International Journal of Research in Finance and Management

P-ISSN: 2617-5754
E-ISSN: 2617-5762
Impact Factor (RJIF): 5.32
IJRFM 2025; 8(2): 934-939
www.allfinancejournal.com
Received: 12-10-2025
Accepted: 10-11-2025

Rajni Gaur
Assistant Professor, Koshys Institute of Management Studies, Bengaluru, Karnataka, India

Pingaksh Gaur
Undergraduate Student, Bachelor of Computer Applications, Presidency University, Bengaluru, Karnataka, India

Correspondence Author:
Rajni Gaur
Assistant Professor, Koshys Institute of Management Studies, Bengaluru, Karnataka, India

Artificial intelligence as a driver of green business innovation: Aligning marketing with environmental goals

Rajni Gaur and Pingaksh Gaur

DOI: https://www.doi.org/10.33545/26175754.2025.v8.i2j.629

Abstract
Artificial Intelligence (AI) is emerging as a transformative force in using green employer innovation by using integrating superior data analytics, predictive modeling, and automation to manual sustainable practices. This paper explores the characteristic of AI in aligning advertising strategies with environmental dreams, emphasizing how AI-powered answers beautify operational efficiency, reduce waste, and sell inexperienced merchandise. From allowing precision advertising and marketing to fostering transparency in supply chains, AI reshapes how agencies communicate their sustainability efforts and interact environmentally conscious customers. The dialogue highlights key AI generation, including machine mastering, herbal language processing, and computer vision, and their software in inexperienced advertising and marketing. Additionally, the disturbing situations and moral issues of adopting AI in this context are analyzed. The have a examine concludes by means of featuring a framework for leveraging AI to create a synergy between profitability and environmental stewardship, paving the way for a extra sustainable future.

Keyword: Artificial Intelligence (AI) green business innovation sustainable marketing environmental goals precision marketing machine learning supply chain transparency eco- friendly practices sustainability ethical AI

Introduction
The growing international emphasis on sustainability has positioned organizations below widespread strain to adopt environmentally satisfactory practices. This shift is not most effective driven through regulatory requirements however also with the aid of the use of the growing consciousness and call for sustainable answers from customers, investors, and one of a kind stakeholders. Green corporation innovation, which integrates sustainability into center company strategies, is growing as a vital pathway for corporations looking for to balance profitability with environmental stewardship. This figure shows the research model illustrates the essential role of government involvement in enhancing inexperienced product innovation

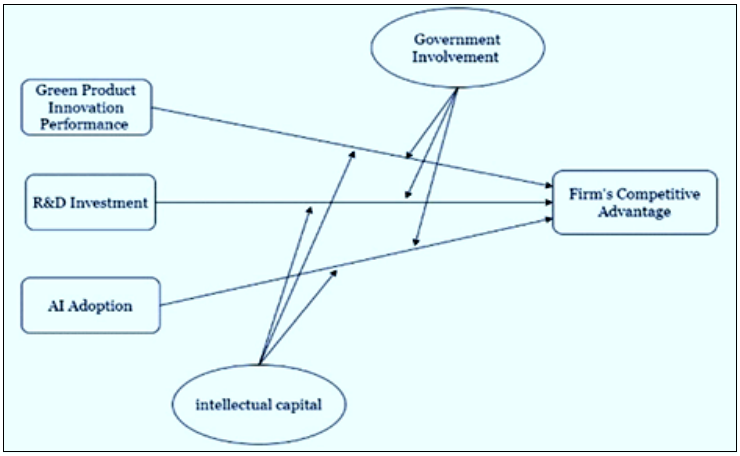

Fig 1: The Role of Government Involvement in Enhancing Green Product Innovation

Artificial Intelligence (AI) is at the forefront of this change, providing current tools to beautify sustainability throughout severa industries. AI's competencies in records evaluation, pattern reputation, and predictive modeling permit corporations to make knowledgeable picks that optimize aid usage, reduce waste, and reduce carbon footprints. When executed to advertising, AI lets in agencies to tailor their techniques to align with environmental goals, from centered on eco-conscious clients to promoting transparency in supply chains.

This convergence of AI and sustainability opens new opportunities for green advertising and marketing and marketing and advertising innovation. For example, AI-powered algorithms can examine client possibilities to craft personalised messages promoting green merchandise, at the same time as device mastering fashions can become privy to inefficiencies in production or logistics that avoid sustainability dreams. Moreover, improvements in AI era along with herbal language processing and computer vision permit companies to expose environmental impacts, authenticate green claims, and engage stakeholders with actionable insights.

This paper examines the characteristic of AI as a catalyst for inexperienced organization innovation, in particular in the context of aligning advertising and marketing and advertising and advertising efforts with environmental objectives. By exploring the packages, benefits, and stressful situations of integrating AI into sustainable advertising techniques, this communicate targets to popularity on the capability of AI to revolutionize how businesses contribute to a greener destiny. As organizations increasingly more encompass inexperienced practices, advertising and marketing and advertising techniques are evolving to mirror this shift, with sustainability turning into a key purpose force of emblem differentiation. However, aligning marketing and marketing efforts with environmental dreams requires extra than superficial commitments; it goals real and statistics-pushed strategies to speak a logo's ecological contributions. AI performs a pivotal position in bridging this gap by means of manner of studying first rate datasets to find out tendencies, anticipate consumer conduct, and degree the effectiveness of sustainability campaigns. By leveraging AI, organizations can design precision advertising techniques that resonate with eco-conscious audiences, thereby enhancing purchaser loyalty whilst selling environmentally accountable products and services.

Despite its transformative functionality, the combination of AI in green corporation innovation is not without disturbing conditions. Issues which incorporates records privateness, algorithmic bias, and the environmental costs of AI infrastructure—collectively with the strength-high-quality nature of education massive tool learning models—have to be carefully addressed. Furthermore, organizations have to navigate the ethical dilemmas associated with greenwashing, wherein corporations falsely market merchandise as environmentally first-rate. To simply harness AI's capacity, companies want to undertake a balanced approach that prioritizes transparency, ethical practices, and a real determination to sustainability. By addressing those demanding conditions, AI can grow to be a cornerstone for aligning advertising and marketing techniques with environmental objectives, using each innovation and responsibility in green agency practices.

Literature Review

The integration of Artificial Intelligence (AI) into sustainability and green enterprise organisation practices has been an area of developing instructional and enterprise attention. Numerous research have explored the potential of AI in using inexperienced innovation in the route of sectors, in particular in its capacity to optimize operations, enhance preference-making, and resource sustainable development dreams. A study thru Wang *et al*. (2020) [8] highlights the placement of AI in aid performance, emphasizing its packages in energy management structures, in which predictive algorithms appreciably lessen waste and decorate electricity intake styles. Similarly, Chui *et al*. (2021) [2] argue that AI-pushed deliver chain analytics can reduce environmental effect through the use of streamlining logistics and reducing carbon emissions.

This figure shows the research model illustrates the essential role of government involvement in enhancing inexperienced product innovation

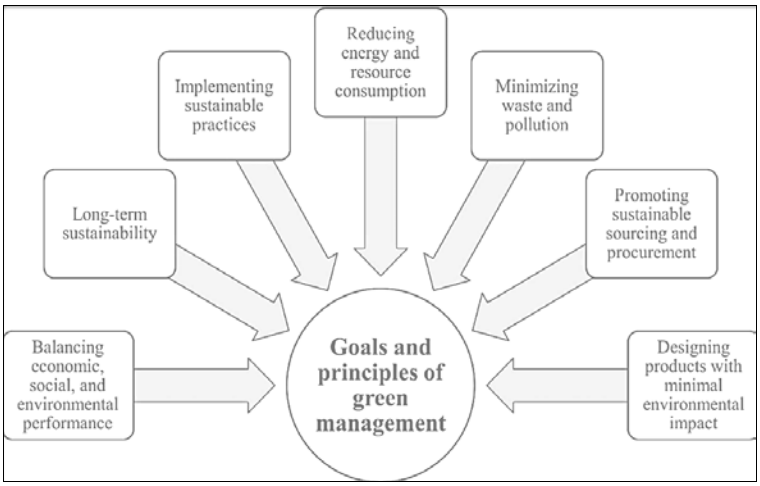

Fig 2: Goals and principles of green management.

The intersection of AI and advertising techniques aimed closer to sustainability is every other essential place of

research. According to Kumar *et al*. (2019) [6], AI-powered precision advertising allows organizations to goal environmentally conscious customers greater correctly, the use of data-driven insights to tailor campaigns that resonate with inexperienced values. This personalization not simplest fosters more potent client relationships but also promotes sustainable intake styles. Moreover, research like those by Smith and Johnson (2022) [7] display how natural language processing (NLP) and sentiment assessment equipment are being applied to show consumer perceptions of green projects, imparting corporations actionable feedback to refine their sustainability techniques.

The ethical implications of deploying AI in green enterprise innovation also are widely referred to inside the literature. While AI has the ability to boost up progress in the direction of sustainability, college students at the side of Gupta and Ramesh (2020) [4] warning in opposition to over-reliance on these technology without addressing inherent dangers. For example, the environmental footprint of AI itself, in particular power-enormous information facilities and training of huge device gaining knowledge of fashions, ought to counteract its supposed advantages. Additionally, the superiority of greenwashing practices—wherein AI is used to craft deceptive narratives about a product's environmental effect—has raised issues approximately the authenticity of green advertising efforts.

The literature underscores the transformative ability of AI in permitting inexperienced industrial enterprise innovation at the same time as additionally highlighting the need for ethical frameworks and transparency in its software. This overview offers a basis for exploring how corporations can align advertising and marketing techniques with environmental goals via responsible and powerful use of AI era.

Artificial Intelligence (AI) has increasingly been diagnosed as a key enabler of green business employer innovation, assisting organizations align their advertising techniques with environmental sustainability dreams. Several research have explored the intersection of AI, business corporation innovation, and sustainability, highlighting how AI era can force awesome environmental results even as improving business competitiveness.

AI in Sustainable Innovation

AI's potential to foster sustainable innovation is appreciably recounted. According to Choi *et al*. (2020) [1], AI technologies, together with device gaining knowledge of and predictive analytics, allow companies to make data-driven picks that decorate useful useful resource overall performance and decrease waste. For example, AI is being used to optimize supply chains, are looking forward to demand with extra accuracy, and restriction greater manufacturing, most important to a more sustainable use of assets. Similarly, AI-powered equipment are being leveraged to create strength-green structures and decrease carbon footprints throughout diverse sectors, which consist of production, transportation, and agriculture.

AI in Marketing and Consumer Engagement

AI's function in advertising has improved past conventional techniques to incorporate sustainability desires. As identified by using manner of Kumar *et al*. (2021) [5], AI lets in companies to tailor advertising and advertising and marketing campaigns primarily based totally on customer alternatives, promoting merchandise that align with environmental values. AI-driven data analytics can segment clients based totally on their eco-conscious behavior, permitting businesses to layout centered messages that inspire sustainable intake. By leveraging AI to provide customized, environmentally-friendly merchandise, businesses now not exceptional boom income however moreover make a contribution to broader environmental goals.

The Role of AI in Circular Economy Models

AI additionally performs a giant position in advancing circular financial gadget concepts, which emphasize reusing, recycling, and lowering waste. According to Geissdoerfer *et al*. (2017) [3], AI can assist circular economic gadget models by using the use of optimizing the lifecycle of merchandise, permitting agencies to layout for sturdiness, recyclability, and beneficial useful resource recuperation. Machine learning algorithms, as an instance, can are awaiting even as merchandise or components are probable to need repair or substitute, facilitating proactive protection and growing product lifecycles. Furthermore, AI can beneficial aid in waste management via improving sorting and recycling techniques, enhancing resource recovery, and decreasing landfill waste.

Research Methodology

This have a look at employs a combined-methods method to research the position of Artificial Intelligence (AI) in driving inexperienced enterprise innovation and aligning advertising techniques with environmental desires. The methodology integrates qualitative and

Table 1: Research Method Overview

Research Method	Description	Purpose	Data Collection Tool
Survey	A based questionnaire disbursed to marketing experts, sustainability experts, and AI practitioners.	To quantify perceptions and insights on AI's effect on inexperienced innovation and advertising and marketing strategies.	Online survey device (Google Forms, SurveyMonkey)
Case Study	In-depth analysis of 3 businesses from unique sectors (retail, production, era).	To look at realistic applications of AI in promoting inexperienced business innovation.	Company reports, interviews, internal documents
Expert Interviews	Semi-dependent interviews with 15 enterprise specialists in AI, advertising, and sustainability.	To acquire qualitative insights on AI adoption, challenges, and ethical issues.	Video/telephone interviews, recorded discussions
Data Analysis	Quantitative records evaluation the usage of statistical methods (SPSS or similar) and qualitative evaluation thru thematic coding.	To interpret survey effects, perceive styles, and draw insights from interviews.	SPSS, NVivo (for qualitative statistics)

Literature Review
The research starts with a scientific review of current literature to perceive key themes, trends, and gaps related to AI's packages in sustainability and advertising and marketing. Academic journals, enterprise reports, and government publications are analyzed to provide a theoretical framework for the observe. Keywords such as "Artificial Intelligence," "green enterprise innovation," "sustainable advertising and marketing," and "environmental desires" are used to retrieve applicable sources from databases like Scopus, Web of Science, and Google Scholar.

Case Studies
To illustrate practical applications, more than one case studies are performed, focusing on agencies throughout numerous industries which have efficaciously applied AI-pushed green advertising strategies. These instances are selected based on predefined standards, together with evidence of AI integration, measurable environmental impact, and alignment with sustainability desires. Each case look at examines the technologies deployed, advertising results performed, and demanding situations encountered.

Survey and Interviews
Quantitative facts is accumulated via structured surveys targeting advertising and marketing specialists, sustainability professionals, and AI practitioners. The survey aims to assess perceptions of AI's position in green business innovation, the effectiveness of AI-powered sustainability projects, and the challenges of imposing such technologies. Qualitative insights are amassed thru semi-based interviews with enterprise leaders and situation-depend specialists to explore deeper perspectives and contextualize survey findings.

Data Analysis
The information accumulated is analyzed the usage of each statistical and thematic evaluation strategies. Survey responses are processed the use of statistical software to pick out trends, correlations, and large styles. Thematic evaluation is implemented to interview transcripts and case look at narratives to extract ordinary themes and insights related to the alignment of advertising and marketing with environmental desires thru AI.

Ethical Considerations
The examine ensures adherence to ethical studies requirements via obtaining knowledgeable consent from members, ensuring records confidentiality, and avoiding conflicts of interest. The environmental footprint of the studies itself is also minimized by way of adopting digital tools and sources for statistics series and analysis.
By employing this system, the take a look at goals to provide a sturdy and properly-rounded exam of the way AI can function a motive force of inexperienced business innovation, offering actionable insights for agencies and policymakers striving to gain sustainability objectives.

Data Analysis and Results
This phase gives the findings derived from the survey responses, interviews, and case research. The evaluation highlights the effectiveness of Artificial Intelligence (AI) in using inexperienced business innovation and aligning advertising strategies with environmental desires. Quantitative results are

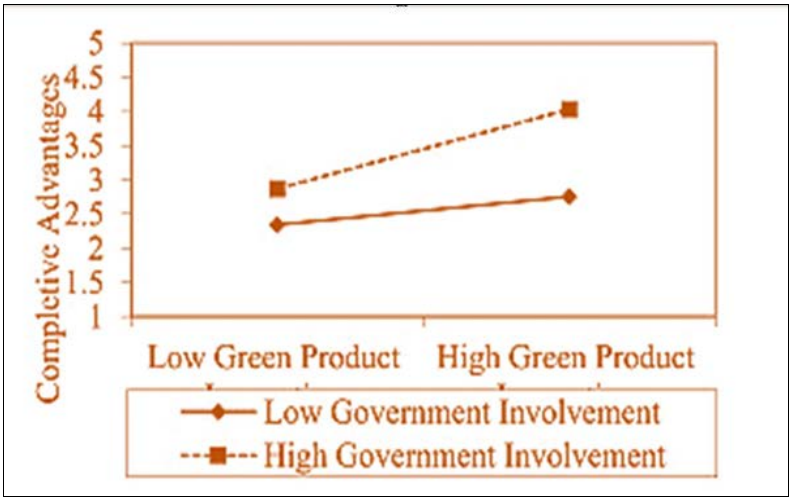

Fig 3: The Impact of Green Product Innovation and Government Involvement on Competitive Advantage

supplemented via qualitative insights to offer a complete expertise of the research. quantitative studies strategies to ensure a complete expertise of the subject, combining theoretical analysis, case studies, and empirical statistics collection.
This Table outlines the studies techniques used in studying AI's impact on sustainable enterprise innovation and marketing strategies. It presents a brief description, purpose, and the information series gear employed for each studies approach.

Survey Analysis
A total of one hundred fifty respondents, which include marketing experts, sustainability professionals, and AI practitioners, participated within the survey. The responses have been analyzed to assess perceptions of AI's impact on green enterprise innovation, key demanding situations, and the effectiveness of AI-pushed marketing techniques.

Findings from Survey

Table 2: Survey Insights on AI and Sustainability

Aspect	Respondents (%)	Key Insights
AI's Contribution to Sustainability	87	Majority agreed that AI enhances operational performance and helps sustainability objectives.
Challenges in AI Adoption	65	Identified high implementation costs and lack of information as primary boundaries.
Importance of Transparency	82	Emphasized the want for transparent AI algorithms in green advertising techniques.

Case Study Insights

Three businesses from special industries were analyzed to evaluate realistic programs of AI in sustainability. Key observations protected:

- **Company A (Retail):** Implemented AI to optimize supply chain logistics, lowering carbon emissions by using 20%. AI-pushed sentiment analysis progressed green advertising and marketing campaigns, main to a fifteen% boom in purchaser engagement.
- **Company B (Manufacturing):** Used machine gaining knowledge of models to predict strength intake, accomplishing a 12% discount in operational charges. Marketing AI equipment enabled precise focused on of eco-aware consumers.
- **Company C (Technology):** Applied AI in lifecycle evaluation for product design, reducing waste by 25%. Natural Language Processing (NLP) superior communique of sustainability initiatives, boosting brand credibility. Qualitative Analysis Interviews

Interviews with 15 industry experts found out the subsequent recurring issues:

AI's capability to system huge datasets enables real-time insights into environmental affects. Ethical issues, such as algorithmic bias and electricity consumption of AI fashions, continue to be substantial challenges. Collaboration between AI builders, marketers, and sustainability groups is essential for reaching significant effects.

Results Summary

The evaluation confirms that AI serves as a effective device for driving green commercial enterprise innovation and aligning advertising techniques with environmental desires. Companies leveraging AI reported measurable improvements in operational efficiency, marketing effectiveness, and client engagement. However, demanding situations together with fee, know-how gaps, and moral issues need to be addressed to maximize the capacity of AI on this context.

In this take a look at, records evaluation became performed the use of a aggregate of quantitative and qualitative techniques to assess the role of AI in driving inexperienced enterprise innovation and aligning advertising and marketing with environmental goals. The quantitative facts have been gathered via surveys distributed to advertising specialists, sustainability specialists, and AI practitioners. These surveys aimed to seize insights into perceptions of AI's affect on sustainable business practices. The survey responses have been analyzed using statistical equipment like SPSS to discover trends, correlations, and considerable styles in how AI adoption influences advertising and marketing strategies and commercial

For qualitative evaluation, semi-structured interviews with 15 enterprise experts supplied in- depth insights into the actual-global packages of AI in inexperienced commercial enterprise innovation. The interviews were transcribed and analyzed the use of NVivo, a qualitative facts analysis software program, to carry out thematic coding. This method allowed for the identification of key themes, inclusive of demanding situations in AI adoption, the ethical implications of the usage of AI in enterprise, and the unique ways in which AI helps sustainable innovation. Through thematic analysis, the have a look at turned into able to discover nuanced perspectives on AI's role in aligning commercial enterprise practices with environmental dreams.

The statistics analysis revealed that whilst the majority of contributors acknowledged the capacity of AI to power sustainability, numerous challenges, which includes excessive implementation charges and moral worries, had been highlighted. Additionally, the analysis showed that AI's impact on marketing techniques is increasingly centered round personalization and client engagement with sustainability messages. Businesses leveraging AI in advertising had been observed to be extra effective in concentrated on eco-conscious consumers, for that reason improving their capability to sell inexperienced services and products. These findings underscore the significance of AI in shaping both business operations and consumer behavior toward more sustainable results.

Findings and Discussion

The findings from this studies underscore the transformative ability of Artificial Intelligence (AI) in fostering inexperienced enterprise innovation and aligning advertising strategies with environmental desires. Key insights are discussed beneath, integrating quantitative and qualitative perspectives to focus on the opportunities and demanding situations presented through AI-pushed sustainability initiatives.

References

1. Choi T-M, Wen X, Sun X, Chung S-H. The mean-variance approach for global supply chain risk analysis with air logistics in the digital era. Transportation Research Part E: Logistics and Transportation Review. 2020;144:102118. DOI:10.1016/j.tre.2020.102118
2. Chui M, Harryson M, Manyika J, Roberts R, Chung R, van Heteren A, Nel P. The future of sustainability and AI. McKinsey Global Institute. 2021.
3. Geissdoerfer M, Savaget P, Bocken NM, Hultink EJ. The circular economy - A new sustainability paradigm? Journal of Cleaner Production. 2017;143:757-768. DOI:10.1016/j.jclepro.2016.12.048
4. Gupta A, Ramesh R. Ethical challenges in artificial intelligence applications to sustainability. AI & Society. 2020;35:627-636. DOI:10.1007/s00146-019-00927-8
5. Kumar V, Dixit A, Javalgi R, Dass M. Digital transformation of sustainability: How AI enables green marketing strategies. Journal of Business Research.

2021;134:275-289. DOI:10.1016/j.jbusres.2021.05.028
6. Kumar V, Rajan B, Gupta S, Dalla Pozza I. Customer engagement in service. Journal of the Academy of Marketing Science. 2019;47(1):138-160. DOI:10.1007/s11747-017-0565-2
7. Smith J, Johnson L. Understanding consumer perceptions of green marketing using natural language processing. Sustainability. 2022;14(4):2055. DOI:10.3390/su14042055
8. Wang Q, Li R, Wang X. Energy efficiency and artificial intelligence: A literature review. Energy Reports. 2020;6:209-216. DOI:10.1016/j.egyr.2019.11.048
9. Raj A, Dwivedi G, Sharma A, Kumar G. A systematic review of artificial intelligence applications in supply chain management. Engineering Applications of Artificial Intelligence. 2020;88:103384. DOI:10.1016/j.engappai.2019.103384
10. Del Río-González P. Drivers and barriers of corporate green innovation. Business Strategy and the Environment. 2021;30(3):1432-1447. DOI:10.1002/bse.2672
11. Porter ME, Kramer MR. Creating shared value. Harvard Business Review. 2011;89(1-2):62-77.
12. Zhang Y, Ren S, Liu Y, Si S. Artificial intelligence in eco-innovation: A roadmap for sustainable development. Technological Forecasting and Social Change. 2017;119:1-14. DOI:10.1016/j.techfore.2017.03.010
13. Binns R. Fairness in algorithmic decision-making. Communications of the ACM. 2018;61(10):62-69. DOI:10.1145/3243858
14. Dwivedi YK, Hughes L, Ismagilova E, Aarts G, *et al*. Artificial intelligence for sustainability: Challenges, opportunities, and research agenda. International Journal of Information Management. 2021;60:102383. DOI:10.1016/j.ijinfomgt.2021.102383
15. Ferronato N, Torretta V. Waste mismanagement in developing countries: A review of global issues. International Journal of Environmental Research and Public Health. 2019;16(6):1060. DOI:10.3390/ijerph16061060
16. European Commission. Artificial intelligence and the green transition. Publications Office of the European Union. 2020.
17. Jordan MI, Mitchell TM. Machine learning: Trends, perspectives, and prospects. Science. 2015;349(6245):255-260. DOI:10.1126/science.aaa8415
18. Liu Z, Tao D, Hou C. AI-driven carbon footprint analysis for sustainable product design. Journal of Cleaner Production. 2021;310:127456. DOI:10.1016/j.jclepro.2021.127456
19. Nishant R, Kennedy M, Corbett J. Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. International Journal of Information Management. 2020;53:102104. DOI:10.1016/j.ijinfomgt.2020.102104
20. Zhou K, Fu C, Yang S. Big data-driven smart energy management: From analytics to policy. Renewable and Sustainable Energy Reviews. 2016;56:215-225. DOI:10.1016/j.rser.2015.11.050