an operational focus on environmental management and green manufacturing toward a strategic integration of marketing, sustainability, and supply chain management. Core research clusters highlight the growing importance of green marketing strategies, decision making, and sustainability-driven innovation in shaping competitive advantage. Overlay analysis indicates that recent studies increasingly emphasize consumer attitudes, government roles, and strategic marketing approaches, reflecting a shift toward market-oriented sustainability practices. Collaboration analysis shows that China and India serve as major contributors to global research output, while cross-institutional collaboration remains relatively fragmented, suggesting opportunities for broader interdisciplinary engagement. Overall, the study provides a comprehensive overview of the development and future trajectory of Green Supply Chain Marketing research and offers insights for scholars and practitioners seeking to align environmental responsibility with marketing and supply chain performance.

**Keywords:** *Green Supply Chain Marketing, Sustainability, Supply Chain Management, Green Marketing, Bibliometric Analysis*

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## 1. INTRODUCTION

In recent decades, the global business landscape has experienced significant transformations, driven largely by environmental awareness, consumer consciousness, and regulatory frameworks. The traditional focus of supply chain management on efficiency, cost reduction, and timely delivery has gradually shifted to incorporate sustainability principles, resulting in the emergence of the green supply chain (GSC) concept. Green supply chain management (GSCM) integrates environmental considerations into every stage of the supply chain, from procurement and production to logistics and product disposal, aiming to minimize ecological footprints while maintaining economic viability [1]. The increasing recognition of environmental degradation, climate change, and resource scarcity has propelled organizations to adopt environmentally responsible practices, not merely as compliance measures but as strategic imperatives for competitive advantage.

Marketing, as the interface between organizations and their consumers, plays a crucial role in translating sustainable practices into consumer perception and behavioral outcomes. Green supply chain marketing (GSCMkt) represents the convergence of these two disciplines—marketing and supply chain management—where sustainability becomes both a process and a communicative strategy. Firms leveraging green supply chain marketing are able to promote eco-friendly products, enhance brand reputation, and influence consumer choices toward environmentally responsible consumption. In essence, GSCMkt extends beyond operational improvements, serving as a bridge between organizational sustainability efforts and market recognition. This convergence underscores

the evolving role of marketing in influencing supply chain decisions and shaping stakeholder engagement [2], [3].

Technological advancements have further accelerated the adoption of green supply chain practices. The development of digital tools, such as the Internet of Things (IoT), blockchain, and artificial intelligence, facilitates real-time monitoring of resource use, energy consumption, and waste management, enabling firms to optimize sustainability performance. In parallel, digital marketing channels allow organizations to communicate their green initiatives transparently and effectively, thereby reinforcing consumer trust. Moreover, regulatory pressures and international agreements on environmental protection, such as the Paris Agreement, have created both incentives and obligations for companies to integrate green practices into their supply chains and marketing strategies. Consequently, organizations now face the dual challenge of operationalizing sustainability within the supply chain while simultaneously conveying these efforts convincingly to consumers and stakeholders [1], [3], [4].

The evolution of consumer preferences has also been a driving force behind the rise of green supply chain marketing. Today's consumers are increasingly aware of the environmental implications of their purchasing decisions, and they often prefer brands that demonstrate environmental responsibility. Research indicates that consumers are willing to pay a premium for products that are sustainably sourced, produced, and delivered [5], [6]. This shift in consumer behavior has prompted organizations to reassess traditional marketing strategies, incorporating environmental narratives, eco-labeling, and green certifications as key differentiators. As a result, green supply chain marketing has emerged not merely as a compliance mechanism but as a strategic tool to enhance brand loyalty, market share, and long-term profitability.

Academia has responded to these developments by producing an increasing body of research examining the intersection of sustainability, supply chain management, and marketing [7]. Studies have explored topics ranging from green procurement practices and sustainable logistics to consumer perceptions of environmentally responsible brands and the financial implications of green initiatives. However, the literature reveals a fragmented landscape, with different disciplines approaching green supply chains from operational, strategic, and consumer-focused perspectives. This divergence necessitates a comprehensive examination of trends and the evolution of research in green supply chain marketing to synthesize insights, identify knowledge gaps, and provide guidance for both scholars and practitioners seeking to navigate this complex and rapidly evolving domain.

Despite growing interest and investment in green supply chain marketing, significant challenges persist in both practice and research. Organizations often struggle to align operational sustainability initiatives with marketing narratives, leading to gaps between actual environmental performance and consumer perception. Moreover, existing literature indicates inconsistencies in definitions, methodologies, and conceptual frameworks, resulting in fragmented knowledge and limited practical guidance for integrating green supply chain practices with marketing strategies (Zhu et al., 2012). As consumer expectations evolve and regulatory pressures intensify, a deeper understanding of the trends, patterns, and research trajectories in this field is critical to inform managerial decision-making and academic inquiry. This study aims to examine the trends and evolution of research in green supply chain marketing, providing a comprehensive overview of theoretical foundations, empirical findings, and emerging practices.

## 2. METHODS

This study employed a bibliometric research design to analyze the development and evolution of Green Supply Chain Marketing literature. Data were collected from the Scopus database using relevant keywords related to green supply chain, sustainability, and marketing within a defined publication period. The retrieved metadata, including titles, abstracts, keywords, authors, affiliations, and countries, were exported in CSV format and processed using VOSviewer software. The analysis focused on several mapping techniques, including keyword co-occurrence to identify thematic structures, overlay visualization to explore temporal research trends, density visualization to detect dominant research areas, and network analysis to examine co-authorship, institutional collaboration, and country-level partnerships. The minimum occurrence thresholds and normalization settings were adjusted to ensure data reliability and to highlight the most significant relationships within the research field. This approach enables a systematic and quantitative exploration of research patterns, intellectual structures, and emerging directions in Green Supply Chain Marketing studies.

## 3. RESULTS AND DISCUSSION

### 3.1 Network Visualization

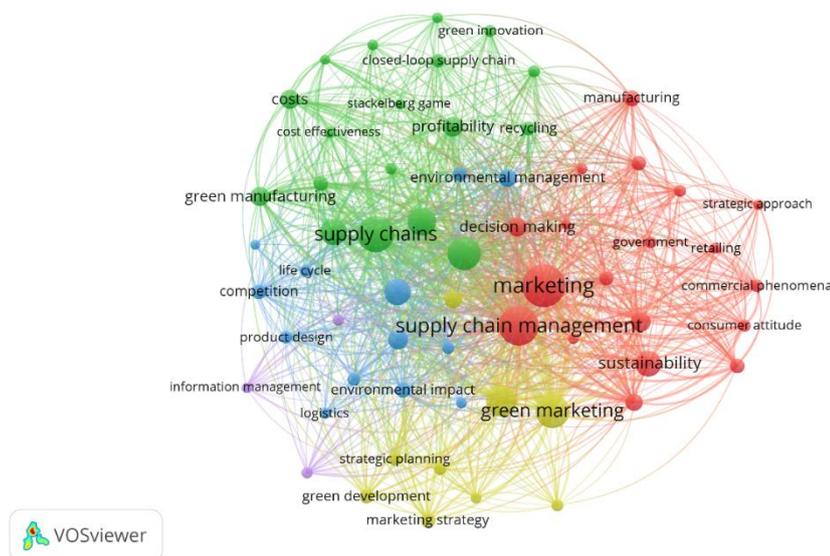


Figure 1. Network Visualization

Source: Data Analysis Result, 2026

Figure 1 reveals that green supply chain marketing research is strongly anchored in the intersection between marketing, supply chain management, and sustainability. The largest and most central nodes, such as “supply chain management,” “marketing,” “supply chains,” and “green marketing,” indicate that the literature has evolved from traditional logistics and operational discussions toward market-oriented sustainability strategies. The dense connections among these core terms suggest that scholars increasingly frame environmental initiatives not only as operational practices but as strategic marketing mechanisms that influence brand positioning, competitiveness, and long-term value creation.

The red cluster highlights a marketing-driven perspective, linking sustainability concepts with consumer behavior and strategic business approaches. Keywords like “consumer attitude,” “government,” “retailing,” and “strategic approach” show that recent studies emphasize external market forces and stakeholder expectations. This cluster suggests that green supply chain initiatives are no longer confined to internal efficiency but are shaped by regulatory pressures, public

awareness, and evolving consumer preferences. The strong presence of “marketing” within this cluster signals a shift toward integrating sustainability narratives into brand communication and market differentiation.

The green cluster reflects a more operational and economic orientation, with terms such as “green innovation,” “closed-loop supply chain,” “profitability,” “recycling,” and “cost effectiveness.” This indicates that a significant portion of the literature focuses on balancing environmental responsibility with financial performance. The connections between profitability and environmental management suggest that scholars increasingly explore business cases for sustainable supply chain practices. Rather than viewing green initiatives as cost burdens, many studies frame them as drivers of innovation, efficiency, and long-term competitiveness within manufacturing and production contexts.

The blue and purple clusters represent technological and logistical dimensions, including “product design,” “logistics,” “information management,” and “environmental impact.” These clusters highlight the integration of design thinking and data management into green supply chain marketing strategies. Research in this area often examines lifecycle assessment, eco-design, and digital information systems that support sustainable decision making. The presence of “competition” and “life cycle” indicates that companies are using sustainability as a strategic tool to optimize product development processes and respond to competitive pressures in global markets. The yellow cluster centered around “green marketing,” “strategic planning,” and “green development” signals an emerging convergence between sustainability strategy and marketing orientation. This suggests that recent research trends move toward holistic frameworks where environmental goals, marketing strategy, and supply chain performance are integrated into a unified model.

### 3.2 Overlay Visualization

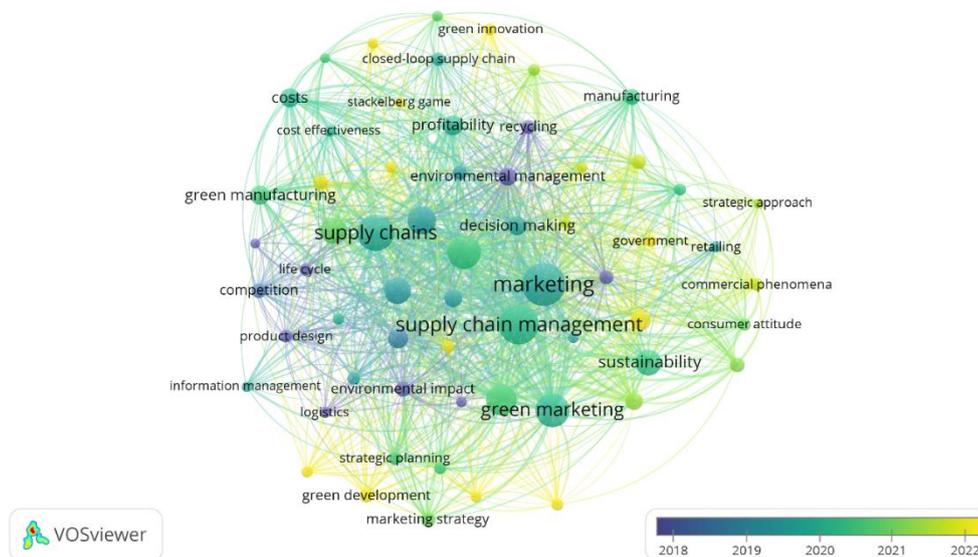


Figure 2. Overlay Visualization

Source: Data Analysis Result, 2026

Figure 2 illustrates the temporal evolution of research themes in green supply chain marketing, with colors representing the progression from earlier studies (blue–purple) to more recent topics (green–yellow). Earlier research phases were largely dominated by operational and environmental management perspectives, reflected in keywords such as “environmental management,” “information management,” “life cycle,” and “competition.” These themes suggest

that initial scholarly attention focused on efficiency, environmental impact measurement, and internal supply chain optimization rather than market-driven sustainability strategies.

As the field developed, the focus gradually shifted toward integrated supply chain and marketing perspectives, indicated by the central positioning of “supply chain management,” “marketing,” and “supply chains” in green and light-blue tones. This phase marks a transition where sustainability began to be embedded within strategic decision making and business performance discussions. The connections among profitability, green manufacturing, and decision making highlight how researchers started to examine sustainability as a source of competitive advantage, linking operational practices with broader managerial and strategic frameworks.

The most recent trends, represented by yellow-colored nodes such as “green marketing,” “marketing strategy,” “government,” and “consumer attitude,” indicate a growing emphasis on external stakeholders and market-oriented sustainability narratives. These emerging themes reflect a movement toward integrating environmental initiatives with branding, policy influence, and consumer perception. The visualization suggests that current research increasingly explores how green supply chains contribute to value creation through strategic marketing and collaborative governance, signaling a maturation of the field toward holistic and market-responsive sustainability models.

### 3.3 Citation Analysis

Table 1. The Most Impactful Literatures

Citations	Authors and year	Title
1257	[8]	Green supply chain management in China: Pressures, practices and performance
869	[9]	An analysis of the drivers affecting the implementation of green supply chain management
670	[10]	Green product supply chain contracts considering environmental responsibilities
637	[11]	“Green Marketing”: An analysis of definitions, strategy steps, and tools through a systematic review of the literature
551	[12]	Effects of green supply chain management practices on sustainability performance
519	[13]	Firm-level correlates of emergent green supply chain management practices in the Chinese context
496	[14]	Mapping the green product development field: Engineering, policy and business perspectives
362	[15]	Consumer product knowledge and intention to purchase remanufactured products
342	[16]	Greening the automotive supply chain: A relationship perspective
330	[17]	A new holistic conceptual framework for green supply chain management performance assessment based on circular economy

Source: Scopus, 2025

### 3.4 Density Visualization

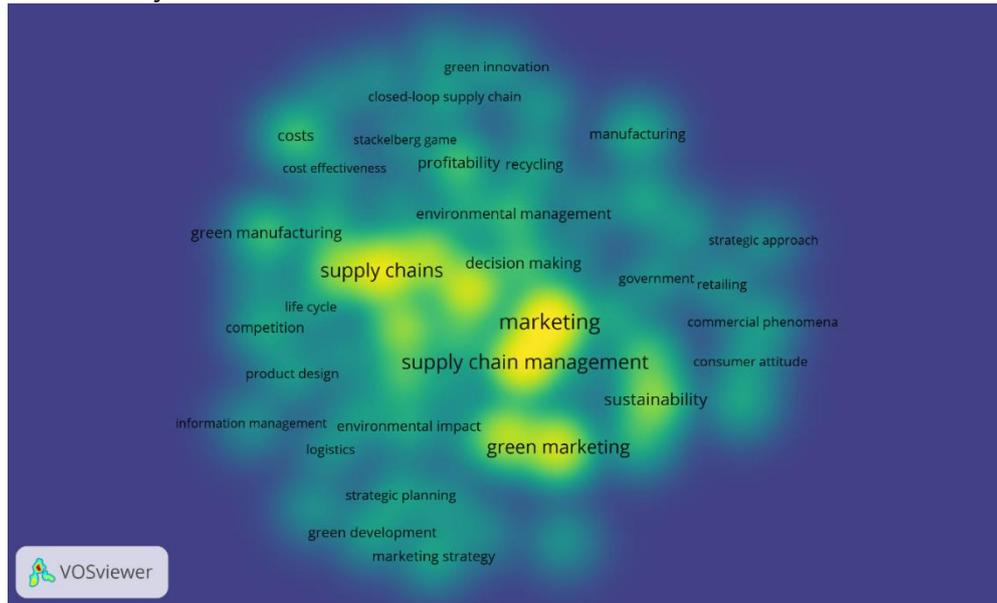


Figure 3. Density Visualization

Source: *Data Analysis Result, 2026*

Figure 3 highlights the intellectual concentration of research topics within the green supply chain marketing field. The brightest yellow areas are centered around “marketing,” “supply chain management,” “green marketing,” and “supply chains,” indicating that these themes represent the most frequently studied and strongly interconnected concepts. This dense core suggests that scholars increasingly position sustainability within marketing-driven supply chain frameworks, emphasizing how environmental initiatives intersect with managerial strategies, operational efficiency, and value creation across business networks. Surrounding this central hotspot are moderately dense areas such as “sustainability,” “environmental management,” “green manufacturing,” and “decision making,” which reflect supporting research streams that reinforce the main discourse. Peripheral zones with cooler colors, including topics like “information management,” “product design,” and “competition,” indicate emerging or more specialized subthemes that complement the broader narrative.

### 3.5 Co-Authorship Network

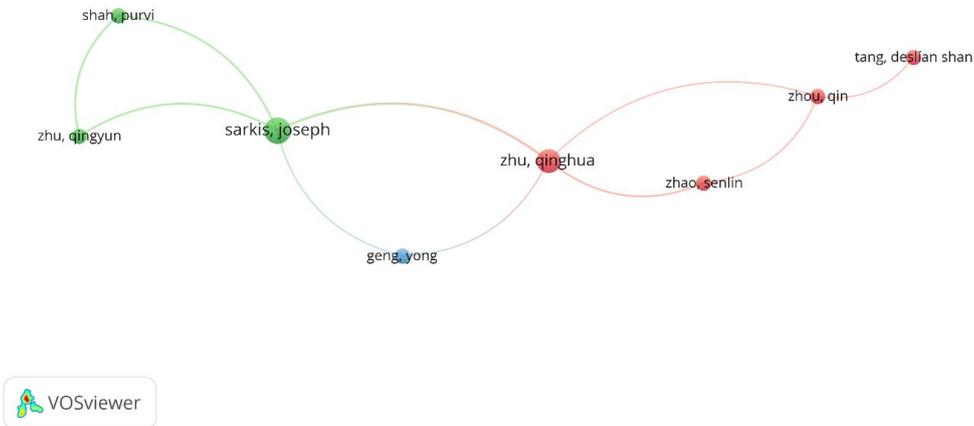


Figure 4. Author Visualization

Source: Data Analysis Result, 2026

Figure 4 shows a relatively small but interconnected collaboration structure within the green supply chain marketing research field. Two central authors, Sarkis, Joseph and Zhu, Qinghua, appear as key connectors bridging different collaboration clusters, indicating their strong influence in shaping the intellectual development of this domain. The green cluster around Sarkis highlights earlier foundational collaborations, while the red cluster centered on Zhu reflects a more recent or highly productive research group involving authors such as Zhou Qin, Tang Deshan, and Zhao Senlin. The presence of Geng Yong as an intermediate link suggests knowledge transfer between clusters, showing how collaborative networks evolve through shared research themes and joint publications.

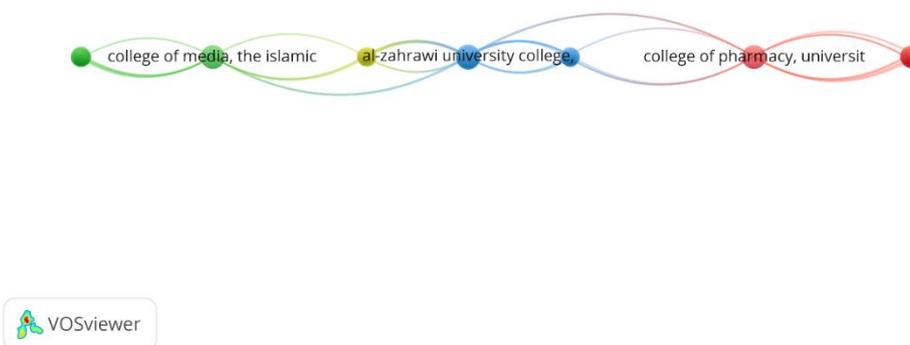


Figure 5. Affiliation Visualization

Source: Data Analysis Result, 2026

Figure 5 indicates a limited but linear pattern of partnerships among several academic organizations contributing to green supply chain marketing research. Institutions such as Al-Zahrawi University College and the College of Media at The Islamic University appear as intermediary nodes that connect different research groups, suggesting their role in facilitating cross-disciplinary collaboration. On the other side, the College of Pharmacy cluster reflects another collaboration stream, indicating that sustainability and supply chain themes are being explored beyond business faculties, extending into applied and interdisciplinary contexts. The relatively sparse and sequential structure of the network suggests that institutional collaboration in this field remains fragmented, with opportunities for broader international and cross-sector partnerships to strengthen knowledge integration and research impact.

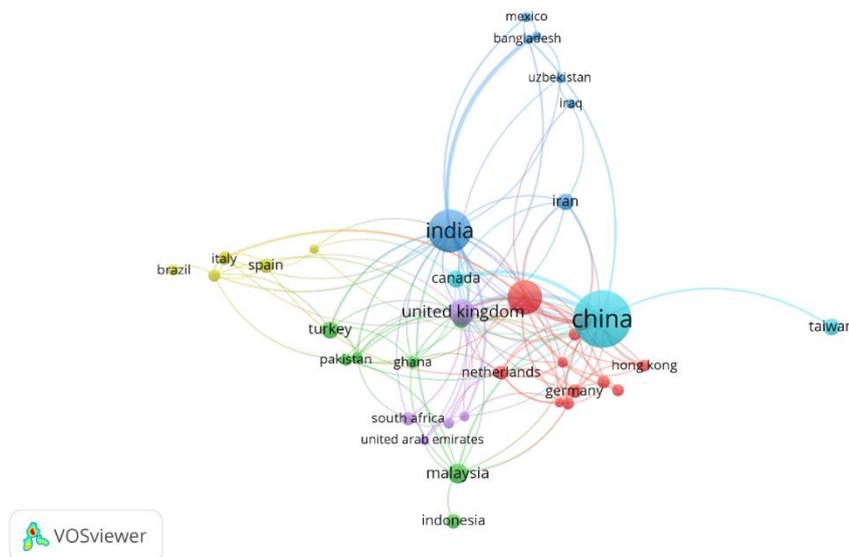


Figure 6. Country Visualization

Source: Data Analysis Result, 2026

Figure 6 shows that China and India act as the primary hubs driving research on green supply chain marketing, indicated by their large node sizes and dense interconnections with multiple countries. China appears strongly connected with developed research economies such as Germany, the Netherlands, and Hong Kong, reflecting its central role in global sustainability and manufacturing-related studies, while India bridges collaborations with regions including Iran, Bangladesh, and Uzbekistan, suggesting a growing influence from emerging economies. The presence of the United Kingdom and Canada as intermediary nodes indicates cross-regional academic exchange, linking Asian research clusters with Western scholarship. Peripheral countries such as Indonesia, Malaysia, and Taiwan appear less central but show potential growth areas, suggesting that collaboration in this field is expanding toward broader international participation, especially among developing and transition economies.

### Discussion

This bibliometric study of Green Supply Chain Marketing (GSCMkt) provides valuable insights into the evolution and trends in the field, highlighting the integration of sustainability into supply chain management and marketing practices. The findings suggest a shift from traditional operational models focused on environmental management to more strategic approaches that incorporate consumer behavior, government policies, and competitive advantage. The literature review reveals a growing emphasis on marketing-driven sustainability strategies that align with supply chain practices to foster brand loyalty and market differentiation.

The network visualization (Figure 1) illustrates the prominent role of green marketing within the field, reflecting the increasing focus on integrating sustainability narratives into consumer-facing strategies. The interconnection between supply chain management, green marketing, and sustainability highlights a convergence of previously siloed practices. This shift towards market-driven sustainability suggests that organizations are not only adopting green practices to meet operational goals but are also using them strategically to influence consumer behavior and enhance brand equity. As sustainability becomes a key differentiator in the marketplace, the role of marketing in conveying these efforts to consumers has become increasingly important.

The temporal evolution of the research themes, as shown in the overlay visualization (Figure 2), highlights the growing emphasis on external market forces and the integration of sustainability within strategic marketing. Earlier studies focused primarily on environmental management and operational efficiency, while more recent research has shifted towards understanding consumer attitudes, government involvement, and marketing strategies. This evolving focus underscores the importance of incorporating market and consumer insights into the development of green supply chain practices. The growing importance of consumer perception and strategic marketing aligns with a broader trend towards market-oriented sustainability practices, where companies leverage environmental initiatives to create value and competitive advantage.

In addition, the citation analysis (Table 1) reveals the foundational works that have shaped the trajectory of GSCMkt research. The impact of seminal studies, such as those by Zhu et al. (2005) and Dangelico & Vocalelli (2017), highlights the influence of operational and marketing perspectives in the development of green supply chain practices. These studies underscore the importance of integrating environmental responsibility into supply chain management while ensuring that these initiatives resonate with consumer values and expectations. The citation patterns suggest that GSCMkt research has benefited from a cross-disciplinary approach, with contributions from both supply chain management and marketing scholars.

The density visualization (Figure 3) further supports the centrality of green marketing and supply chain management as key themes in the field. The density of connections among these core themes indicates that the intersection of environmental management and marketing is a dominant area of interest for scholars. This suggests that future research in GSCMkt should continue to explore the integration of sustainability within supply chains, not only as an operational necessity but as a strategic approach to engaging consumers and improving brand reputation. Furthermore, the peripheral clusters, including technological aspects such as product design and logistics, highlight the role of innovation in shaping the future of GSCMkt. The integration of digital tools and technologies, such as IoT and blockchain, will continue to play a crucial role in optimizing sustainability performance and communicating these efforts to consumers.

Co-authorship and collaboration networks (Figures 4 and 5) reveal a fragmented yet evolving global research landscape in GSCMkt. While China and India emerge as key contributors to the field, collaboration between institutions and across borders remains relatively sparse. This suggests an opportunity for further international and interdisciplinary collaborations that could strengthen the impact of GSCMkt research. The need for more extensive global partnerships is particularly important given the global nature of supply chains and the universal relevance of sustainability in business practices. Expanding collaborative efforts could lead to more comprehensive frameworks for integrating green marketing strategies into supply chain management, offering valuable insights for both scholars and practitioners.

The findings of this study also align with the growing importance of government and regulatory influences in shaping green supply chain practices. As government policies increasingly encourage sustainable business practices, the integration of environmental standards into supply chains will likely become more formalized. This regulatory push is reflected in the emergence of policy-related themes in recent research, as seen in the overlay visualization. The increasing attention to governmental roles in sustainability suggests that future research should explore the interplay

between policy, consumer behavior, and supply chain strategies to better understand how regulations can drive innovation in green marketing and supply chain management.

## CONCLUSION

This bibliometric study reveals that the evolution of green supply chain marketing research has progressed from an operational and environmental management focus toward a more strategic and market-oriented perspective that integrates sustainability, supply chain management, and marketing innovation. The keyword and density analyses indicate that core themes such as supply chain management, green marketing, and sustainability form the intellectual foundation of the field, while emerging topics related to consumer behavior, strategic planning, and policy influence highlight its growing interdisciplinary nature. Collaboration patterns show that a small group of influential authors and countries, particularly China and India, play a central role in shaping research development, although institutional and international partnerships remain uneven and present opportunities for expansion. The study demonstrates that green supply chain marketing has matured into a holistic research domain where environmental performance, strategic marketing, and global collaboration converge to address contemporary sustainability challenges in business and supply networks.

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