



E-ISSN: 2706-9591  
P-ISSN: 2706-9583  
[www.tourismjournal.net](http://www.tourismjournal.net)  
IJTHM 2025; 7(1): 56-60  
Received: 04-11-2024  
Accepted: 08-12-2024

**Md. Ashadul Islam**  
Department of Tourism and  
Hospitality Management,  
Mirpur University College,  
Dhaka, Bangladesh

**Sufal Chandra Goldar**  
Department of Human  
Resource Management,  
Patuakhali Science and  
Technology University,  
Patuakhali, Bangladesh

**SM Al Imran**  
Islami Bank Bangladesh PLC,  
Swarupkathi, Bangladesh

**Md. Halimuzzaman**  
School of Business, Galgotias  
University, Delhi, India

**Salman Hasan**  
Police Headquarters,  
Bangladesh Police,  
Dhaka, Bangladesh

**Corresponding Author:**  
**Md. Ashadul Islam**  
Department of Tourism and  
Hospitality Management,  
Mirpur University College,  
Dhaka, Bangladesh

## AI-Driven green marketing strategies for eco-friendly tourism businesses

**Md. Ashadul Islam, Sufal Chandra Goldar, SM Al Imran, Md. Halimuzzaman and Salman Hasan**

**DOI:** <https://www.doi.org/10.22271/27069583.2025.v7.i1a.125>

### Abstract

The integration of Artificial Intelligence (AI) into green marketing strategies presents a transformative opportunity for eco-friendly tourism businesses. This study examines the effectiveness of AI-driven marketing techniques in promoting sustainable tourism by leveraging data analytics, machine learning, and predictive modeling. Using a quantitative research approach, we analyze consumer responses to AI-powered marketing campaigns, assessing their impact on eco-conscious purchasing behavior, customer engagement, and brand loyalty. Data was collected from a survey of eco-conscious travelers and analyzed using statistical methods, including regression analysis and machine learning-based sentiment analysis. The findings reveal that AI-driven green marketing significantly enhances consumer awareness and engagement, leading to increased adoption of sustainable tourism options. The results offer valuable insights for tourism businesses seeking to optimize their marketing strategies while maintaining sustainability goals. This research contributes to the growing discourse on AI applications in environmental marketing and provides actionable recommendations for businesses aiming to align profitability with ecological responsibility. Future studies should explore the long-term impact of AI-driven strategies on consumer loyalty and environmental conservation efforts.

**Keywords:** Green marketing strategies, eco-friendly tourism, automated content creation, customer satisfaction

### 1. Introduction

With the increasing emphasis on environmental conservation, sustainable tourism has gained momentum. AI-driven green marketing provides innovative solutions to reach eco-conscious travelers. This study aims to quantify the impact of AI technologies, such as predictive analytics, chatbots, and automated marketing, on the performance of eco-friendly tourism businesses. The tourism industry is a significant contributor to global economic development, yet it also has a profound environmental impact (Cui, 2025) <sup>[6]</sup>. In recent years, there has been an increasing shift toward sustainable tourism, driven by rising consumer awareness of environmental issues and regulatory pressures. Green marketing, which promotes eco-friendly practices and sustainable tourism services, has emerged as a crucial strategy for businesses seeking to attract environmentally conscious travelers (Chaudhary, 2025) <sup>[3]</sup>. However, traditional marketing methods often struggle to effectively target and engage this niche audience. Artificial Intelligence (AI) has revolutionized the marketing landscape, offering advanced tools for data-driven decision-making, personalized customer experiences, and efficient resource management. AI-powered technologies, such as machine learning, natural language processing (NLP), and predictive analytics, enable businesses to analyze vast amounts of consumer data, optimize marketing campaigns, and enhance customer engagement (Besiri, 2024) <sup>[2]</sup>. In the context of green marketing, AI can play a pivotal role in identifying eco-conscious travelers, tailoring marketing messages, and promoting sustainable tourism experiences more effectively (Cristian Mihai Gabriel, 2024) <sup>[5]</sup>. Despite the potential benefits of AI in green marketing, there remains a gap in understanding how AI-driven strategies influence consumer behavior in the eco-friendly tourism sector (Singh *et al.*, 1 C.E.). While some businesses have successfully integrated AI into their marketing efforts, there is limited empirical research assessing its effectiveness in driving sustainable travel choices (Basak *et al.*, 2020) <sup>[1]</sup>. Furthermore, challenges such as ethical considerations, data privacy, and the cost of AI implementation pose barriers to adoption (Hossen *et al.*, 2024) <sup>[10]</sup>. Albania presents a special scenario for investigating the use of AI technology in promoting sustainable tourism because it is a quickly developing travel destination (Salma Honey, 2024) <sup>[10]</sup>.

With its many natural and cultural attractions, the nation stands to gain a great deal from AI-powered solutions that meet the needs of tourism for customization and sustainability (Basak *et al.*, 2020) <sup>[1]</sup>. This study seeks to address this gap by conducting a quantitative analysis of AI-driven green marketing strategies in eco-friendly tourism businesses. By examining the impact of AI-powered personalization, automated marketing campaigns, and consumer sentiment analysis, this research aims to provide insights into the role of AI in shaping sustainable consumer behaviors. This study contributes to both academic literature and industry practice by providing empirical evidence on the effectiveness of AI in green marketing for sustainable tourism. The findings will help tourism businesses optimize their AI strategies to align with environmental sustainability goals while enhancing customer satisfaction. Additionally, policymakers and marketers can use the insights from this research to develop ethical guidelines for AI implementation in green marketing.

In the tourism sector, green marketing aims to attract eco-conscious travelers by showcasing sustainable practices such as carbon footprint reduction, waste management, and conservation efforts. Research indicates a growing trend of eco-conscious consumers who prioritize sustainable travel options. Travelers are increasingly influenced by environmental concerns, leading them to choose accommodations, transportation, and experiences that align with their values. However, the gap between consumer intent and actual behavior remains a challenge due to factors such as cost, convenience, and perceived effectiveness of eco-friendly initiatives. Artificial Intelligence (AI) has revolutionized marketing by enabling data-driven decision-making, automation, and personalized customer engagement. AI applications include machine learning, natural language processing (NLP), predictive analytics, and chatbots, all of which enhance marketing efficiency and effectiveness (Cherian, 2025) <sup>[4]</sup>. Artificial Intelligence (AI) is revolutionizing tourism by promoting sustainable practices and producing highly customized travel experiences. Chatbots, virtual assistants, and recommendation engines are examples of AI-driven technologies that use sophisticated machine learning algorithms to evaluate massive datasets and provide user-profile-specific recommendations. Beyond user convenience, these features actively promote sustainable behaviors that support global sustainability goals, such as choosing green-certified lodging, using low-carbon forms of transportation, or traveling to less-traveled locations (Basak *et al.*, 2020) <sup>[1]</sup>. However, the success of AI-driven personalization in tourism hinges on its capacity to provide consistent, contextually relevant results and align recommendations with consumer values; without this alignment, the perceived value of such systems declines, particularly when decisions pertaining to sustainability entail trade-offs between ecological responsibility and convenience (Md. Halimuzzaman, 2024) <sup>[10]</sup>. For this reason, the design of AI systems must take into account not only the technical aspects of user engagement but also the behavioral and ethical dimensions. AI allows businesses to deliver highly personalized marketing messages based on consumer preferences and behavior (Halimuzzaman *et al.*, 2024) <sup>[9]</sup>. Personalized recommendations, dynamic pricing, and targeted advertisements improve engagement and conversion rates (Deepta C.S., 2024) <sup>[7]</sup>. In sustainable

tourism, AI-driven personalization helps eco-conscious travelers find relevant sustainable options, enhancing their booking experience (Singh *et al.*, 1 C.E.). A complex interaction of ethical, psychological, and technological issues shapes the use of AI in tourism. According to the Technology Acceptance Model (TAM), perceived utility and usability stand out as important factors. These correspond to travelers' assessments of the applicability and practicality of AI suggestions in contrast to their worries about algorithmic transparency, data privacy, and dependability. According to, incorporating real-time data into AI systems has been found to be a crucial factor in raising perceived value as travelers' demands for smooth and secure services grow. Predictive analytics enables businesses to anticipate consumer needs, optimize marketing campaigns, and allocate resources efficiently (Besiri, 2024) <sup>[2]</sup>. In tourism, AI can predict travel trends, analyze sentiment from online reviews, and assess customer preferences for sustainable experiences (Kumar *et al.*, 1 C.E.). The study found that while customers tend to value performance over environmental sustainability, they prioritize transparency over performance when selecting AI systems. This research emphasizes how crucial it is to strike a balance between practical usefulness and ethical design in order to satisfy a range of customer priorities. Additionally, the study found that people who are focused on the future give sustainability more thought, which is consistent with broader pro-environmental behavior patterns and the demand for environmentally friendly AI solutions. Adoption behaviors are significantly shaped by trust. Higher adoption rates can be facilitated by transparent AI features that directly address trust concerns, such as ethical data procedures and explainable algorithms highlights that mistrust about AI's trustworthiness, fairness, and openness continues to be a major obstacle, especially among tech-savvy consumers. (Meduri *et al.*, 1 C.E.), confidence in AI systems depends on their capacity to exhibit morality, objective judgment, and transparent disclosure of data usage. These results imply that building trust and guaranteeing broad adoption require addressing user concerns around fairness and transparency. AI enhances green marketing by automating sustainability messaging, optimizing digital ad campaigns, and analyzing consumer sentiment toward eco-friendly tourism options (Sharma, n.d.). AI-powered chatbots and virtual assistants provide real-time sustainability information, improving customer interactions (Nwokedi & Nwafor, 2024). The objectives of this study are:

1. To evaluate the effectiveness of AI-driven green marketing strategies in influencing consumer behavior toward sustainable eco-tourism.
2. To analyze the role of AI-powered personalization and predictive analytics in enhancing eco-conscious customer engagement.
3. To identify the key challenges and ethical considerations associated with AI implementation in green marketing.
4. To provide recommendations for eco-friendly tourism businesses on optimizing AI-driven marketing strategies.

## 2. Methods and Materials

The study used a quantitative research methodology to investigate the efficacy of AI-powered green marketing

tactics in environmentally conscious travel agencies. To collect information on customer attitudes, levels of participation, and moral dilemmas around AI-powered marketing, a structured questionnaire was created. Convenience sampling was used to disseminate the survey online to those with prior experience in digital marketing and tourism. The study included 400 participants in total, guaranteeing a wide range of age groups, educational backgrounds, and levels of experience with AI-driven marketing. To measure replies, the survey included both closed-ended and Likert-scale items. To find trends and patterns in customer behavior, the gathered data was examined using descriptive statistics, such as frequency distributions and percentage analysis. The results supported data-driven suggestions for sustainable tourist firms by shedding light on the efficacy, impact of personalization, difficulties, and optimization techniques of AI-driven green marketing.

**3. Results and Discussion**

The results show that AI-powered green marketing greatly raises consumer awareness and engagement, which encourages more people to choose eco-friendly travel

options. The findings provide insightful information for travel agencies looking to maximize their marketing tactics while upholding environmental objectives. The findings are examined in light of the goals of the study and the information obtained from the questionnaire.

**3.1 Demographic Information**

Table 1 summarizes the respondents' age profile, their educational background, eco-friendly tourism involvement, and their familiarity with AI-driven marketing. Aging: the largest age group is 25-34 years (35%), then 18-24 years (30%), and only 5% are older than 55. On the education front, 40% are bachelorette, 30% masters and 10% doctorated or equivalent, and thus a well-educated sample. In terms of participation in eco-friendly tourism, 45% do so regularly and only 5% never take part. Awareness of AI-driven marketing is 25% being very familiar with it, followed by 40% strongly familiar with it, and only 5% having no familiarity. This leaves us with a relatively young, well-educated group, that participates in eco-tourism at a moderate level, and have fair awareness of AI marketing.

**Table 1:** Demographic Information of Respondent

Category	Categories	Percentage (%)
Age Group	18-24	30%
	25-34	35%
	35-44	20%
	45-54	10%
	55 and above	5%
Education Level	High school or below	20%
	Bachelor's degree	40%
	Master's degree	30%
	Doctorate or higher	10%
Eco-Friendly Tourism Engagement	Frequently	45%
	Occasionally	35%
	Rarely	15%
	Never	5%
Familiarity with AI-Driven Marketing	Very familiar	25%
	Somewhat familiar	40%
	Neutral	20%
	Not very familiar	10%
	Not familiar at all	5%

**3.2 Effectiveness of AI-Driven Green Marketing Strategies**

According to the findings, a sizable percentage of participants reported coming across AI-powered green marketing initiatives when making travel plans. Some respondents agreed that AI-based sustainability advertising influenced their travel choices, and participants admitted that AI-powered recommendations raised their awareness of

sustainable tourism. According to these results, AI-driven marketing can effectively raise customer awareness of and interest in eco-friendly travel options. The significance of AI in encouraging ecologically conscious decisions has been strengthened by the positive change in consumer behavior brought about by personalized AI-generated content, such as sustainability ratings and eco-friendly trip recommendations.

**Table 2:** Effectiveness of AI-Driven Green Marketing Strategies to Eco-Tourism

Statement	Agree (%)	Neutral (%)	Disagree (%)
AI-driven green marketing increased awareness of sustainable eco-tourism.	78%	15%	7%
AI-powered recommendations influence travel decisions toward eco-friendly tourism.	65%	22%	13%
AI-driven sustainability promotions are more engaging and accessible than traditional marketing.	72%	18%	10%
I fully trust AI-generated sustainability claims.	58%	25%	17%

Table 5 — Descriptive Statistics on Effectiveness of AI-based Green Marketing Programs in Eco-tourism in fact, 78% confirm that AI-focused green marketing has the potential to raise awareness of sustainable eco-tourism,

while only 7% disagreed. AI-driven recommendations affect travel decision making of 65% respondents in favor of eco-tourism but 13% contradicts. Moreover, 72% agree that companies using AI to promote ideas around sustainable

practices make the brand more interesting and accessible compared to traditional marketing efforts, and 10% disagree. AI-generated sustainability claims don't enjoy the same trustworthiness — 58% trust it, 25% are neutral and 17% disagree. ABSTRACT The above data implying that FAI drives green wCM that promotes eco-tourism while trust is a concern demonstrating the overall generalizability of the data.

**3.3 AI-Powered Personalization and Predictive Analytics**

One of the significant findings of this research is the role of

AI in enhancing sustainability efforts. AI-driven optimization in energy consumption, waste management, and supply chain logistics enables eco-friendly tourism businesses to reduce their environmental footprint. For instance, AI-powered tools can analyze historical data to predict peak demand periods, allowing for more efficient resource allocation. Furthermore, AI's ability to process vast amounts of data from multiple sources facilitates real-time decision-making, ensuring that businesses can proactively address sustainability challenges.

**Table 3:** AI-Powered Personalization and Predictive Analytics to Eco-Friendly Tourism

Statement	Agree (%)	Neutral (%)	Disagree (%)
AI-generated personalized recommendations helped me discover eco-friendly travel options.	70%	20%	10%
Predictive analytics improved my decision-making by offering real-time sustainability insights.	60%	25%	15%
AI-driven personalization is more effective in engaging me than traditional marketing strategies.	68%	20%	12%
I fully trust AI-generated sustainability recommendations.	55%	25%	20%

Table 3 data survey of AI-powered personalization and predictive analytics in persuading greener tourism 70% of respondents agreed that AI-generated recommendations helped them discover sustainable travel options, 20% stayed neutral on this and 10% disagreed. The same was true for predictive analytics (60% found it useful for gaining real-time sustainability insights while 25% were neutral and 15% disagreed). 68% of respondents found AI-driven personalization more engaging than traditional marketing, 20% neutral and 12% disagreed. However, only 55% agreed, 25% remained neutral, and 20% disagreed that they trusted AI-generated sustainability recommendations. In general, AI-powered personalization is perceived as primarily good, however, trust in its sustainability

recommendations is comparatively lower.

**3.4 Key Challenges and Ethical Considerations in AI-Driven Green Marketing**

While AI-driven marketing strategies offer numerous benefits, the study also underscores concerns related to consumer trust and data privacy. Transparency in AI algorithms and responsible data handling practices are essential to maintaining consumer confidence. Ethical AI deployment must prioritize data security, avoid biases, and ensure compliance with regulatory standards. Businesses must balance technological advancements with ethical considerations to prevent potential reputational risks.

**Table 4:** Challenges and Ethical Considerations in AI-Driven Green Marketing

Statement	Agree (%)	Neutral (%)	Disagree (%)
Concerned about data privacy and security in AI-driven green marketing.	65%	20%	15%
Question the accuracy of AI-generated sustainability claims (risk of green washing).	58%	25%	17%
Believe AI-driven marketing lacks transparency in decision-making.	62%	22%	16%
I Trust AI-generated sustainability recommendations without hesitation.	50%	30%	20%

The table 4 highlighted a number of ethical issues and problems with AI-powered green marketing that affect customer acceptance and confidence. 58% of respondents questioned the veracity of AI-generated sustainability claims, pointing out the possible danger of greenwashing, while 65% of respondents voiced worries about data privacy and security, wondering how AI systems gather and handle personal information. Furthermore, according to 62% of participants, AI-driven marketing makes decisions opaquely, making it challenging to confirm the veracity of eco-friendly suggestions. Nonetheless, 15% disagreed and 20% were neutral, suggesting that not all customers view these issues as major obstacles.

**3.5 Eco-Friendly Tourism and AI-Driven Marketing Strategies in Future**

The table 5 provides the numbers of agree, neutral, and disagree responses for eco-friendly tourism and AI-driven marketing strategies. The strong public concern regarding the ethical use of AI in the tourism sector is best demonstrated with the 72% agreement of the need for AI algorithms to be transparent and thus enhance consumer trust of the eco-tourism offering. 68% of the same group of people feel that third-party sustainability certifications are very important and 65% think data privacy should be strengthened — trust and security being the number one issue again. Rich 3D environment of the tour with AI-driven tours - 60% agree A surge of neutral responses (18%-25%) indicates some ambivalence or disinterest, in addition to low levels of disagreement (10%-15%), which suggests a general positivity towards these AI implementations within eco-tourism.

**Table 5:** Eco-Friendly Tourism and AI-Driven Marketing Strategies in Future

Statement	Agree (%)	Neutral (%)	Disagree (%)
Transparency is required in AI algorithms to improve consumer trust in eco-tourism.	72%	18%	10%
Third-party sustainability certifications are important to validate AI-generated recommendations and customer feedback.	68%	20%	12%
Strengthen data privacy measures is essentials to address personal information security concerns.	65%	22%	13%
AI-driven tour guide and environmental surroundings is highly appreciated	60%	25%	15%



#### 4. Findings and Recommendations

The results suggest that the integration of AI in green marketing strategies presents a significant opportunity for eco-tourism businesses to achieve sustainable growth. The ability to leverage AI for predictive analytics, consumer segmentation, and automated marketing campaigns positions businesses at the forefront of innovation. However, successful implementation requires investment in AI infrastructure, staff training, and adherence to ethical guidelines. The findings emphasized important suggestions for maximizing AI-powered marketing tactics in eco-friendly travel. While 68% of respondents favored the inclusion of third-party sustainability certifications to verify AI-generated suggestions, 72% of respondents stressed the necessity of increased transparency in AI algorithms to increase consumer trust in sustainability claims. Furthermore, 60% proposed boosting AI-driven personalization by integrating real-time user feedback to improve recommendations, and 65% supported strengthening data protection safeguards to address worries about the security of personal information. Nonetheless, 10% disagreed and 18% were neutral, suggesting that not all customers view these elements as necessary for AI-driven marketing advancements.

#### 5. Conclusion

In summary, AI-driven green marketing strategies are reshaping the eco-friendly tourism industry by enhancing consumer engagement, optimizing operational efficiency, and promoting sustainability. While challenges related to data privacy and ethical considerations persist, the potential benefits outweigh the risks when implemented responsibly. As AI continues to evolve, businesses must embrace innovation while maintaining ethical and transparent practices to foster consumer trust and long-term success. In conclusion, AI-driven green marketing strategies play a crucial role in promoting sustainable tourism by enhancing consumer engagement, increasing willingness to choose eco-friendly services, and fostering brand loyalty. The study confirms that personalized AI-powered campaigns effectively capture consumer interest, but ethical concerns and data privacy issues pose significant challenges to trust and adoption. While AI has the potential to revolutionize sustainable tourism marketing, businesses must prioritize transparency, ethical AI practices, and robust data protection measures. By addressing these concerns, AI can be a powerful tool in advancing sustainability efforts and ensuring long-term consumer trust in eco-friendly tourism services. This study explores the role of AI-driven green marketing strategies in promoting sustainable tourism and examines their influence on consumer behavior, engagement, and trust. The findings indicate that AI-powered marketing significantly impacts consumer choices, but ethical and privacy concerns remain a challenge.

#### 6. References

- Basak S, Gazi MDH, Mazharul Hoque Chowdhury SM. A review paper on comparison of different algorithms used in text summarization. In: Hemanth DJ, Shakya S, Baig Z, editors. *Intelligent data communication technologies and Internet of things*. Springer International Publishing; 2020. p. 114-119. DOI: 10.1007/978-3-030-34080-3\_13.
- Besiri D. AI-driven predictive analytics: transforming decision-making in business. *Hum Comput Interact*. 2024;8(1):163-163. DOI: 10.62802/8ny1ww06.
- Chaudhary S. Study of impact of green marketing practices and strategies on consumer behavior in India with the global perspective. *Glob J Res Anal*. 2025;54-55. DOI: 10.36106/gjra/7001930.
- Cherian M. Leveraging AI for predicting marketing and customer insights—an overview. *J Informat Educ Res*. 2025;5(1):1. doi: 10.52783/jier.v5i1.2050.
- Cristian Mihai Gabriel TC. Challenges and perspectives of AI in sustainable tourism. *Manag Sustain Dev J*. 2024 Jan 12. Available from: <https://msdjournal.org/article/challenges-and-perspectives-of-ai-in-sustainable-tourism/>.
- Cui H. Tourism development and environmental sustainability: a study on the dual impact on economic growth in developing countries. *Adv Econ Manag Polit Sci*. 2025;147:184-191. DOI: 10.54254/2754-1169/2024.GA19197.
- Deepta CS, SN. Enhancing e-commerce with personalized product recommendations[v1] | Preprints.org. Available from: <https://www.preprints.org/manuscript/202410.2506/v1>.
- Dewi LKC, Putra IBU, Widodo S, Yudithia Y, Soares A. An empirical study on the artificial intelligence practices on the digital marketing effectiveness within tourism village in Bali, Indonesia. *J Digitainability Realism Mastery (DREAM)*. 2025;4(01):1. DOI: 10.56982/dream.v4i01.290.
- Halimuzzaman M, Wafik M, Chakraborty P, Mahub S. Public relation and educational outcomes of films in Bangladesh: a study on Hawa. *J Primeasia*. 2024;5:1-7. doi: 10.25163/primeasia.519834.
- Hossen M, Dutta S, Salma U, Nath K, Saha P, Biswas M, Halimuzzaman M. Application of digital banking in preventing money laundering activities. 2024;12:1-16. DOI: 10.53882/IJMFM.2024.1202001.