

SMART MARKETING AND DIGITAL INNOVATION IN SUSTAINABILITY: A SYSTEMATIC LITERATURE REVIEW

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Abstract

The rapid advancement of digital technology has reshaped marketing practices and sustainable business strategy, yet research on smart marketing, digital innovation, and sustainability remains fragmented across separate lines of inquiry. This study aims to identify the development, dominant themes, conceptual relationships, and future research directions within this combined field. A systematic literature review combined with bibliometric analysis was conducted on 445 Scopus-indexed journal articles published between 2016 and 2025, using keyword co-occurrence, bibliographic coupling, and citation analysis to map the field's intellectual structure. The findings show that research has evolved from an initial focus on digital technology adoption toward broader concerns encompassing marketing transformation, artificial intelligence, consumer engagement, organizational decision-making, green innovation, and long-term value creation. Digital technology is found to enhance personalization, operational efficiency, transparency, and consumer engagement, though these benefits depend on organizational readiness, workforce competency, sound data governance, and credible sustainability communication. Practically, firms need to align technological investment with ethical governance and authentic sustainability practice to translate digital capability into lasting value rather than short-term commercial gain. The originality of this study lies in its integrative mapping of marketing capability, organizational transformation, consumer response, and sustainable value creation within a single analytical framework, offering a structured foundation for future research in this rapidly growing field.

Keywords: *Artificial Intelligence Adoption; Consumer Engagement; Green Innovation; Data Governance; Bibliometric Mapping*



By Authors

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1. Introduction

Over the past several years, sustainability and digital transformation have emerged as central concerns in the formulation of contemporary business strategy. Mounting environmental pressures, shifting consumer expectations, and the rapid pace of technological change have prompted firms to rethink how value is created, communicated, and delivered to the market. Marketing, in this light, can no longer be viewed merely as a function concerned with product promotion and short-term profitability; it is now expected to contribute to long-term value creation by weaving economic, social, and environmental considerations into the fabric of everyday business activity (White et al., 2025). Digital technologies, for their part, offer firms considerable opportunities to raise operational efficiency, broaden market reach, gain a clearer understanding of consumer needs, and manage resources in a more informed manner (Uršič & Čater, 2025).

This broader shift has given rise to what is now widely termed smart marketing an approach built on artificial intelligence (AI), data analytics, automation, and personalization, all directed toward sharper marketing decisions and deeper consumer engagement (Dwivedi et al., 2021; Vlačić et al., 2021). By drawing on consumer data, smart marketing allows firms to craft strategies that are more adaptive, more responsive, and more attuned to the individual consumer. Yet the deployment of such intelligent technologies in marketing cannot be fully understood in isolation from the wider phenomenon of digital innovation, which concerns the use of digital technologies to reshape business models, organizational processes, marketing channels, and the very nature of firm consumer interaction (Verma et al., 2021; Ziakis et al., 2023). Smart marketing, then, is perhaps best understood as a data-driven marketing capability, while digital innovation constitutes the broader organizational and technological infrastructure through which that capability takes shape and is put into practice.

The relationship among smart marketing, digital innovation, and sustainability deserves particular attention, since technological progress does not, on its own, guarantee sustainable outcomes. Digital tools may well sharpen efficiency, personalization, supply chain visibility, and consumer communication, yet whether they genuinely advance sustainability hinges on how they are designed, deployed, and aligned with an organization's broader objectives. Sustainability, in this sense, operates as a strategic compass one that steers marketing and digital innovation toward the creation of durable economic value while also holding firms accountable to environmental responsibility, social obligation, transparency, and the interests of a wider set of stakeholders. Digital innovation, in turn, can advance sustainability through more efficient resource use, supply

chain transformation, green innovation, and a heightened capacity for organizational responsiveness (Le et al., 2024; Rotondo et al., 2025). Smart marketing, digital innovation, and sustainability are, accordingly, best understood not as separate strands of inquiry but as interlocking dimensions of a single, ongoing process of business transformation.

Several earlier reviews have already taken up parts of this relationship. Alkhatib et al. (2023), for instance, conducted a systematic review of green marketing in the digital age, tracing the development of research at the intersection of green and digital marketing and surfacing themes tied to marketing strategy, digital media, consumer behavior, promotional practice, and the challenges of the digital environment. Valuable as this foundation is, its emphasis rests chiefly on the evolution and application of green and digital marketing practices, rather than on the fuller integration of smart marketing capabilities with digital innovation and sustainability.

More recently, Bashar et al. (2025) turned their attention to sustainable digital marketing, offering an integrated taxonomy, a conceptual framework, and an agenda for future inquiry. Their work advances the conceptual grounding of sustainable digital marketing by linking sustainability concerns to digital marketing practice and by mapping out relevant theoretical, contextual, and methodological directions. Even so, its central aim is to conceptualize sustainable digital marketing as a research domain, rather than to position smart marketing explicitly as a data-driven capability or to trace its relationship with digital innovation as a wider mechanism of organizational change.

In a related vein, Mei et al. (2025) examined the role of artificial intelligence in green marketing through a systematic review, classifying AI technologies by function and assessing their contribution to product development, pricing, distribution, and promotion. While this review sheds useful light on AI-enabled green marketing, its focus remains largely confined to AI's role within the green marketing mix, leaving open a broader inquiry into how smart marketing, digital innovation, and sustainability intersect across technological, organizational, consumer, and strategic dimensions alike.

Taken together, these studies suggest that the literature has developed along several related, yet only partially connected, lines green marketing, digital marketing, sustainable digital marketing, artificial intelligence, digital transformation, and digital innovation among them. The core academic challenge, then, is not simply the growing volume of publications, but the limited degree to which these separate streams have been drawn together into a coherent conceptual whole. It remains unclear how smart marketing operates as a marketing capability, how digital innovation functions as a mechanism of organizational and market change, and how the two, together, contribute to sustainability-oriented value creation. This matters because digital technologies can just as easily sharpen marketing efficiency and consumer engagement without necessarily securing environmental responsibility, social accountability, or genuine long-term sustainability.

The gap this study seeks to address is therefore both integrative and conceptual in nature. Existing reviews have tended to focus on discrete intersections green and digital marketing, sustainable digital marketing, or AI's application within green marketing without adequately mapping the broader intellectual terrain connecting smart marketing, digital innovation, and sustainability as a unified field of inquiry. Nor has sufficient attention been paid to how research themes, patterns of collaboration, and conceptual linkages among these three areas have evolved over time. A more comprehensive mapping has therefore needed one capable of clarifying how these concepts have developed, how they relate to one another, and which avenues remain open for future exploration.

In response, the present study examines smart marketing, digital innovation, and sustainability as an integrated analytical domain, rather than narrowing its lens to any single technology, marketing channel, or sustainability outcome. It maps the broader trajectory of the field and traces the intellectual and thematic connections among its principal concepts, combining a systematic literature review with bibliometric analysis to examine publication trends, patterns of research collaboration, keyword co-occurrence, bibliographic coupling, and the evolution of research themes. This approach makes it possible to identify the field's dominant themes, its emerging topics, and the conceptual threads running through it.

The contribution of this study is threefold. First, it offers an integrated mapping of the literature on smart marketing, digital innovation, and sustainability, bringing together research streams that have too often been examined in isolation. Second, it clarifies the conceptual standing of each: smart marketing as a data-driven marketing capability, digital innovation as a mechanism of technological and organizational change, and sustainability as the strategic orientation guiding long-term value creation. Third, it traces the field's evolution from largely technology-centered discussions toward broader strategic concerns encompassing consumer behavior, organizational transformation, sustainable innovation, and responsible digital practice. The study further draws attention to the challenges accompanying the integration of intelligent marketing and digital technologies among them data privacy, greenwashing, digital inequality, technological literacy, and organizational readiness. In doing so, it lays a structured foundation for future research into how digital intelligence and innovation might support marketing systems that are more adaptive, more responsible, and more firmly oriented toward sustainability.

2. Literature Review

2.1 Smart Marketing Concept

Smart marketing refers to a marketing approach that employs artificial intelligence (AI), automation, data analytics, and personalization to enhance the effectiveness and efficiency of decision-making in marketing, particularly in marketing

communication (Vlačić et al., 2021; Kumar et al., 2024). In a broader context, technology is also utilized to accurately understand consumer behavior in order to support more responsive decision-making (Kshetri et al., 2024). Studies by Rosário (2023) indicate that smart marketing has evolved into a strategic approach that functions to build adaptive, data-driven relationships with consumers.

2.2 Sustainability and Digital Transformation

Sustainability, within the context of modern marketing, is closely associated with digital transformation. According to this concept, digital innovation can support supply chain transformation, resource efficiency, and the strengthening of business practices to achieve greater environmental and social responsibility (Le et al., 2024; Rotondo et al., 2025). Several studies have shown that the collaboration between digitalization and green innovation contributes positively to organizational sustainability performance (Sabando-Vera et al., 2025; Zuñiga-Collazos et al., 2025). It can therefore be concluded that digital technology serves not only as a tool for enhancing competitive advantage but also as a strategic element in achieving long-term sustainability (Huang et al., 2025; Gao et al., 2026).

2.3 Digital Innovation in Marketing

Digital innovation in marketing relates to the application of digital technology to transform marketing models, business processes, and consumer–firm interactions (Verma et al., 2021; Ziakis et al., 2023). Several studies indicate that through the integration of big data, AI, and other digital technologies, companies can enhance operational efficiency and market responsiveness, as well as rapidly identify new opportunities (Borimnejad et al., 2025; Manjunath et al., 2025). However, other studies reveal that the adoption of digital innovation in developing countries continues to face considerable challenges, including limited human resource readiness, infrastructure constraints, and the digital divide (Gao et al., 2026).

2.4 Consumer Behavior in Sustainable Marketing

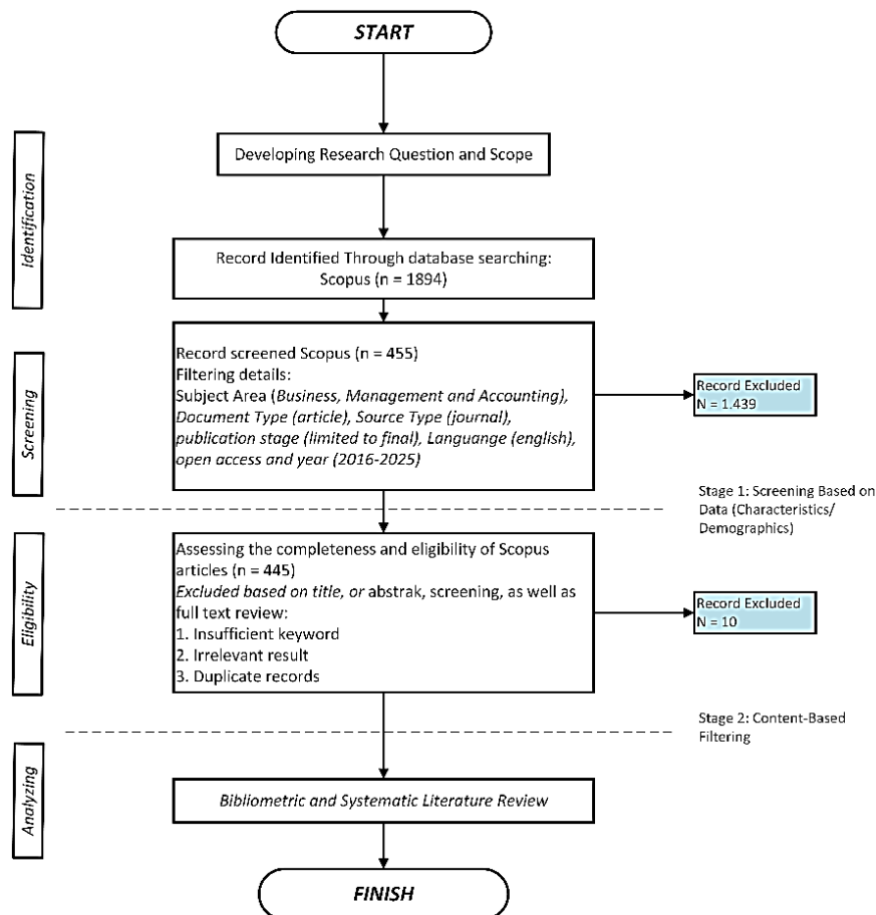
Consumer behavior constitutes an important element in explaining the effectiveness of sustainable marketing strategies. Several studies show that consumers are increasingly responsive to credible sustainability messages, such as green packaging, eco-labels, and corporate social responsibility (CSR) communication (Quoc et al., 2025; Dao, 2024; Jain et al., 2025). Within the context of smart marketing, companies can leverage consumer data to personalize messaging, enabling more relevant communication that enhances purchase intention and strengthens consumer engagement with corporate sustainability initiatives (Lestari, 2026; Verma et al., 2021).

2.5 Conceptual Integration of Digital Innovation, Smart Marketing, Consumer Behavior, and Sustainability

Digital innovation serves as the catalyst for operational and strategic change, unfolding through the stages of digitization, digitalization, and digital transformation, and drawing on technologies such as artificial intelligence, big data analytics, digital platforms, and the Internet of Things to build the capabilities firms need to create and deliver value to consumers (Verhoef et al., 2021). These capabilities are then put into practice through smart marketing encompassing social media marketing, influencer marketing, omnichannel strategies, and integrated supply chain systems which together sharpen marketing precision, deepen consumer engagement, and support the delivery of sustainability-oriented services (Nekmahmud et al., 2022). The application of such digitally driven smart marketing, in turn, shapes consumer behavior by influencing green product knowledge, subjective norms, environmental awareness, perceived value, satisfaction, and attribution of responsibility factors that together foster more positive attitudes, stronger perceived behavioral control, firmer green purchase intentions, and more responsible patterns of consumption and recycling (Su et al., 2022). This shift in consumer behavior functions as the crucial link connecting digital innovation to sustainability, since it is ultimately consumer response that determines the extent to which sustainable marketing strategies translate into genuine impact. Viewed in this light, the integration of digital innovation and smart marketing does more than generate economic value through greater efficiency and business growth; it also carries the potential to yield environmental and social value by reducing waste, raising sustainability awareness, supporting the transition to a circular economy, and reinforcing progress toward the Sustainable Development Goals (Sun et al., 2022).

3. Research Method

Figure 1. Flowchart Prisma



Source: Developed by the Authors (2026)

Figure 1 illustrates the methodological workflow of this study, beginning with the formulation of the research questions and scope, followed by literature identification through Scopus, screening based on bibliographic characteristics, eligibility assessment, and the construction of the final dataset. The resulting 445 articles were subsequently analyzed using Biblioshiny/RStudio and VOSviewer, followed by an SLR to interpret the research themes identified through this process.

3.1 Research Design

Data analysis was carried out in stages, combining bibliometric analysis with a systematic literature review (SLR). These two approaches serve distinct but complementary purposes. Bibliometric analysis was employed to identify publication

patterns, author productivity, citation influence, keyword development, and the relationships among articles within the broader knowledge network. The SLR and thematic review, meanwhile, were used to interpret the substantive content of the articles, identify their principal themes, and account for the trajectory of the field in more qualitative terms. In this sense, the SLR served to establish the pool of articles eligible for analysis, while bibliometric analysis was used to map the structure and evolution of knowledge within that pool. The research procedure followed four main stages: (1) identification, (2) screening, (3) eligibility and inclusion, and (4) bibliometric and thematic analysis.

The process of identifying and selecting articles was documented using the PRISMA framework to ensure transparency and traceability throughout the selection process. Articles meeting the established criteria were subsequently analyzed using Bibliometrix/Biblioshiny and VOSviewer (Lim et al., 2024; Lim & Kumar, 2024).

3.2 Data Source and Search Strategy

Research data were retrieved from the Scopus database. Scopus was selected for its well-structured bibliographic metadata, which supports both literature searching and bibliometric analysis (Baas et al., 2020). The literature search was conducted in April 2026 and restricted to English-language journal articles published between 2016 and 2025. The search strategy was designed to capture the relationships among smart marketing, sustainability, digital innovation, digital transformation, and artificial intelligence. The search string used was as follows:

Table 1. Full String

Scopus Database		Description
Search	Formula	("smart marketing" OR "AI-driven marketing" OR "intelligent marketing" OR "sustainable marketing" OR "green marketing" OR "digital marketing") AND ("sustainability" OR "sustainable business model" OR "environmental performance") AND ("digital innovation" OR "digital transformation" OR "technological innovation" OR "industry 4.0" OR "artificial intelligence")
(Keyword)		

Source: Developed by the Authors (2026)

The initial search yielded 1,894 records. After applying Scopus filters covering subject area, document type, source type, publication stage, language, open-access status, and publication year 455 records remained. These records were then evaluated against the predetermined inclusion and exclusion criteria.

3.3 PRISMA Procedure

The PRISMA procedure was carried out prior to the bibliometric analysis and followed the stages of identification, screening, eligibility, and inclusion. At the identification stage, a total of 1,894 records were retrieved through the Scopus database

search conducted in April 2026. At the screening stage, records were filtered according to the following publication characteristics:

Table 2. Filtering Details	
Scopus Database	Description
Filtering Details (n=445)	1. Year : 2016-2025
	2. Subject Area : Business, Management and Accounting
	3. Document Type : Article
	4. Publication Stage : Limited to Final
	5. Source type : Journal
	6. Language : English
	7. Open Access : All Open Access
	8. Keyword : Artificial Intelligence, Marketing, Digital Marketing, Innovation, Consumer Behavior, Digital Technologies, Social Media Marketing, Consumer Behaviour, Marketing Management, Marketing Strategy, Sustainable Marketing, Green Innovation.

Source: Developed by the Authors (2026)

Following the application of these filters, 455 records remained, while 1,439 records were excluded during this initial screening stage for failing to meet the specified publication characteristics and database constraints. The eligibility stage then involved a closer examination of each article's relevance based on its title, abstract, keywords, and completeness of metadata. At this stage, 10 records were excluded for failing to meet the relevance or eligibility criteria, leaving a final dataset of 445 articles. This final dataset of 445 articles was subsequently stored as a cleaned CSV file and used as the basis for all core bibliometric analyses.

3.4 Data Cleaning and Final Dataset

Following the screening process, the data were examined to identify duplicate entries, incomplete metadata, inconsistencies in author names, and variations in keyword formatting. This cleaning process was undertaken to improve metadata consistency prior to the bibliometric analysis (Lim & Kumar, 2024). Of the 455 records obtained after the Scopus filtering process, 10 were excluded during the eligibility stage, leaving 445 articles as the final dataset. This dataset was stored in CSV format and served as the foundation for all subsequent bibliometric and thematic analyses.

3.5 Data Analysis Technique

Data analysis in this study was conducted through a bibliometric approach using RStudio software, specifically the Bibliometrix package, to extract and manage metadata from the selected publications (Lim, 2024). The intellectual structure of the research field was then visualized using VOSviewer, which enabled comprehensive bibliometric network mapping, including author collaboration, keyword co-occurrence relationships,

and citation network patterns (Lim, 2024; Jose, 2026). To ensure the robustness and reliability of the analytical results, this study applied a multi-layered validation procedure comprising verification of metadata consistency, assessment of thematic cluster stability and coherence, and the application of a quantitative parameter

namely, a modularity threshold of ≥ 0.7 . In addition, a minimum cluster size of six articles was established to ensure the formation of a representative and analytically meaningful cluster structure (Omer, 2025; Lim, 2024).

4. Results and Discussion

4.1 Descriptive Statistics Article

Table 3. Descriptive Statistics Article

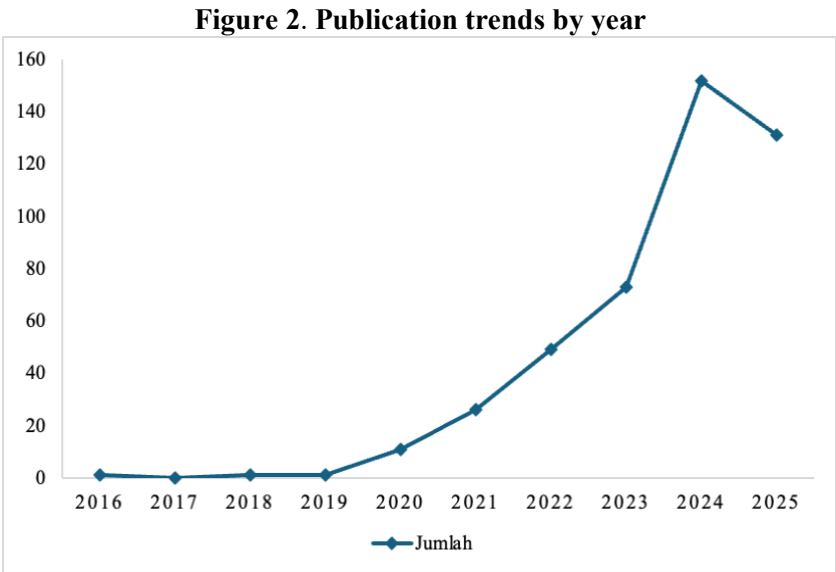
Description	Result
Timespan	2016–2025
Number of Sources	152
Number of Documents	445
Annual Growth Rate	71.74%
Number of Authors	1547
Authors of Single-Authored Documents	34
International Co-Authorship	41.35%
Average Citations per Document	31.25
Author's Keywords	1.563

Source: Data Processed by R-Biblioshiny (2026)

Scholarly interest in smart marketing, digital innovation, and sustainability has grown steadily over the 2016–2025 period. As shown in Table 3, this body of research comprised 445 articles published across 152 sources, expanding at an annual growth rate of 71.74%. A total of 1,547 authors contributed to the dataset, while only 34 articles were single-authored a pattern that reflects a field shaped largely by collaborative work. International co-authorship reached 41.35%, further indicating that this area of study has developed through extensive cross-country collaboration.

In terms of its underlying knowledge structure, the dataset contained 1,563 author's keywords, pointing to the considerable breadth of themes and approaches represented in the literature. Taken together, these indicators suggest that research on smart marketing, digital innovation, and sustainability has advanced in a manner that is active, collaborative, and multidimensional in scope. As Ratnasari et al., (2026) note, indicators such as publication output, authorship, source distribution, citation activity, and keyword frequency remain essential tools for mapping the development of a research field through bibliometric analysis.

4.2 Publication Trends by Year



Source: Data Processed by R-Biblioshiny (2026)

Publication trends in smart marketing, digital innovation, and sustainability show a marked increase over the 2016–2025 period (Figure 2). Output remained relatively modest between 2016 and 2019 before rising steadily from 2020 onward from 11 articles that year to 26 in 2021, 49 in 2022, and 72 in 2023. Publications peaked in 2024 at 151 articles, followed by a decline to 131 in 2025. Despite this decline in the final year, the figure still reflects sustained academic interest in the relationship among marketing, digital innovation, and sustainability. This pattern is consistent with Koul & Kasar, (2024), who observe that research on sustainable marketing has expanded alongside the growing integration of marketing strategy, digital technology, and the sustainability agenda.

4.3 Source Impact

Table 4. Source Impact

Source	Citation
International Journal of Information Management	4031
Technological Forecasting and Social Change	1374
Business Strategy and the Environment	1253
Journal of Business Research	809
International Journal of Information Management Data Insights	635
Industrial Marketing Management	376

Source: Data Processed by R-Biblioshiny (2026)

These patterns align with the broader trajectory of research on artificial intelligence and digital technology in marketing, particularly work concerned with consumer research, decision-making, personalization, and data analytics (Mariani et al., 2022). The distribution of citations, then, points to a field that has moved well beyond conventional marketing toward an integrated perspective spanning digital technology, organizational innovation, consumer behavior, and sustainability.

Figure 3. Word Cloud



A word cloud was used to visualize the terms that recur most frequently across the reviewed literature (Shekhar & Venugopal, 2025). As shown in Figure 3, the most prominent terms include Marketing, Innovation, Artificial Intelligence, Digital Technologies, Commerce, Sustainable Development, and Consumer Behavior. The prevalence of "Marketing" suggests that it functions as the central concept tying together Technological Advancement, Innovation, Consumer Behavior, and Sustainability within this body of literature.

The strong presence of "Innovation" indicates that marketing is no longer treated purely as a communication or promotional activity but as part of a broader process of organizational innovation one concerned with developing new ways of creating, delivering, and communicating value to consumers. Smart marketing, in this light, can be understood as a marketing approach increasingly reliant on technology, data, and adaptive capability to respond to shifting market conditions, a view consistent with Verma & Diwan, (2025), who argue that marketing innovation is increasingly geared toward sustainability goals, brand differentiation, and sustainability-based competitive advantage.

The terms "Artificial Intelligence" and "Digital Technologies" point to a field of study increasingly shaped by technology's capacity to process data, predict consumer behavior, personalize offerings, and support decision-making. Digital technology, in other words, is no longer merely a supporting tool for marketing but is becoming a strategic component in how marketing activities are conceived and carried out. This aligns with Mariani et al., (2022), whose review shows AI research within marketing, consumer research, and psychology advancing through themes such as decision-making, machine learning, social media analytics, technology adoption, and big data.

The presence of "Consumer Behavior" and "Consumption Behavior" signals that consumers occupy a central place in the relationship between technology, innovation, and marketing. This reflects a shift in research attention away from a firm-centric perspective toward understanding how consumers receive, use, and respond to digital technology and marketing strategy encompassing not only purchase decisions but also consumer experience, technology acceptance, trust, personalization, digital engagement, and responsiveness to sustainability values.

The terms "Commerce" and "Electronic Commerce" indicate that digital innovation is applied concretely within market exchange and transaction activities, extending beyond technology development to influence business models, distribution channels, customer interaction, and value creation. Smart marketing, accordingly, emerges as an approach that integrates digital technology with commercial activity to sharpen offer relevance, streamline marketing processes, and strengthen consumer relationships.

Meanwhile, the appearance of terms such as "Sustainable Development," "Sustainability," "Environmental Economics," "Green Economy," and "Circular

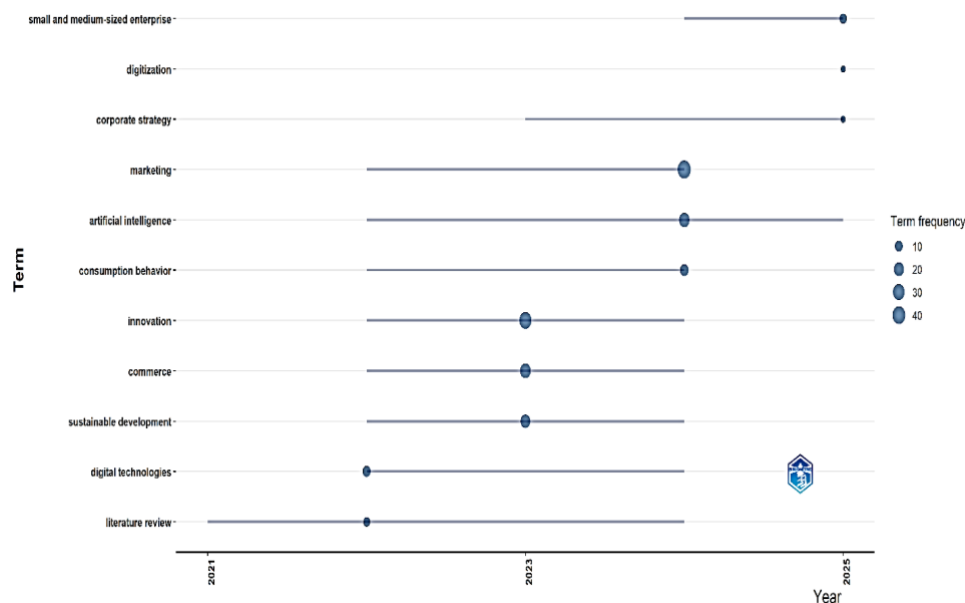
Economy" reflects a growing linkage between marketing technology and innovation on one hand and sustainability goals on the other. Innovation success, in this sense, is no longer judged solely by sales growth or efficiency gains but also by its contribution to long-term environmental, social, and economic value an argument reinforced by Verma & Diwan, (2025), who contend that sustainability-oriented marketing innovation can support brand differentiation, competitive advantage, and the integration of sustainability principles throughout the value chain.

Other keywords digital transformation, data analytics, social media, strategic approach, business models, small and medium-sized enterprises, and technology adoption point to the multidimensional character of this field. Digital transformation captures broader organizational change, while data analytics and artificial intelligence represent the technological capabilities that support it (social media, business models, and SME-related terms), in turn, show that digital innovation is examined across varied strategic, business-model, and organizational contexts.

4.5 Trend Topics

Trend topic analysis was employed to identify the dynamics of research topic development in the fields of artificial intelligence, digital marketing, innovation, and consumer behavior over the observation period. The figure illustrates the temporal distribution of various keywords, reflecting shifts in research focus over time. The results indicate that several major topics, such as marketing, artificial intelligence, and consumption behavior, exhibited a relatively long research timespan, suggesting that these topics serve as the foundational pillars of this field of study. Among the three, marketing exhibited the highest frequency of occurrence, indicating the dominance of a marketing perspective in research related to technology and consumer behavior. In addition, topics such as innovation, commerce, and sustainable development began to show increased research intensity during the mid-period, reflecting a shift in focus toward the integration of innovation and sustainability within business and marketing strategies. This indicates that sustainability and digital transformation have become increasingly significant concerns within the academic literature.

Figure 4. Trend Topics



Source: Data Processed by R-Biblioshiny (2026)

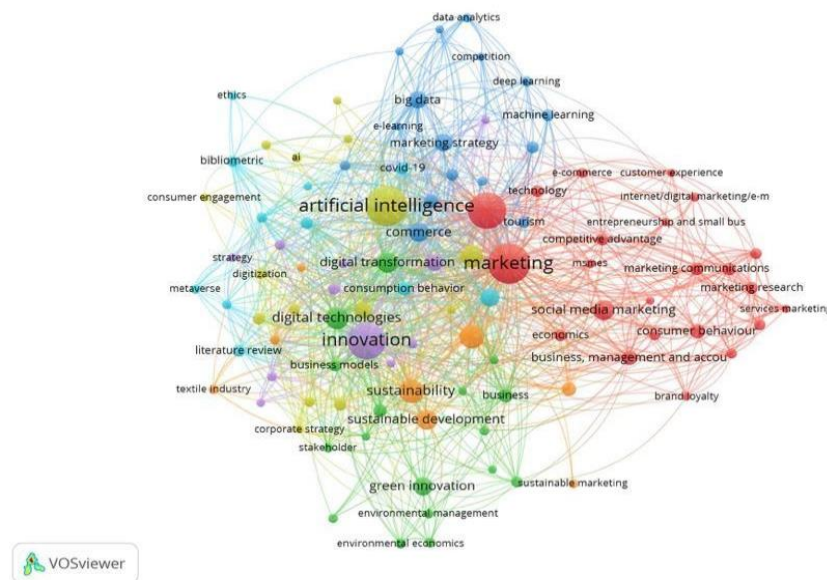
The trend topic analysis reveals how the research focus within smart marketing and digital innovation in sustainability has shifted over time. In the earlier period, around 2021, the topics that emerged centered on literature review and digital technologies, reflecting an initial emphasis on mapping the existing body of literature and exploring the early applications of digital technology in marketing.

By 2022, the focus had broadened to include innovation, commerce, and sustainable development a shift indicating growing attention to how digital innovation was being applied within commercial practice and how it contributed to sustainable development goals. Around 2023, attention turned more prominently toward marketing, artificial intelligence, and consumption behavior, marking a move toward examining AI's role in marketing and toward a more technology-informed understanding of consumer behavior.

The most recent developments are evident in the emergence of corporate strategy, digitization, and small and medium-sized enterprises as key topics in 2025. These themes suggest that the field has expanded beyond the application of technology in marketing activities alone toward a broader concern with integrating digitalization into corporate strategy and supporting the development of small and medium-sized enterprises.

4.6 Co-occurrence Network

Figure 5. Co-occurrence Network



Source: Data Processed by Vos Viewer (2026)

Keyword co-occurrence analysis was conducted using VOSviewer to identify the relationships among keywords and the principal themes underlying research on smart marketing and digital innovation in sustainability. Of the 2,152 keywords identified, 101 met the minimum threshold of five occurrences. The resulting network divided into seven interconnected clusters, pointing to a field that is multidimensional in nature rather than confined to a single facet of marketing.

The keywords "marketing" and "digital marketing" occupy a central position within the network, underscoring marketing as the field's primary concern. These terms connect closely with artificial intelligence, digital technologies, data analytics, big data, machine learning, and deep learning a pattern that gives rise to what might be termed data-driven and intelligent marketing, in which digital technology and AI are harnessed to support consumer analysis, personalization, automation, and marketing decision-making. The linkage among innovation, digital transformation, and commerce, meanwhile, suggests that digital innovation is also understood as a means of reshaping business processes and commercial activity more broadly.

The keyword network further reveals a theme centered on consumer-oriented digital marketing, formed through the interconnection of consumer behavior, consumer engagement, customer experience, social media marketing, and brand loyalty. This pattern indicates that the literature is concerned not only with the deployment of technology but also with how consumers receive, interact with, and respond to digital

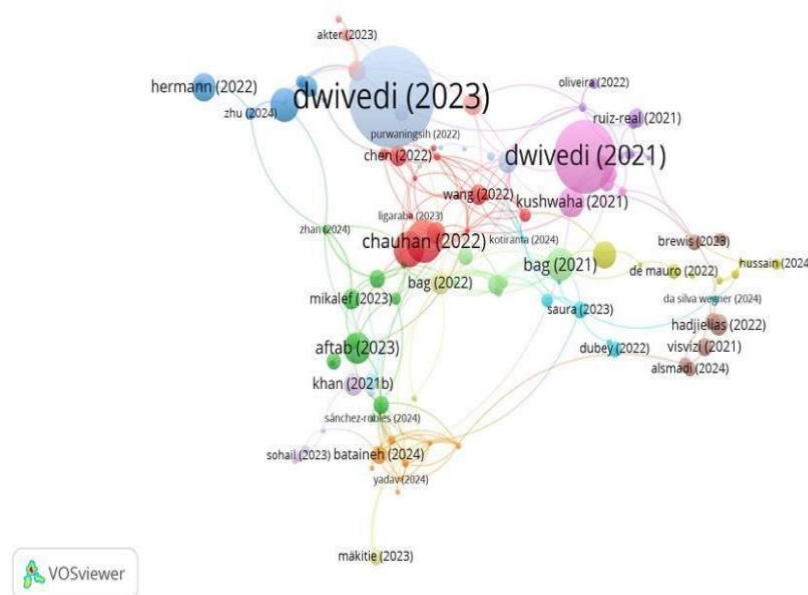
marketing strategies positioning consumer behavior as the link connecting technology adoption, marketing innovation, and the creation of customer value.

Another cluster points to a theme of sustainable and green marketing, marked by connections among sustainability, sustainable development, green innovation, environmental management, and sustainable marketing. This suggests that digital innovation is increasingly framed within a logic of long-term value creation spanning environmental, social, and economic dimensions such that sustainability functions not merely as an additional context but as a strategic orientation guiding the development of innovation and marketing practice.

A further theme, strategic and organizational digital transformation, emerges from the relationships among business models, corporate strategy, small and medium-sized enterprises, digitization, and competitive advantage. This theme centers on how organizations SMEs in particular leverage digital technology to develop new business models, strengthen competitiveness, and embed innovation within organizational strategy. The appearance of keywords such as metaverse, e-learning, and technology adoption likewise signals an expanding research scope extending toward newer forms of digital interaction and technology use.

4.7 Bibliographic Coupling

Figure 6. Bibliographic Coupling



Source: Data Processed by Vos Viewer (2026)

Bibliographic coupling analysis was conducted using VOSviewer, with documents as the unit of analysis, to identify the intellectual relationships among articles based on shared references. Of the 445 documents analyzed, 113 documents sharing at least five common references formed a connected network, organized into 15 research clusters. Each cluster reflects a distinct research perspective and focus, yet all remain interrelated in shaping the intellectual structure of research on smart marketing and digital innovation in sustainability.

Cluster 12 is dominated by the work of Dwivedi et al. (2023), "So What If ChatGPT Wrote It? Multidisciplinary Perspectives on Opportunities, Challenges and Implications of Generative Conversational AI for Research, Practice and Policy." This cluster centers on the opportunities, challenges, ethical dimensions, and managerial implications of generative AI. Its connections to research on AI adoption, digital ethics, and technological innovation suggest that the cluster represents a generative AI and digital ethics perspective, with a particular emphasis relative to the other clusters on the social and managerial consequences of AI development.

Cluster 9 is dominated by Dwivedi et al. (2021), "Setting the Future of Digital and Social Media Marketing Research: Perspectives and Research Propositions," focusing on digital marketing communication, social media, consumer engagement, and shifting consumer behavior. Although linked to Cluster 12 through shared themes of digital technology and AI, Cluster 9 is more oriented toward the practical application of technology within marketing activity, representing a digital marketing and consumer engagement perspective.

Cluster 3, represented by Flavián et al. (2022), centers on the intention to use analytical AI within the services sector, reflecting a technology adoption and user acceptance perspective particularly the roles of technology readiness, awareness, and user perception. This focus sets it apart from Cluster 12's broader treatment of generative AI's implications and Cluster 9's emphasis on digital marketing strategy, positioning Cluster 3 instead as providing the behavioral and psychological grounding for understanding how intelligent technologies come to be accepted.

Cluster 11, represented by Bag et al. (2021), examines AI's role in knowledge creation and rational decision-making within B2B marketing, representing an organizational capability and strategic decision-making perspective centered on knowledge management, decision-making, firm performance, and B2B marketing effectiveness. Its connection to Cluster 3 suggests that individual-level technology acceptance is linked to organizational-level AI adoption, though Cluster 11's emphasis lies more squarely with organizational capability and business performance.

Cluster 2, associated with Aftab et al. (2023), addresses green human resource management, green innovation, environmental strategy, and environmental performance, representing an organizational sustainability perspective. Unlike the AI- and marketing-oriented clusters, Cluster 2's central concern is how organizational practices and

environmentally minded strategy contribute to sustainability performance indicating that sustainable innovation is shaped not only by technology but also by organizational culture, human resources, and environmental management.

A comparison across clusters reveals a complementary intellectual structure. Clusters 12 and 3 establish the technological and behavioral foundations underlying AI adoption, Cluster 9 channels this technology toward marketing communication and consumer engagement, Cluster 11 extends the discussion to organizational decision-making and business performance, and Cluster 2 links innovation to environmental strategy and sustainability. The research landscape, in other words, progresses from technology development and user acceptance, through marketing application, toward organizational transformation and the pursuit of sustainability.

Taken as a whole, the bibliographic coupling results show that research on smart marketing and digital innovation in sustainability is shaped by interconnected perspectives spanning technology, consumer behavior, marketing, organization, and the environment. This field, the findings suggest, has not developed along separate research trajectories but rather through the convergence of AI, digital marketing, organizational capability, and sustainability.

4.8 Systematic Literature Review

Systematic review examines scientific articles indexed in the Scopus database to trace the development, dominant themes, and conceptual direction of research on smart marketing, digital innovation, and sustainability. The review encompasses publication trends, research themes, theoretical perspectives, methodological approaches, and potential gaps in the existing literature. Citation analysis was conducted with documents as the unit of analysis. From the final dataset of 445 documents, a minimum threshold of 15 citations was applied using VOSviewer, yielding 132 documents. The six articles presented in Table 5 were selected as the most highly cited works within this group and for their direct relevance to the study's focus

These articles can be grouped into several interconnected themes. Dwivedi et al. (2023) address the opportunities, challenges, and implications of generative artificial intelligence, with particular attention to the use of ChatGPT in research, business practice, and policy work that underscores the growing importance of AI governance, digital ethics, and the managerial implications of intelligent technology. Dwivedi et al. (2021), by contrast, look toward the future of digital and social media marketing, focusing on the transformation of marketing communication, consumer engagement, and digital interaction. Chauhan et al. (2022) draw a connection between digitalization technologies and the circular economy, showing how digital innovation can support resource efficiency and sustainability-oriented business practices.

Other studies extend the discussion into technology adoption and organizational decision-making. Flavián et al. (2022) examine the factors shaping the intention to use

analytical AI within the services sector, particularly technology readiness, user awareness, and perception. Bag et al. (2021) highlight AI's role in knowledge creation and rational decision-making within B2B marketing, linking intelligent technology to organizational capability and firm performance. Mariani et al. (2016), meanwhile, contribute to the discussion of social media use and its relevance to digital communication and marketing practice.

Taken together, these findings suggest that research in this field has evolved from an initial focus on the adoption and use of digital technology toward broader applications spanning marketing transformation, organizational decision-making, and sustainability. Promising directions for future research include integrating AI adoption with ethical governance frameworks, examining the long-term effects of digital marketing on consumer behavior, and investigating more closely how digital innovation can produce measurable sustainability outcomes.

Table 5. Systematic Literature Review

No	Article Title	Other information	Further study for research
1	“So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy	Author(s) : Dwivedi et al. (2023) Year : 2023 Source : International Journal of Information Management Citations : 2637 Theory : Generative AI, Large Language Model (LLM), Human–AI Collaboration Method : Qualitative – Opinion Paper / Expert Perspective Approach	Future research should explore the ethical, legal, and organizational implications of generative AI implementation, particularly with respect to AI bias, transparency, human–AI collaboration, and the capabilities required for AI implementation across various industries.
2	Setting the future of digital and social media marketing research: Perspectives and research propositions	Author(s) : Dwivedi et al. (2021) Year : 2021 Source : International Journal of Information Management Citations : 1363 Theory : Digital Marketing, Social Media Marketing, e-WOM, AI Marketing Method : Qualitative – Literature Review and Expert Opinion Approach	Future research should examine the integration of artificial intelligence, augmented reality, and data analytics in digital marketing to better understand consumer engagement, personalization strategies, and the ethical challenges arising within social media environments.
3	Linking circular economy and digitalisation technologies: A systematic literature review of past achievements and future promises	Author(s) : Chauhan, C.; Parida, V.; Dhir, A Year : 2022 Source : Technological Forecasting and Social Change Citations : 483 Theory : Circular Economy (CE), AI, IoT, Product-Service System (PSS)	Future research should analyze how digital technologies such as AI and IoT can accelerate the transformation toward a circular economy, taking into account organizational readiness, policy barriers, and sustainable business model innovation.

No	Article Title	Other information	Further study for research
		Method: Qualitative – Systematic Literature Review (SLR)	
4	Intention to use analytical artificial intelligence (AI) in services – the effect of technology readiness and awareness	Author(s): Flavián, C.; Pérez-Rueda, A.; Belanche, D.; Casaló Ariño, L.V Year: 2022 Source: Journal of Service Management Citations: 295 Theory: Technology Readiness Index (TRI) Method: Qualitative – Survey with Structural Equation Modeling (SEM)	Future research should explore the adoption of AI across various service sectors and examine the influence of culture, digital literacy, and consumer trust on the acceptance of analytical AI-based services.
5	Facebook as a destination marketing tool: Evidence from Italian regional Destination Management Organizations	Author(s): Mariani, M.; Di Felice, M.; Mura, M. Year: 2016 Source: Tourism Management Citations: 295 Theory: Social Media Marketing, Destination Marketing, User Engagement, UGC Method: Mixed Method – Big Data Analysis dan Semi-Structured Interview	Future research should compare the effectiveness of various social media platforms in destination marketing and examine the influence of visual content and user-generated content on tourist engagement and destination branding.
6	An integrated artificial intelligence framework for knowledge creation and B2B marketing rational decision making for improving firm performance	Author(s): Bag, S.; Gupta, S.; Kumar, A.; Sivarajah, U. Year: 2021 Source: Industrial Marketing Management Citations: 278 Theory: Knowledge Management Theory (KMT) Method: Qualitative – Survey with Structural Equation Modeling (SEM)	Future research should investigate the role of artificial intelligence in enhancing customer knowledge creation, market intelligence, and strategic decision-making across various industries and organizational contexts.

Source: Data Processed by Vos Viewer (2026)

4.9 The Evolution of Smart Marketing in the Digital Era

Smart marketing marks a departure from conventional, transaction-based marketing toward a system that is adaptive, data-driven, and centered on the consumer. The prominence of keywords such as marketing, artificial intelligence, innovation, and digital technologies points to a field increasingly shaped by firms' capacity to gather, process, and act on digital information. Technology, in this light, no longer functions merely as a promotional tool but as a strategic resource for understanding consumer needs, anticipating market shifts, and building more personalized interactions (Verma et al., 2021; Davenport et al., 2020).

The links among AI, data analytics, social media marketing, and consumer behavior suggest that the effectiveness of smart marketing hinges on the integration of technological capability with a genuine understanding of how consumers behave. Conceptually, smart marketing might best be understood as a dynamic capability one that allows firms to continually adjust their marketing strategies in step with technological change and shifting market preferences. Its implementation, however, is not without complications: data privacy, algorithmic bias, unequal digital access, and uneven organizational readiness all pose real challenges (Saura et al., 2024).

Consequently, the progress of smart marketing cannot be judged solely by gains in efficiency and personalization; it must also be weighed against considerations of transparency, consumer protection, algorithmic fairness, and responsible data governance. This broadens the notion of smart marketing from a purely technology-driven approach into a marketing system that is effective, ethical, and sustainable in equal measure.

4.10 Integrating Sustainability with Digital Business Transformation

The connections among sustainability, digital transformation, green innovation, and AI suggest that sustainability is increasingly positioned as a core element of business transformation strategy, rather than a matter of reporting or regulatory compliance alone. Digital technology can help firms use resources more efficiently, strengthen supply chain transparency, monitor environmental performance, and support data-driven decision-making (Guandalini, 2022; Verma et al., 2022).

Digital transformation, in this respect, appears to function as the mechanism linking technological innovation to the pursuit of sustainability goals. AI, big data analytics, the Internet of Things, and blockchain can all support resource monitoring, business activity tracking, and the development of more environmentally sound innovation. Recent research further suggests that AI-driven transformation may improve both the volume and quality of a firm's green innovation output, by way of increased R&D investment, stronger governance, and enhanced organizational capability (Xu & Lin, 2025).

Digitalization, however, does not automatically translate into sustainability. Data center energy consumption, electronic waste, infrastructure disparities, and limited digital literacy can just as easily generate new forms of harm. This points to a conceptual contribution worth emphasizing: the need to view digital sustainability through the lens of twin transition the joint integration of digital and environmental transformation. Realizing such integration calls for supportive governance, human capital development, inclusive infrastructure, and measurable sustainability indicators (Saura et al., 2024; Guandalini, 2022).

4.11 The Role of Digital Innovation in Contemporary Marketing Systems

Digital innovation functions as the connective tissue linking technological progress to changes in marketing strategy. The relationships among innovation, digital technologies, commerce, AI, and digital transformation indicate that digital innovation concerns not merely the adoption of new technology, but broader shifts in marketing processes, business models, consumer interaction, and value creation (Verma et al., 2021; Lim, 2023).

The use of AI, predictive analytics, social commerce, and marketing automation allows firms to build more personalized and interactive consumer experiences. Viewed through the lens of organizational capability, digital innovation helps firms convert technological resources into genuine marketing advantage through greater responsiveness, sharper decision-making, and deeper consumer engagement.

The emergence of themes such as digital ecosystems, AI-driven marketing, and sustainable digital engagement further suggests that digital technology has moved well beyond its promotional origins. Digital platforms are now used to communicate sustainability information, cultivate consumer participation, and enhance transparency in corporate practice. These benefits, though, need to be weighed against risks of data misuse, behavioral manipulation, impulsive consumption, and unequal digital participation (Saura et al., 2024).

Digital innovation, then, contributes meaningfully to sustainability only when it is directed toward long-term value creation rather than short-term sales gains. Research on digital transformation and green marketing similarly shows that technologies such as AI, IoT, blockchain, and digital platforms are playing an increasingly central role in shaping sustainability-oriented marketing strategy (Kumar et al., 2025).

4.12 Consumer Responses to Sustainability-Oriented Marketing Practices

Consumer behavior serves as the thread connecting smart marketing, digital innovation, and sustainability. The links among consumer behavior, green marketing, sustainability, and digital transformation reveal that consumers are gaining access to sustainability-related information through social media, e-commerce, and digital platforms at an increasing pace heightening the role that trust, perception, and engagement play in determining whether sustainable marketing succeeds (Sun et al., 2022).

Factors such as green branding, eco-labeling, CSR, transparency, and sustainability communication all shape how consumers evaluate a brand. Yet communicating sustainability through digital channels also raises the bar for authenticity: consumers can readily compare products, scrutinize environmental claims, and push back against greenwashing. Sustainability communication, in other words, is no longer a one-way message but an interactive process demanding consistency between what firms claim and what they actually do (Suphasomboon, 2025).

These findings also lend further weight to the well-documented attitude–behavior gap the tendency for consumers' positive attitudes toward sustainability to fall short of translating into actual purchasing behavior. Barriers such as price, convenience, product availability, accessibility, trust, and digital literacy all help explain why good intentions do not always become concrete action (Sun et al., 2022; La Ragione et al., 2026). Research on greenwashing concerns similarly shows that skepticism toward inauthentic sustainability claims can weaken the link between positive attitudes, purchase intention, and actual green buying behavior (Margariti et al., 2024).

The effectiveness of sustainable marketing, then, rests not only on a firm's ability to communicate environmental messages but also on its capacity to lower the practical barriers to sustainable consumption. An effective strategy would need to combine consumer education, transparent information, authentic digital communication, more affordable pricing, and adequate product access.

4.13 Research Implications

Taken together, these findings suggest that smart marketing, digital innovation, sustainability, and consumer behavior form an interconnected conceptual system. Smart marketing provides the capability to understand consumers through data; digital innovation enables new forms of value creation and interaction; sustainability supplies strategic and ethical direction; and consumer behavior determines how these practices are ultimately received and acted upon.

The conceptual contribution of this study lies in recognizing that the evolution of digital marketing cannot be explained through a technological or purely performance-based lens alone. It must instead be understood through the integration of technological capability, organizational transformation, environmental responsibility, ethical governance, and consumer response. Future research, accordingly, would do well to examine how intelligent technology can generate commercial benefit while also producing measurable social and environmental value.

This study contributes to the development of marketing theory by illustrating how smart marketing, digital innovation, sustainability, and consumer behavior are interconnected. Drawing on the results of the keyword co-occurrence analysis, bibliographic coupling, and systematic literature review, smart marketing emerges not merely as the application of AI and data analytics, but as a strategic capability for understanding consumers, enhancing personalization, and responding to shifting market conditions.

Digital innovation functions as the mechanism driving organizational transformation and value creation, while sustainability provides the strategic and ethical direction guiding how such technology is applied. Consumer behavior serves as a critical connecting thread, operating through trust, engagement, technology acceptance, and both the intention and practice of sustainable consumption. This study accordingly proposes

an integrative perspective linking technological capability, organizational transformation, environmental responsibility, ethical governance, and consumer response.

The findings of this study carry several implications for companies and business practitioners:

1. Embed sustainability in business strategy. Sustainability should be integrated into marketing and digital transformation efforts, not treated as mere communication supported by genuine, transparent, and measurable practices to avoid greenwashing.
2. Leverage AI and data analytics. These tools can strengthen personalization, deepen customer engagement, and support more adaptive marketing decisions.
3. Build organizational readiness. Digital innovation requires stronger employee competencies, adequate infrastructure, and the organizational capacity to embed technology into core processes.
4. Communicate sustainability credibly. Information should be consistent, verifiable, and educational, with transparency and data protection to build consumer trust.
5. Lower barriers to sustainable consumption. Price, accessibility, convenience, and digital literacy must be addressed so that positive consumer attitudes translate into actual purchasing behavior.

Overall, companies should direct digital transformation toward not only efficiency and competitiveness, but also the sustained creation of economic, social, and environmental value.

5. Conclusion

This study shows that smart marketing, digital innovation, and sustainability constitute a rapidly growing and closely interconnected field within the broader transformation of modern business. The systematic literature review indicates that technologies such as AI, big data analytics, the Internet of Things (IoT), blockchain, predictive analytics, and marketing automation can enhance marketing effectiveness, strengthen consumer engagement, and improve operational efficiency and business transparency.

The bibliometric analysis reveals a marked rise in publications over the 2016–2025 period, particularly from 2020 onward. The dominance of keywords such as marketing, innovation, artificial intelligence, digital technologies, and sustainability confirms that contemporary marketing is no longer oriented toward profitability alone, but increasingly toward the creation of social, environmental, and long-term value.

Even so, the implementation of smart marketing and digital transformation continues to face notable obstacles, including data privacy concerns, greenwashing, the digital divide, limited technological literacy, and constrained organizational readiness challenges that are especially pronounced in developing countries. Integrating digital

technology, marketing strategy, and sustainability therefore requires grounding in ethical principles, transparency, social responsibility, and sound governance.

Taken as a whole, the integration of smart marketing, digital innovation, and sustainability stands as a strategic component in building marketing systems that are adaptive, responsive, and sustainable. Future research would benefit from examining the application of AI and digital technology across a range of industry sectors, along with their influence on consumer behavior, organizational performance, and the achievement of sustainability goals.

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