

The Role of Artificial Intelligence in Shaping Sustainable Consumer Behaviors: A Trusttech Perspective

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Abstract

In the current landscape, marked by an increasing demand for sustainable practices and responsible consumption, businesses across retail and e-commerce face the challenge of integrating Artificial Intelligence (AI) into marketing in a way that genuinely supports environmental and social goals. This paper investigates how AI technologies, viewed through a TrustTech framework, can shape sustained, sustainable consumer purchasing behaviors and how AI-driven recommendation systems affect trust building and eco-friendly purchasing decisions. The main objective of this study is to systematically review the literature on the intersection of AI, TrustTech, and sustainable consumer behavior, guided by three specific research questions (RQs).

A Systematic Literature Review was conducted following PRISMA guidelines, searching the Web of Science and Scopus databases for the period 2020 to 2026. The review specifically targeted peer-reviewed academic articles to ensure scientific rigor, analyzing 32 full-text studies out of an initial 347 records. The analysis shows that AI exerts both positive and negative effects on sustainable consumption. On one hand, AI enhances consumer cognitive and affective engagement through behavioral nudges and personalized analytics.

On the other hand, concerns over unethical data manipulation, algorithmic bias, and greenwashing erode consumer trust. TrustTech, particularly Explainable AI built on decentralized verification, transforms passive environmental attitudes into sustained pro-environmental behavior.

To the author's knowledge, this is the first research to simultaneously address the AI, marketing, and sustainable consumption nexus, identifying an unexplored AI and TrustTech gap and proposing an interdisciplinary sustainable business model integrating One Health emerging frameworks. The findings offer practical guidance for businesses, marketers, and policymakers to design responsible AI initiatives that balance the responsible use of AI with consumer protection and sustainable development goals.

Keywords

Artificial Intelligence, TrustTech, Sustainable Consumer Behavior, Green Marketing, Systematic Literature Review.

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Introduction

Today's global economy is defined by sustainable development and the fast digitalization of the world. Artificial Intelligence (AI) is at the center of this intersection (Kotler et al., 2021). Businesses and governments are increasingly looking at AI to provide solutions to sustainable consumption behavior (SCB) that achieves the sustainable development goals (SDGs), particularly SDG 12: responsible consumption and production, to address the impacts of environmental degradation and climate change (Eurostat, 2025b).

Recent data from Eurostat (2025a, 2026) show a significant rise in the use of AI by businesses in the European Union, where 20% of companies with 10 or more employees are expected to use Artificial Intelligence to perform at least one function of their business, a solid increase of 6.5 percentage points from 2024.

Peattie & Crane (2005) describe the digitally fueled green marketing of products that promote their environmental advantages. AI has enabled the marketing world to provide solutions that are designed to further the environmental interest of consumers and to strengthen the links between consumers' values and their purchasing behavior by using hyper-personalized suggestions (Acatrinei et al., 2025; Shaik et al., 2026). The successful use of AI towards sustainable alternatives depends significantly upon the trust of the consumer. Trust is difficult to cultivate, and when it is lost, the use of AI in the nature of marketing can contribute to the many concerns consumers have towards the erosion of privacy, the existence of bias, and even the criminal use of technology to invent a facade of sustainable practice (Xu et al., 2026; Saura et al., 2024), especially in the youth. The AI-facilitated automated bias, and especially the AI-enhanced automated feedback, has caused the erosion of trust among youth that hold concern and responsibility towards concerns of the environment. This has cultivated a "trust gap" the consumer prefers not to trust an automated process in promoting a green product, even when the green product has been ethically created.

The most popular concept for closing the trust gap has become TrustTech (Trust Technology). TrustTech is intentionally transparent and quantifiable and is sensitive and protectively responsive towards the privacy of users. It includes things such as Explainable AI (XAI) and various systems of verification that are based upon Blockchain (Faccia, 2025). The use of TrustTech by companies for the AI systems of marketing can help to use technologically sustainable practices. Additionally, TrustTech can close the gap of skepticism and help in converting passive concern for the environment towards action, sustainable purchasing. TrustTech also harmonizes with holistic paradigms, like the One Health, because they all integrate sustainable and transparent business models that recognize the interconnection between human, animal, and environmental health (OHHLEP, 2022).

Although this intersection is becoming increasingly important, there is still a large gap in research that looks at AI, TrustTech, and sustainable consumer behavior at the same time. There is already a lot of research about the role of AI in digital marketing (Handoyo, 2024) and the general factors that motivate sustainable consumption (Nygaard, 2024), and also the connection between trust, sustainability and blockchain (Aysan & Bergigui, 2021), the role of TrustTech in green purchasing decisions fueled by AI is still unexplored.

The main objective of this study is to systematically review the literature on the intersection of AI, TrustTech, and sustainable consumer behavior. To guide this review, the following Research Questions (RQs) were formulated:

RQ1: How does AI-based marketing affect the formation of consumer trust towards green products?

RQ2: How do TrustTech approaches (e.g., Explainable AI, Blockchain) mitigate consumer skepticism and perceived AI greenwashing?

RQ3: How can these technologies be integrated to promote sustained eco-friendly consumption?

To answer these questions, the study follows the PRISMA guidelines to report the findings of a Systematic Literature Review (SLR) of the most recent literature. The structure of this paper is as follows: a review of the literature on AI and its relation to consumer trust and green marketing in Section 1, Section 2 provides the research methodology employed, Section 3 outlines an SLR of the findings and discussion, and the paper concludes with the theoretical insights and marketing policy recommendations and actions for the future research.

1. Review of the scientific literature

The relationship between Artificial Intelligence (AI), digital marketing, and consumer behavior has led to the evolution of research on the role of AI in fostering sustainable consumption. Research has documented two effects of consumption alteration prompted by AI. One involves the use of personalization and digital nudging by AI to increase consumer knowledge and encourage the actualization of pro-environmental consumer behaviour (Panwar et al., 2025; Shaik et al., 2026). Acatrinei et al. (2025) stated AI increases the targeting of marketing to eco-friendly behaviour. The studies of Popa & Chenic (2025) revealed positive AI-mediated online reviews enhance the product quality perception of youth and ecological purchasing. These phenomena, however, only shift consumer behaviour if the consumer has deep trust in the

interventions. The trust gap literature has gained momentum in relationship to apprehensions around ethics. Saura et al. (2024) and Naz & Kashif (2024) conclude data privacy, bias in algorithms, and nontransparent marketing models breach consumer trust. Xu et al. (2026) describe the notion of AI washing as a deceptive marketing strategy that impedes green technology innovation and erodes consumer trust. Guglyvatyy (2026) believes there should be a mandatory algorithmic transparency in relations to the AI in sustainability reporting. To counter these issues, TrustTech solutions are gaining more attention from researchers. A prime example is the use of Blockchain technology as an advanced technology that consumers perceive as an immutable, decentralized, and transparent means of recording the results of sustainability initiatives where there is trust (Bhatt & Emdad, 2025; Faccia, 2025). Explainable AI (XAI) is another promising construct for the provision of transparency of AI's decision-making processes to consumers, which will serve to diminish the distrust towards green claims (Söderlund & Natorina, 2026). Table no. 1 unifies the most significant technological strategies proposed by literature sources to bridge the AI-trust gap in green marketing. The concept of TrustTech was formally defined by G+D Ventures (2024) as "technologies designed to build, maintain, and restore trust in digital ecosystems," operating on four layers: identity, data, infrastructure, and interaction.

Table no. 1. Technological approaches for mitigating the AI-Trust Gap in Green Marketing

Technology	Primary Function in Green Marketing	Impact on Consumer Trust	Key Literature Sources
Explainable AI (XAI)	Provides transparency in algorithmic decision-making and product recommendations	Reduces skepticism by clarifying how green scores are calculated	Söderlund & Natorina (2026), Saura et al. (2024)
Blockchain	Offers immutable, decentralized ledgers for supply chain and sustainability verification	Eliminates greenwashing fears through verifiable, tamper-proof data	Bhatt & Emdad (2025), Duan (2025), Faccia (2025)
Data Privacy Tech	Secures consumer data used for hyper-personalized marketing	Builds institutional trust by preventing unethical data exploitation	Naz & Kashif (2024)
AI Ethics Frameworks	Ensures responsible AI deployment in sustainability reporting	Prevents AI washing and algorithmic greenwashing	Xu et al. (2026), Guglyvatyy (2026)

One of the frameworks that have been developed is the One Health paradigm. This framework attempts to integrate of conservation of the environment and the other elements - i.e. AI and TrustTech - developed by OHHLEP (2022). Integrative frameworks of that nature still lack in the interests of the One Health paradigm.

2. Research methodology

This study explores how AI technologies, through the lens of a TrustTech framework, cultivate the adoption of continuous sustainable purchasing behaviour. A correct application of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021) in a Systematic Literature Review (SLR) provided the framework for the objective. Adopting the SLR approach was important due to a high level of analytic rigor and a transparent and reproducible approach to mapping and organizing the available literature.

Two dominant academic databases, Web of Science and Scopus, were searched. A subset of the literature was searched for keywords, ("Artificial Intelligence" OR "AI") AND ("sustainable consumption" OR "green marketing" OR "pro-environmental behavior") AND ("trust" OR "TrustTech" OR "blockchain" OR "Explainable AI"). A time-limited search was also imposed to ensure the literature accuracy through the rapid evolution of AI, specifically, the search was limited to the period of 2020 and 2026. To ensure high scientific rigor, the search was strictly limited to peer-reviewed academic journal articles, excluding conference proceedings, books, and non-academic sources.

The initial search yielded 347 records across the two databases. After removing 84 duplicate documents, the remaining 263 records were screened based on titles and abstracts. AI applications, consumer trust, and sustainability studies were included. Papers discussing the technical aspects of AI, without regard to consumer sustainability and behavior, were not considered. After this initial screening, 85 full-text articles were assessed for eligibility based on their direct relevance to the three research questions. Ultimately, 32 articles met all inclusion criteria and were included in the final qualitative synthesis. The remaining documents were systematically analysed along three dimensions: (a) the positive contributions of AI, (b)

the challenges of AI greenwashing and algorithmic bias, and (c) the TrustTech framework as mitigation. The PRISMA flow diagram for study selection is shown in Figure no. 1.

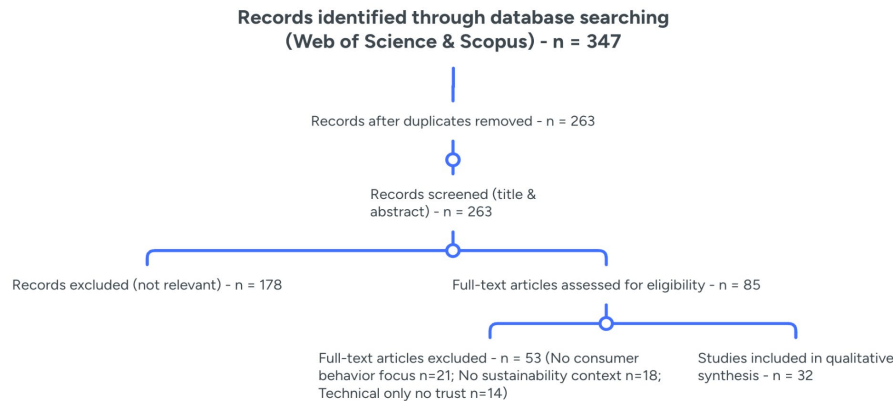


Figure no. 1. PRISMA Flow chart for study selection

Source: Author own research based on Page et al. (2021)

Context for the economic analysis was provided by integrating data from Eurostat (2025a, 2025b, 2026), along with other, indicator-macroeconomic, and policy-data-focused, EU reports.

3. Results and discussion

3.1. Descriptive and Bibliometric Analysis

A descriptive analysis of the 32 included studies reveals a sharp increase in publications starting in 2024, reflecting the recent surge in Generative AI and TrustTech applications. The most prominent journals publishing at this intersection include Sustainability, Journal of Innovation & Knowledge, and European Journal of Marketing. A thematic co-occurrence mapping identified three dominant clusters: (1) AI-driven Green Marketing (focusing on nudging and personalization), (2) Ethical AI and Consumer Trust (focusing on algorithmic bias and privacy), and (3) TrustTech Verification (focusing on XAI and blockchain for sustainability claims).

3.2. Thematic Findings

Through the analytical synthesis of the literature, the dualistic nature of AI in the context of sustainable consumption is described. From this perspective, the literature reports that AI technologies, due to their capacity to tailor consumer psychographics to the greatest extent achievable, improve consumer engagement in sustainable products, especially the cognitive and affective dimensions. This is mainly due to the hyper-personalized nudges and analytics resultant from AI technologies that facilitate the customization of green marketing to individual consumers (Panwar et al., 2025; Shaik et al., 2026). AI-based recommendation systems have been found to be particularly effective in the transportation of latent environmental values to active green consumption among the digitally oriented consumer segment, especially the youth, whose green purchasing is often stimulated by relatively lower levels of engagement (Ma et al., 2025; Popa & Chenic, 2025).

In the literature, the negative influence of AI on sustainable consumption is mostly due to consumer trust issues. Lack of trust is mainly attributed to four issues: the authenticity of sustainability claims generated using AI, the perceived bias of the AI algorithms, the lack of algorithmic transparency, and the possibilities of the unethical use of consumer information (Naz & Kashif, 2024; Saura et al., 2024). AI washing, in which companies are alleged to be using AI algorithms to mask their lack of environmental commitment, is reported to be doing the greatest damage to trust in legitimate green marketing (Xu et al., 2026; Guglyvatyy, 2026).

3.3. Discussion: TrustTech as an Engineered Construct

In light of these considerations, the evidence supports the recommendation to incorporate TrustTech frameworks into AI systems. The literature illustrates that trust in AI systems should not be interpreted as

an incidental outcome of positive interactions, rather, it should be recognized as a deliberate factor that must be technologically designed. One of the key frameworks that help diminish the trust deficit and support rational sustainable behavior in AI systems is explained as XAI. It makes AI's processes and the underlying evidence of AI's decision-making visible and understandable to end users (Söderlund & Natorina, 2026). Also, the implementation of decentralized verification systems such as blockchain, and the creation of a permanent and visible record of sustainability activities (ledgers of sustainability) would help validate sustainability and strengthen trust in green sustainability claims (Bhatt & Emdad, 2025; Faccia, 2025). These findings extend current knowledge by demonstrating that while AI alone can amplify greenwashing risks, the integration of TrustTech provides the necessary technological governance to secure consumer confidence.

Table no. 2 presents a comparative analysis of the dual impacts of AI on sustainable consumer behaviour identified in the reviewed literature.

Table no. 2. Dualistic Impact of AI on Sustainable Consumer Behavior

Impact Category	Mechanisms	Consumer Response	Mitigation Strategies
Positive Enablers	Hyper-personalized nudging, eco-targeting, real-time carbon footprint analytics	Increased cognitive involvement, higher green purchase intention	Continuous refinement of recommendation algorithms
Negative Barriers	Algorithmic bias, data privacy violations, 'AI washing' / greenwashing	Skepticism, 'trust gap', rejection of sustainability claims	Implementation of TrustTech (XAI, Blockchain verification)

The synergy of AI and TrustTech not only addresses the ethical and privacy concerns associated with digital marketing but also aligns with the broader goals of sustainable development and the One Health paradigm (OHHLEP, 2022).

Conclusions

This research builds upon the existing scholarship on sustainable consumption, providing a systematic study of the relationship between AI, consumer trust, and green marketing. The results reveal that although AI has the potential to improve personalized nudges and, subsequently, the choices consumers make in an environmentally sustainable direction, the positive results of AI in this area remain constrained by the “trust gap” associated with algorithmic bias, data privacy, and greenwashing.

This study uniquely contributes to the literature by proposing the productive coalescing of TrustTech frameworks within the AI-trust gap. Trust, as an engineered technological construct rather than an afterthought, suggests the combination of Explainable AI and decentralized verification systems (e.g., blockchain) to be used as technology to facilitate permanent shifts in the behavior of consumers and to be used as a tool to disrupt environmentally unfriendly business processes.

In this regard, this research provides marketers and business owners, and European Union policymakers with a number of suggestions. Retailers and e-commerce platforms should use transparent and explainable AI and TrustTech frameworks in order to reduce consumer trust gaps and improve brand loyalty in green markets. Consequently, the EU policymakers should establish a greater focus on protecting consumers from AI greenwashing. The integration of TrustTech and AI across multiple industries and markets to enhance sustainable consumer habits should be the basis of the EU's legislative focus on greenwashing. Furthermore, integrating these technologies supports the One Health framework by recognizing that human consumption patterns, driven by AI, directly impact environmental and planetary health. By engineering trust into sustainable AI marketing, businesses can actively contribute to the One Health goals of balancing human and ecosystem well-being.

A limitation of this study is its reliance on secondary data from existing literature. Future research should focus on empirical, cross-cultural studies to test the effectiveness of specific TrustTech interventions (e.g., XAI vs. Blockchain) on actual green purchasing behavior across different demographic groups.

Generative Artificial Intelligence (GenAI) usage statement:

GenAI tools were used for language polishing under author supervision; all research design, analysis, and interpretation are the author's.

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