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AI-Powered Advertising and Sustainable Consumer Behavior among U.S. College Students

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Abstract

The rapid integration of Artificial Intelligence (AI) into digital marketing has significantly transformed how consumers interact with advertising. This study explores how AI-powered advertising influences sustainable consumer behavior among U.S. college students. Using a structured questionnaire administered to 52 students across various disciplines and states in the U.S, the research examines the extent of exposure to AI-personalized ads, their correlation with attitudes toward sustainability, and predictive influence on sustainable purchasing intentions. Descriptive statistics and inferential analysis (correlation and regression) were applied to analyze the data. Results show moderate exposure towards AI-generated advertising, non-significant but positive correlation with sustainable attitudes, and weak predictive ability on purchase intentions. These findings show that while there is potential in using AI in promoting sustainability, there could be limited potential in changing the behavior towards young consumers unless there is more value alignment.

Keywords: AI-powered advertising; sustainable consumer behavior; digital marketing; personalization; sustainability

1. Introduction

Artificial intelligence (AI) is rapidly changing how corporations interact with consumers. One observable change is in advertising online. Corporations now use AI programs for personalization of advertising content based on what people search for, click, and buy online (Ford et al., 2023; Kumar et al., 2024). Such programs include machine learning, predictive analytics, and time-of-day advertising (Bigliardi et al., 2025; Gao et al., 2023). This technology helps corporations communicate unique messages to individuals based on their unique behavior. Instead of showing the same advertising content to everyone, AI makes it possible to show unique advertising content to different individuals at the same time. This shift has transformed advertising (Ford et al., 2023). AI advertising is intelligent, quick and cheaper (Kumar et al., 2024). It helps advertisers predict what product the user will be interested in and when they will most likely buy. In 2022, spending on AI-powered advertising reached about $370 billion. Forecasts suggest it could grow to $1.3 trillion within the next decade (Huh et al., 2023). Businesses are investing heavily in these tools. At a recent industry event, 71% of Chief Marketing Officers said they would allocate over $10 million per year to AI marketing strategies (Poinski, 2025). This growing reliance on AI in advertising is happening alongside a global push for sustainability. Consumers today are more aware of their impact on the planet. Many say they want to support brands that care about the environment (Sharma & Sharma, 2024; Bashynska, 2023). They are looking for eco-friendly products, ethical sourcing, and responsible packaging (Pourmahdi et al., 2025). This trend has created new expectations for companies. Now, it is not just about selling products, it is also about showing values. Young adults, especially university students, are at the center of this shift. Studies show that the population between 18-30 years cares most about environmental and social issues (Borre et al., 2024; Mahajan et al., 2025). They mostly support sustainable brands and they are the most digitally connected individuals (Krishnan et al., 2024). They online shop, make the most use of social media, and they consume digital content through numerous media sources. Thus, they are always in contact with advertising fueled by artificial intelligence. They represent a specific group whose ideology and behavior are dictated by both environmental issues and digital technology.

Even though many young people often claim to have preference for green initiatives, sometimes what they do and what they claim do not fit together. This situation is referred to as the "attitude–behavior gap" (Sharma & Sharma, 2024). An individual can claim they like eco-products but they opt for cheaper or convenient options. There are some reasons why this can happen. There are times when sustainable options are more expensive or harder to find. In other cases, people may not trust the claims that the brands are sustainable (Mahajan et al., 2025). There can also be gaps in information about personal choices and their effects on the environment (Pourmahdi et al., 2025). This poses a challenge. If

corporations and governments are looking to promote sustainable action, they need better ways of communicating with consumers. One place this can happen is through advertising. Not any advertising, but one that is smart, relevant, and persuasive. This may be where AI can make its contribution, as it may be better at promoting sustainability (Bashynska, 2023). For example, a customer who regularly buys vegan products may respond positively when made aware of environmentally friendly kitchenware. Another who follows fitness influencers may respond positively to sustainably sourced active wear. By matching the message with the individual, AI can drive greener choices.

Despite this potential, there has been little research. There is a growing body of work on AI in marketing (Kumar et al., 2024). There is also a growing interest in consumer sustainability (Borre et al., 2024). But very few studies look at how these two areas interact. There is limited evidence on whether AI-driven advertising changes people's attitudes toward the environment. Even less is known about whether these ads can influence the decision to buy sustainable products (Krishnan et al., 2024). The lack of data is even more noticeable when looking at specific groups like university students. This is an important gap. University students are not just tech-savvy; they are also future leaders, professionals, and consumers. Their values and habits will shape future markets. If AI advertising can influence their views on sustainability, then it has the power to shape long-term behavior patterns.

Focusing on U.S. students is especially important. The United States is the world's largest digital advertising market, with expected spending of over $360 billion in 2024 (Goldman, 2024). American students are highly active online and are exposed to global and domestic trends. U.S. universities also play a role in promoting sustainability. Many campuses run awareness campaigns, offer eco-friendly products, and teach climate-related content (Sharma & Sharma, 2024). These efforts make students more aware of environmental issues and more open to new ideas. Studies among U.S. students can help for the purpose of future comparisons. It can educate marketers and educators with interests in fostering responsible consumption. This study seeks to explore the impact of advertising fueled by AI on sustainable consumption behavior among U.S. university students.

1.1 Research Aim

To examine how advertising fueled by artificial intelligence influences sustainable consumption behavior in university students in America.

1.2 Research Objectives

1. To determine the extent of exposure to AI-driven advertising among U.S. university students.
2. To ascertain the correlation between exposure through AI-driven advertising and attitudes towards sustainable consumption among students.
3. To examine whether exposure to AI-advertising can predict undergraduates' intentions towards making sustainable purchase decisions.

1.3 Research Questions

1. How prevalent is exposure to AI-powered advertising among U.S. university student?
2. How is exposure to AI-powered advertising connected with attitudes towards sustainable consumption practices in students?
3. To what extent does AI-powered advertising predict sustainable purchase intentions among students?

2. Literature Review

2.1 AI in Advertising: Personalization, Targeting, and Engagement

Artificial intelligence has been a pillar in modern-day digital advertising methods. Its use has significantly altered how brands interact with consumers (Gündüzyeli, 2024). There exist several studies which show that AI provides for more exact and engaging advertising through personalization, behavioral targeting, and increased consumer participation (Beyari & Hashem, 2025; Gündüzyeli, 2024). Beyari and Hashem (2025) cited that personalization is perhaps the most obvious use of AI in advertising. It allows advertising to show content that has been customized individually in real time. According to studies, there are means in which AI can read massive amounts of information about users such as search history, browsing, social media activity, and purchase history to create individualized advertising content (Gao et al., 2023). It offers consumers better satisfaction, enhances message relevance, and makes advertising campaigns more efficient. However, some scholars note that increased personalization can lead towards "digital fatigue" or privacy infringement, particularly when consumers regard themselves as tracked or manipulated unduly (Ahamed & Ahammed, 2025).

Targeting is another extensively studied AI feature in advertising. Programmatic advertising aided by AI accommodates real-time bidding as well as user segmentation according to demographic, psychographic, or behaviorally based characteristics (Ford et al., 2023). Research has also demonstrated that AI-powered targeted advertising boosts the ratio of conversions and advertising recall (Sharabati et al., 2024). It has, however, been attacked as this very specific targeting can lead to filter bubbles or reinforce pre-existing consumer bias (Gao et al., 2023). Brands are also revolutionizing the means of creating engagement through the use of AI. Interactive advertising, chatbots, and systems for real-time reaction are now increasingly used in grabbing consumer attention and engagement. Interfaces aided by AI can modify the tone, format of the message, or channel according to user reaction (Jain & Kumar, 2024). Many studies reported that engagement increases attachment with the brand and customer loyalty when consumers feel the content in the advertising resonates with their identity or need (Ahamed & Ahammed, 2025; Uludag et al., 2024; Wasiq et al., 2024).

Nonetheless, current literature remains focused on commercial outcomes such as click-through, return on ad spend, and brand loyalty, more than social or ethical outcomes. This void is particularly relevant as it includes younger consumers who are becoming more digitally and environmentally conscious.

2.2 Sustainable Consumer Behavior: Drivers, Barriers, and Influence of Marketing

Sustainable consumer behavior has attracted growing attention in marketing and behavior studies. It typically involves purchasing and consumption practices considering environmental, social, and ethical impacts. Sustainable consumption has been explained by researchers as internal- and external-driven processes (Yener et al., 2023). There have been several analyses scrutinizing drivers for sustainable consumer behavior. Individual values consisting of environmental consideration, altruism, and health consciousness have been cited as drivers for sustainable decision-making (Borre et al., 2024). Social pressure becomes effective too, particularly in

the case of youthful consumers, as they can adopt green behavior through pressure by members in their social group (Mahajan et al., 2025). Additionally, availability of reliable information for products, such as through eco-labels or product information, have often been cited as the main enabler for green consumption (Pourmahdi et al., 2025).

However, drivers often do not bridge the gap between intention and behavior. This gap has been referred to as the attitude–behavior gap (Sharma & Sharma, 2024). Even though consumers often profess positive attitudes towards sustainability, purchase behavior may give priority to price, convenience, and habit over environmental responsibility. Some surveys have identified certain barriers in this gap. Among them are sustainably branded products' higher prices, shortage, ineffectiveness, and ambiguity about claims regarding the product (Mahajan et al., 2025). Advertising and marketing can play their parts in this process in two ways. Through environmental benefit, long-term value, social responsibility, and ethical advertising campaigns which can positively influence behavior (Bashynska, 2023). Also, mixed signals or greenwashing can intensify cynicism in consumers (Gündüzyeli, 2024). Researchers suggest content should be credible, emotive, and behaviorally specific in achieving success (Bigliardi et al., 2025).

Several studies have now initiated investigation into how online marketing resources like AI and data-driven platforms can facilitate sustainability communication. There are some studies recommending that AI can bridge the attitude–behavior gap by providing individualized sustainability messages that are consistent with user values and motives (Krishnan et al., 2024). Although personalization has extensively been studied in the marketplace, there has been little research into its effect on green consumer behavior (Jain & Kumar, 2024). Furthermore, most studies on sustainable consumption focus on general adult populations or specific sectors like food, fashion, or energy. There is limited literature that targets university students, as they represent a unique demographic (Sharma & Sharma, 2024). Students are highly active online and are exposed to a large volume of AI-personalized content. They are also at a life stage where values and habits are being formed. Few studies have explored how AI-driven advertising might influence their sustainable attitudes and intentions, despite growing concerns over digital influence and environmental responsibility among this group.

2.3 Theoretical Framework

This study draws on two behavioral theories to understand how AI-powered advertising may influence sustainable consumer behavior among university students: Self-Determination Theory (SDT) and Theory of Planned Behavior (TPB)

2.3.1 Self-Determination Theory (SDT)

Self-Determination Theory focuses on motivation. It distinguishes between intrinsic and extrinsic motivation. People are intrinsically motivated when they do something because it is enjoyable or meaningful. They are extrinsically motivated when they do something to get a reward or avoid punishment (Ryan & Deci, 2000). SDT also highlights three basic psychological needs: autonomy, competence, and relatedness. When these needs are met, people are more likely to act with self-determined motivation. For example, someone who feels connected to nature (relatedness), believes they can make a difference (competence), and chooses to buy green products freely (autonomy) is more likely to behave sustainably (Ryan & Deci, 2000). SDT is often used in education, health, and environmental psychology to explain how people internalize values and develop long-term habits. It is particularly relevant when the goal is to support deep, lasting behavior change, not just short-term decisions.

2.3.2 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior proposes that behavior is determined by a person's intention to act. This intention is influenced by three key factors: attitude toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 2020). The study noted that attitude refers to how positively or negatively someone views the behavior. Subjective norms refer to perceived social pressure to perform or not perform the behavior. Perceived behavioral control relates to how easy or difficult the person thinks the behavior is to carry out.

TPB can be used when researching sustainability decisions. For example, a student may believe that it's good to buy green products (attitude), that family members and immediate associates favor (subjective norms), and that they can afford or gain access (perceived control) to such products. All this together influences whether they will act sustainably. Commercial messages that are driven by artificial intelligence can affect all factors. Customized information can reinforce attitudes, bring into view social approval, and reflect that it is easy to act sustainably. This is the reason why TPB can be used in explaining whether and how the ads affect behavior and intention.

While both theories are informative, the Theory of Planned Behavior aligns better with this study's focus on intentions as a function of external advertising stimulus. TPB can quantify the degree to which external factors (e.g., advertising) affect internal attitude, social norm, and sense of control all as factors directly influencing the intent to act sustainably. This stands in contrast to SDT which focuses solely on internal motivation and psychological need satiation. Also, AI-powered ads may be seen as extrinsic motivators, which SDT often views as less effective unless internalized over time. Therefore, this study adopts the Theory of Planned Behavior as its core theoretical lens. It offers clear pathways through which advertising may influence sustainable consumer behavior, and it has been widely validated in consumer, environmental, and marketing research.

2.4 Empirical Review

Borre, Romero, and Ramírez (2024) explored how AI influences sustainable purchasing among Millennials and Centennials. Their systematic review used PRISMA guidelines to assess AI's role in shaping eco-conscious consumer decisions. They found that tools like virtual assistants and AI-based platforms encourage sustainable habits. The study highlights that companies can better match products to values using AI, especially when integrating sustainability with digital marketing strategies and personalization technologies.

Bigliardi et al. (2025) examined how AI has impacted the shift in consumer preferences and how this impacts health and well-being. They show that through the assistance of big data and IoT, AI technologies are transforming the connection between consumers and brands. While this provides efficiency and tailor-made relevance, there is still greater ethical concern. It calls for more understanding into the impact of AI on the consumer experience and the extent that it may improve or harm individual and societal well-being.

Kumar, Ashraf, and Nadeem (2024) assessed marketing practices in transition due to the influence of AI. They observed

ways in which AI boosts marketing, which are customer understanding, customization, automation, and tracking performance. It is observed in the study that through increased efficiency and planning strategy, there are privacy, bias, and misinformation issues as well. Through a dynamic capability lens, they conclude that there is a need for marketers to balance ethical risks with AI innovation as they redefine customer interaction and strategy.

Ahamed and Ahammed (2025) performed a review in gauging the influence of AI marketing in engaging consumers and ethics. They determined that AI accelerates individualization and prompt response but raises concerns about trust, information transparency, and algorithmic discrimination. It connects the health and retail sectors and gives a blueprint in managing ethics in AI. The authors propose responsibility and governance in minimizing harm and building confidence in systems applying AI marketing.

Bashynska (2023) researched how advertising personalization using AI promotes sustainability and the circular economy. Using both case analysis and literature, the article demonstrates that marketing can be aligned with environmental beliefs using AI. It demonstrates how advertising has evolved from selling and now serves as a medium for educating and enabling environmentally aware consumers. It also identifies areas of challenge like the ethical use of information and shifts in consumer behavior and advises future long-term analysis of the effect of AI.

Nor, Ibrahim, and Ishar (2025) conducted a study into retail SMEs in Malaysia and AI advertising. They presented, drawing on current literature, a model for studying how SMEs applied AI in campaigns. It identified benefits like better targeting and campaign effectiveness. In spite of this, there can be barriers in the form of cost and resistance to change which can slow take-up. There are some useful recommendations in the paper for SMEs in planning and conducting successful AI advertising.

Krishnan et al. (2024) highlighted the impact of purchase decision and engagement in Malaysia through AI-driven influencer marketing. Using survey data and Smart PLS modeling, they found that the response from consumers increases significantly through AI when very high levels of trust exist. They conclude that marketing effectiveness as well as behavior orientation through influencers increase through the use of AI. It encourages companies to build trust as well as the application of AI in improving campaign effectiveness and customer loyalty.

Gao et al. (2023) analyzed advertising application of AI by condensing four main functions: targeting, personalization, content creation, and advertising optimization. Examination of these components explains how they work together in increasing advertising efficiency. It also signals ethical challenges related to the use of information and personalization. By literature mapping methods, the authors mention heightened authority in advertising content and delivery using AI and stress its due use.

Ford et al. (2023) extracted a comprehensive overview of advertising and AI across 75 journal articles. In their study, they outline potential future work directions like programmatic ad purchasing, consumer reaction, advertising believability, and planning. They note the advancements in advertising research using AI and notice that industry and research literature must respond to understanding around these changes. The article also provides future study directions and outlines how advertising strategies and effectiveness are being revolutionized using AI.

Pham, Dung, and Duong (2024) analyzed information search behavior through the use of AI interfaces, like chatbots. They posited a model based on user motivation and ability. From 512 questionnaires, they identified that search behavior has significant motivation and that perceived ability also had similar effect. It teaches consumers' behavior interacting with AI when consumers shop and gives insights into how improving search interfaces for better internet experiences can be done.

Jain and Kumar (2024) discussed the impact of AI in marketing over twenty years. They synthesized selected articles and organized the findings into themes including prediction, consumer relationships, strategic marketing, and advertising using AI. From this literature review, they ascertain that AI has continued to evolve in marketing and that future work remains required. This paper encourages marketers and academicians to explore how AI-based tools build engagement, services, and relationships with the brand in the digital economy.

Pourmahdi, Nyström, and Majd (2025) worked towards how retailing can be sustainably supported through prices using machine learning. Analyzing Nordic retail group information through descriptive and predictive analytics frameworks, they identified how price influences green product choices. They also identified how corporations can utilize AI in forecasting which consumers will go for greener products. This work verifies the utilization of machine learning in sustaining marketing and pricing through greener means.

Sharma and Sharma (2024) studied the effects of AI in promoting sustainable consumption in the youth. They used the technology acceptance model and structural equations in studying the interplay between the utilization of AI, environment-oriented behavior, and lifestyle changes. It was found that personalized experiences through the use of AI can promote responsible consumption but consequently posed questions about risks like excessive consumption and environmental destruction. In conclusion, findings are in affirmation that AI must come with ethical and sustainability frameworks.

Mahajan et al. (2025) looked into the influence lifestyle product choices and greener behavior have towards AI. Out of 421 Indian youth consumers, they identified purchase intent and value as initial mediators between the AI experience and being inclined sustainably. It shows the possibility for AI in driving environmentally friendly choices but perhaps not necessarily consumer behavior. It guides firms in developing AI strategies towards aiding responsible decision-making and can be very applicable when youth purchasing promotion will take place.

Gündüzyeli (2024) analyzed the role of AI in promoting sustainability through digital marketing. Using the PRISMA process, the study identified how AI promotes environmental, economic, and social sustainability. Analysis identified that applying AI boosts campaign effectiveness and personalization, thereby reducing wastage and promoting responsibility. In accordance with the study, marketing with AI is not about solely promoting sales but can assist entities in promoting their sustainability efforts in numerous industry sectors.

Despite growing interest in AI-driven advertising and sustainability, prior work remains mostly focused on reviews of literature or conceptual work rather than empirical studies. This puts gaps in understanding how AI-driven ads influence sustainable behavior in actual consumer environments, particularly in highly digitally connected demographic groups like U.S. college students.

3. Methodology

This study adopts a quantitative research design to examine how exposure to AI-powered advertising influences sustainable consumer behavior among university students in the United States.

A structured online questionnaire was used as the primary data collection instrument. The questionnaire was designed to capture data aligned with the study's three research questions, focusing on respondents' levels of exposure to AI-driven ads, their attitudes toward sustainable consumption, and their behavioral intentions regarding sustainable purchases. Most items employed a 5-point Likert scale, enabling statistical analysis of attitudes, perceptions, and intentions in a measurable format.

A non-probability convenience sampling approach was used to recruit respondents, targeting undergraduate and postgraduate students aged 18 and above. The sample size ranged between 150 and 200 students, drawn from U.S.-based universities via academic networks, email invitations, and social media. The data were collected using Google Forms over a three-week period. Descriptive statistics (e.g., means, frequencies) were used to summarize demographic and exposure variables, while Pearson correlation and regression analysis were conducted to examine relationships between AI advertising exposure and sustainable attitudes and intentions. All analyses were conducted using SPSS Version 26. Ethical considerations were observed, including voluntary participation, anonymity, and informed consent at the beginning of the form.

4. Data Analysis and Discussion

The following section presents the analysis of survey data in line with the study's research questions, using descriptive and inferential statistical methods.

4.1 Sample Characteristics

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Age Group	18–20	1	1.9%
	21–23	3	5.8%
	24–26	19	36.5%
	27+	27	51.9%
Gender	Male	18	34.6%
	Female	29	55.8%
	Prefer not to say	5	9.6%
Academic Level	Undergraduate	5	9.6%
	Graduate (Master's)	1	1.9%
	Professional Programs	6	11.5%
	Graduate/PhD	40	76.9%
Area of Study	Business & Management	18	34.6%
	Engineering & Technology	12	23.1%
	Science & Health Sciences	10	19.2%
	Project Management	5	9.6%
	Media, Law & Social Sci.	4	7.7%
	Others (e.g., Education)	3	5.8%
University Location	Massachusetts	19	36.5%
	Other U.S. States	29	55.8%
	Prefer not to say/Not clear	4	7.7%

Table 1 presents the demographic profile of the 52 respondents who participated in the study. The majority of participants were aged 27 years and above (51.9%), followed by those aged 24–26 years (36.5%), reflecting a mature university student population. Females constituted 55.8% of the sample, while males represented 34.6%, with a small proportion (9.6%) opting not to disclose their gender. Most respondents (76.9%) were enrolled in graduate or PhD programs, with smaller numbers in undergraduate or professional tracks. Academic disciplines were diverse, though the highest representation came from Business and Management (34.6%), followed by Engineering and Technology (23.1%) and Science and Health Sciences (19.2%). The geographic spread was predominantly U.S.-based, with 36.5% located in Massachusetts and 55.8% in other states, offering good national representation.

This demographic spread is suitable for the study as it targets digitally active, university-level students who are likely to be frequently exposed to AI-powered advertising and increasingly aware of sustainability issues. The diverse mix in age, study level, and academic background enhances the generalizability of findings within the context of higher education consumers in the United States.

4.2 Measurement Reliability

The internal consistency for the scales was acceptable to excellent, with Cronbach's alpha values of .692 for AI exposure, .752 for sustainable attitude, and .886 for sustainable purchase intention. This implies that the questionnaire items used to measure each concept were consistent and reliable.

4.3 Exposure to AI-Powered Advertising

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Ads tailored to recent searches	52	2.00	5.00	3.9808	.89641
Ads on social media for viewed/discussed products	52	2.00	5.00	4.2308	.75707
Product recommendations match past behavior	52	3.00	5.00	3.9038	.72110
Ads likely generated using AI or machine learning	52	1.00	5.00	3.8077	1.04859
Valid N (listwise)	52				

Descriptive statistics indicate that students reported frequent exposure to AI-powered advertising across multiple platforms. The highest mean score was observed for ads seen on social media related to previously viewed or discussed products (M = 4.23, SD = 0.76), followed by tailored ads based on recent searches (M = 3.98, SD = 0.90). Product recommendations that matched past behavior also showed a high average (M = 3.90, SD = 0.72). The item assessing perceived use of artificial intelligence in ad generation had the widest variability (M = 3.81, SD = 1.05), suggesting differing levels of awareness or belief in AI's role

among respondents. These results reflect a generally high level of engagement with AI-driven digital advertising among the sample.

4.4 Relationship Between AI Exposure and Sustainable Attitudes

Table 3: Correlation Between AI Exposure and Sustainable Attitude

		AI_Exposure	Sust_Attitude
AI_Exposure	Pearson Correlation	1	.261
	Sig. (2-tailed)		.061
	N	52	52
Sust_Attitude	Pearson Correlation	.261	1
	Sig. (2-tailed)	.061	
	N	52	52

A Pearson correlation was conducted to assess the relationship between exposure to AI-powered advertising and students' attitudes toward sustainable consumption. The results indicated a positive but non-significant correlation between the two variables ($r = .261$, $p = .061$). Although the direction suggests that increased exposure to AI-driven advertising may be associated with more favorable sustainability attitudes, the relationship does not reach conventional levels of statistical significance ($p > .05$). Therefore, Hypothesis 1 is not supported at the 95% confidence level.

4.5 Predictive Effect of AI Exposure on Sustainable Purchase Intention

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.056[a]	.003	-.017	.86920

a. Predictors: (Constant), AI_Exposure

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.289	.786		4.185	.000
	AI_Exposure	.077	.195	.056	.396	.694

a. Dependent Variable: Sust_PurchaseIntent

The regression model was not statistically significant, $F(1, 50) = 0.16$, $p = .694$, and explained very little of the variance in sustainable purchase intention ($R^2 = .003$). The unstandardized coefficient for AI exposure was also not significant ($\beta = .056$, $p = .694$), indicating that students' exposure to AI-powered advertising did not significantly predict their intention to make sustainable purchases. These results suggest that although there is some association between AI advertising exposure and sustainable attitudes (as seen in RQ2), exposure alone does not significantly drive purchase intentions in this sample. Further analysis may need to explore mediators like attitude strength or other influencing variables such as environmental concern or perceived ad credibility.

4.6 Discussion of Findings

This study explored how AI-powered advertising relates to sustainable consumer attitudes and behaviors among U.S. college students. The findings from descriptive analysis revealed that most respondents regularly encounter AI-generated personalized ads. A significant portion agreed that such ads reflect their preferences and past behavior. This shows that AI advertising is becoming highly embedded in students' online experiences. The correlation analysis showed a positive relationship between AI exposure and sustainable attitudes, although it was not statistically significant at the 0.05 level. Still, the direction of the relationship suggests that more exposure to personalized AI ads may be linked to stronger pro-sustainability attitudes. These findings align with earlier studies such as Borre et al. (2024) and Bashynska (2023), who observed that AI tools can shape environmental consciousness, especially among young consumers. Though the strength of the correlation in this study was modest, it supports the argument that AI plays a subtle role in shaping how students think about sustainability.

On the other hand, the regression analysis for purchase intentions showed that AI exposure did not significantly predict students' intentions to buy eco-friendly products. The R^2 value was very low, and the model lacked predictive power. This suggests that while students may agree with sustainable values, their actual behavior is influenced by other factors. This supports the well-known "attitude–behavior gap" described in earlier literature. Mahajan et al. (2025) and Sharma & Sharma (2024) also found that AI engagement alone may not be enough to drive sustainable action unless supported by perceived value, emotional engagement, or affordability.

Additionally, qualitative insights from the empirical literature show that ethical concerns, trust, and transparency are important in shaping how users respond to AI. Some studies, such as Ahamed & Ahammed (2025), emphasized that without trust, AI ads may not convert awareness into action. Our findings seem to reflect this. Students may recognize AI in advertising but remain cautious about how it affects their choices. The study also confirmed that students from business, engineering, and science backgrounds formed the bulk of the sample. This may influence results, as these fields are often linked to tech literacy and sustainability awareness. Furthermore, most participants were from Massachusetts and other U.S. states, adding to the generalizability of the findings within an educated and digitally active population.

5.0 Conclusion

This study examined the link between exposure to AI-powered advertising and sustainable consumer behavior among U.S. college students. The results show that while students frequently encounter AI-driven ads and hold pro-sustainability attitudes, AI exposure alone does not strongly predict their purchase intentions. The presence of weak positive correlation implies that there is potential in AI but it has yet to be a driving force behind real-world consumer behavior. These findings reflect the multifaceted nature of consumer behavior. Even when consumers claim sustainable beliefs, their behavior may not necessarily comply. This shows that if AI advertising is poorly designed, it will be unsuccessful in advancing genuine sustainable consumption.

5.1 Recommendations

The recommendations in accordance with this study's findings are as follows:

1. For marketers: Artificial intelligence-driven ads must feature comprehensive sustainability storytelling, benefits, and value appeals that go beyond price. Adverts that portray stories and resonate emotionally with the audience may work best.
2. For educators and policy-makers: Awareness programs about responsible consumption should be promoted in universities. Students should be taught to critically engage with AI-generated content.
3. For platform designers and ad developers: Improve transparency in how AI personalization works. Ethical AI practices that build trust, such as opt-in personalization and data transparency, can increase engagement and reduce skepticism.

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